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SWEET'S CATALOG FILE

A File of Manufacturers' Catalogs designed for the use of Architects, Engineers, Contractors and others whose practice it is to select, specify or purchase building materials, equipment and allied services.

SWEET'S CATALOG SERVICE
DIVISION OF F. W. DODGE CORPORATION
119 WEST FORTIETH STREET, NEW YORK

SEE SECTION 1

F.W. DODGE CORPORATION

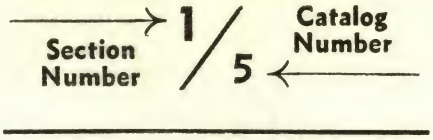
CATALOG NO. 4

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Fitzgibbons Boiler Co., Inc. 26/10
Fuel-Saver 26/97
International Boiler Works Co. 26/97
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Fitzgibbons Boiler Co., Inc. 26/10
Fuel-Saver 26/97
International Boiler Works Co. 26/97
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Brownell Co. 26/94
Burnham Boiler Corp. 26/4
Carrier Corp. 26/5
Columbia Radiator Co. 26/95
Farrar & Trefts Inc. 26/96
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United States Radiator Corp. 26/102

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American Gas Products Corp., Div. American Radiator & Standard Sanitary Corp. 26/1
Crane Co. 27/56
Fitzgibbons Boiler Co., Inc. 26/10
Fuel-Saver 26/97
Gas-80 ..... 26/10
Ideal Empire 26/1
International Boiler Works Co. 26/97
R-Z-U 26/10
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Heating—Gas Fired—Steam, Vapor or Hot Water
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AGP 26/1
American Gas Products Corp., Div. American Radiator & Standard Sanitary Corp. 26/1
Bison 26/96
Bryant Heater Co. 26/3
Burnham Boiler Corp. 26/4
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Columbia Radiator Co. 26/95
Crane Co. 27/56
Delco-Frigidaire Conditioning Division, General Motors Corp. 26/9
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Fuel-Saver 26/97
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Janitrol 26/20
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Mueller, L. J., Furnace Co. 26/18
Richmond Radiator Co., Inc. 26/69
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Brickset 26/98
Brownell Co. 26/94
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Spencer Heater Div. Lycoming Mfg. Co. 26/100

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Fuel-Saver 26/97
Gilbarco 26/13
Gilbert & Barker Mfg. Co. 26/13
International Boiler Works Co. 26/97
May Oil Burner Corp. 26/17
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Oil-O-Matic 26/103
Quiet May 26/17
R-Z-U 26/10
R-Z-U Jr. 26/10
Williams Oil-O-Matic Heating Corp. 26/103

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Electrol-American 26/8
Electrol Incorporated 26/8
Electrol-Kewanee 26/8
Farrar & Trefts Inc. 26/96
Fuel-Saver 26/97
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Gilbert & Barker Mfg. Co. 26/13
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International Boiler Works Co. 26/97
Kewanee Boiler Corp. 26/98
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Oil-O-Matic 26/103
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Quiet May 26/17
Spencer Heater Div. Lycoming Mfg. Co. 26/100
United States Radiator Corp. 26/102
Waterfilm Boilers, Inc. 26/99
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Burnham Boiler Corp. 26/4
Capitol Red Top 26/102
Columbia Radiator Co. 26/95
Crane Co. 27/56
Koven 26/99
Richmond Radiator Co., Inc. 26/69
Spencer Heater Div. Lycoming Mfg. Co. 26/100
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Brownell Co. 26/94
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Capitol Thintube 26/102
Columbia Radiator Co. 26/95
Farrar & Trefts Inc. 26/96
Fitzgibbons Boiler Co., Inc. 26/10
Fuel-Saver 26/97
International Boiler Works Co. 26/97
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Fitzgibbons Boiler Co., Inc. 26/10
Fuel-Saver 26/97
International Boiler Works Co. 26/97
Kewanee Boiler Corp. 26/98
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Fitzgibbons Boiler Co., Inc. 26/10
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International Boiler Works Co. 26/97
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Gilbert & Barker Mfg. Co. 26/13
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Holland Furnace Co. 26/14
May Oil Burner Corp. 26/17
Mueller, L. J., Furnace Co. 26/18
Nebulyte 26/93
Oil-O-Matic 26/103
Quiet May 26/17
Westinghouse Electric & Mfg. Co. 23/16
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American Chimney Corp. 26/127
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Kellogg, M. W., Co. 26/129
Rust Engineering Co. 26/130

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Condensation Engineering Corp. 26/131

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Grinnell Co., Inc. 26/114

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Carrier Corp. 26/5
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Curtis Refrigerating Machine Co. Div. Curtis Mfg. Co. 26/30
Delco-Frigidaire Conditioning Division, General Motors Corp. 26/9
Featherfin 26/59
Fedders Mfg. Co. 26/24
G-E 28/9
Modine Mfg. Co. 26/68
Red Cap 26/68
Rome-Turney Radiator Co. 26/70
Sirocco 26/2
Trane Co. 26/22
UniCoil 26/6
Westinghouse Electric & Mfg. Co. 23/16
Wing, L. J., Mfg. Co. 26/59
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I-R 26/32
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Buffalo Forge Co. 26/54
Carrier Corp. 26/5
Curtis Refrigerating Machine Co. Div. Curtis Mfg. Co. 26/30
Delco-Frigidaire Conditioning Division, General Motors Corp. 26/9
Frick Co. 26/31
Frigidaire 26/9
Trane Co. 26/22
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Baker Ice Machine Co., Inc. 26/29
Carrier Corp. 26/5
Curtis Refrigerating Machine Co. Div. Curtis Mfg. Co. 26/30
Delco-Frigidaire Conditioning Division, General Motors Corp. 26/9
Frigidaire 26/9
G-E 28/9
Trane Co. 26/22
Westinghouse Electric & Mfg. Co. 23/16
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Air Conditioning

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Steam Power Plant

Rust Engineering Co. 26/130

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Barber-Colman Co. 26/33
Detroit Lubricator Co. 26/35
Fedders Mfg. Co. 26/24
Genuine Detroit 26/35
Johnson Service Co. 26/39
Mercoid Corp. 26/40
PW 26/92
Powers Regulator Co. 26/42
Sensatherm 26/40

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Barber-Colman Co. 26/33
Detroit Lubricator Co. 26/35
Duo-Stat 26/39
Genuine Detroit 26/35
Johnson Service Co. 26/39
Powers Regulator Co. 26/42
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Humidity and Temperature Combined

Barber-Colman Co. 26/33
Comfostat 26/39
Johnson Service Co. 26/39

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Pressure—Automatic

Detroit Lubricator Co. 26/35
Fulton Sylphon Co. 26/37
Healy-Ruff Co. 26/92
Johnson Service Co. 26/39
McDonnell & Miller 26/48
Mercoid Corp. 26/40
PW 26/92
Powers Regulator Co. 26/42
Sylphon 26/37

Recording

Johnson Service Co. 26/39
Record-O-Stat 26/39

Stoker

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Detroit Lubricator Co. 26/35
Genuine Detroit 26/35
Mercoid Corp. 26/40
Stokatherm 26/40

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Barber-Colman Co. 26/33
Detroit Lubricator Co. 26/35
Dunham, C. A., Co. 26/36
Duotherm 26/25
Duo-Stat 26/39
Effico 7/22
Fulton Sylphon Co. 26/37
Genuine Detroit 26/35
Grinnell Co., Inc. 26/25
Hirschman, W. F., Co., Inc. 7/22
Johnson Service Co. 26/39
Mercoid Corp. 26/40
Minneapolis-Honeywell Regulator Co. 26/41
Powers Regulator Co. 26/42
Record-O-Stat 26/39
Sarco Co., Inc. 26/52
Sensatherm 26/40
Sylphon 26/37

Temperature—Radiator Valve

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Temperature—Weather Compensating

(See also Thermostats—Weather Compensating)
Barber-Colman Co. 26/33
Detroit Lubricator Co. 26/35
Duo-Stat 26/39
Genuine Detroit 26/35
Johnson Service Co. 26/39

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Valve

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Water Level

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Air Conditioning

Barber-Colman Co. 26/33
Clarage Fan Co. 26/6
Delco-Frigidaire Conditioning Division, General Motors Corp. 26/9
Detroit Lubricator Co. 26/35
Duotherm 26/25
Dunham, C. A., Co. 26/36
Fox Furnace Co., Div. of American Radiator & Standard Sanitary Corp. 26/11
Fulton Sylphon Co. 26/37

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Grinnell Co., Inc. 26/25
Johnson Service Co. 26/39
Mercoid Corp. 26/40
Microtrol 26/33
Minneapolis-Honeywell Regulator Co. 26/41
Powers Regulator Co. 26/42
Sensatherm 26/40
Sylphon 26/37
Syncrotherm 26/6
Vortex 26/6
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Barber-Colman Co. 26/33
Barnes & Jones Inc. 26/34
Detroit Lubricator Co. 26/35
Duo-Stat 26/39
Fox Furnace Co., Div. of American Radiator & Standard Sanitary Corp. 26/11
Hylo 26/44
Johnson Service Co. 26/39
Mercoid Corp. 26/40
Minneapolis-Honeywell Regulator Co. 26/41
Moderator 26/44
Proportionator 26/34
Sensatherm 26/40
Thrush, H. A., & Co. 26/43
Webster, Warren, & Co. 26/44

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Everson Mfg. Co. 21/69
Healy-Ruff Co. 26/92
McDonnell & Miller 26/48
PW 26/92

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See Coolers—Unit

Unit—Cooling Element with Fan or Blower

American Blower Corp., Div. of American Radiator & Standard Sanitary Corp. 26/2
Buffalo Forge Co. 26/54
Clarage Fan Co. 26/6
Climate Charger 26/22
Curtis Refrigerating Machine Co. Div. Curtis Mfg. Co. 26/30
Fedders Mfg. Co. 26/24
Frick Co. 26/31
G-E 28/9
Grinnell Co., Inc. 26/25
Ice-O-Matic 28/38
Ilg Electric Ventilating Co. 26/60
Modine Mfg. Co. 26/68
Multitherm 26/6
Sirocco 26/2
Sturtevant, B. F., Co. 26/58
Trane Co. 26/22
Williams Oil-O-Matic Heating Corp. 28/38
Young Radiator Co. 26/28
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American Blower Corp. Div. of American Radiator & Standard Sanitary Corp. 26/2
Baker Ice Machine Co., Inc. 26/29
Calorider 26/19
Coldstream 26/29
Electrol Incorporated 26/8
Gilbert & Barker Mfg. Co. 26/13
Ilg Electric Ventilating Co. 26/60
Mobilaire 23/16
Research Corp. 26/19
Sirocco 26/2
Spot Kooler 26/60
Sturtevant, B. F., Co. 26/58
Westinghouse Electric & Mfg. Co. 23/16
York Ice Machinery Corp. 26/23; 28/39

Unit and Heater Combination

American Blower Corp., Div. of American Radiator & Standard Sanitary Corp. 26/2
Buffalo Forge Co. 26/54
Carrier Corp. 26/5
Climate Changer 26/22
Delco-Frigidaire Conditioning Division, General Motors Corp. 26/9
DeLuxe 26/22
Fedders Mfg. Co. 26/24
Fox Furnace Co., Div. of American Radiator & Standard Sanitary Corp. 26/11
Grinnell Co., Inc. 26/25
Modine Mfg. Co. 26/68
Sirocco 26/2
Sturtevant, B. F., Co. 26/58
Sunbeam 26/11
Thermolier 26/25
Trane Co. 26/22
Weathermaker 26/5
Westinghouse Electric & Mfg. Co. 23/16
York Ice Machinery Corp. 26/23
Young Radiator Co. 26/28

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See Dampers or Registers

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Barber-Colman Co. 26/33

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American Foundry & Furnace Co. 26/71
Anemostat Corp. of America 26/72
Anemo-trol 26/72
Arc-Eng 26/82
Auer Register Co. 26/73
Barber-Colman Co. 26/75
Beco 7/36
Bennett Fireplace Co. 26/132
Best Register Co. 26/74
Carrier Corp. 26/5
Diamond Mfg. Co. 26/76
Duo-Trol 26/85
DuraBilt 26/73
Dura-Flo 26/73
Effico 7/22
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Burnham Boiler Corp. 26/4
Cadwell 26/90
Detroit Lubricator Co. 26/35
Genuine Detroit 26/35
Hoffman Specialty Co., Inc. 26/47
Hurivent 26/35
Milvaco 26/49
Milwaukee Valve Co. 26/49
Sarco Co., Inc. 26/52
Webster, Warren & Co. 26/44
See also 26/22
Automatic Expansion
Detroit Lubricator Co. 26/35
Genuine Detroit 26/35
Differential Pressure
See Heating Systems—Hot Water
Electrically Operated
Barber-Colman Co. 26/33
Detroit Lubricator Co. 26/35
Fulton Sylphon Co. 26/37
General Controls Co. 26/38
Genuine Detroit 26/35
Sarco Co., Inc. 26/52
Sylphon 26/37
Webster, Warren, & Co. 26/44
Specifications 26/38
Flow Control
See Heating Systems—Hot Water
Gas Furnace Control
General Controls Co. 26/38
Specifications 26/38
Lift
Armored Concrete Corp. 13/44
Mixing or Tempering—Thermostatic
Doran Co. 27/76
Fulton Sylphon Co. 26/37
Johnson Service Co. 26/39
Leonard Valve Co. 27/77
Powers Regulator Co. 26/42; 27/78
Safe-T-Showr 27/76
Sarco Co., Inc. 26/52
Sylphon 26/37
Thermo-Mix, Inc. 27/80
Specifications 27/76; 27/78; 27/80
Radiator—Air Vent—Automatic
Beaton & Cadwell Mfg. Co. 26/90
Burnham Boiler Corp. 26/4
Cadwell 26/90
Detroit Lubricator Co. 26/35
Genuine Detroit 26/35
Hoffman Specialty Co., Inc. 26/47
See also 26/22; 26/55
Radiator — Air Vent — Compression Type
Beaton & Cadwell Mfg. Co. 26/90
Cadwell 26/90
See also 27/15
Radiator—Air Vent—Convector Type
Richmond Radiator Co., Inc. 26/69
Richvent 26/69
Radiator Supply—Combined with Thermostatic Trap
B&J 26/34
Barnes & Jones Inc. 26/34
Multiflex 26/55
Webster, Warren, & Co. 26/44

VALVES—Cont.

Radiator Supply — Electrically or Pneumatically Operated

Barber-Colman Co. 26/33
Detroit Lubricator Co. 26/35
Genuine Detroit 26/35
Johnson Service Co. 26/39
Microvalve 26/33
Powers Regulator Co. 26/42
Specifications 26/42

Radiator Supply — Graduated or Modulated

B&J 26/34
Barnes & Jones Inc. 26/34
Dunham, C. A., Co. 26/36
Hoffman Specialty Co., Inc. 26/47
Massachusetts Blower Div. of Bishop & Babcock Mfg. Co. . . 26/55
Milvaco 26/49
Milwaukee Valve Co. 26/49
Multiflex 26/55
Oriflex 26/36
Sarco Co., Inc. 26/52
Webster, Warren, & Co. 26/44

Radiator Supply—Hot Water Forced Circulation Systems

Equiflo 26/46
Grinnell Co., Inc. 26/46

Radiator Supply—Packless

Barber-Colman Co. 26/33
B&J 26/34
Barnes & Jones Inc. 26/34
Burnham Boiler Corp. 26/4
Crane Co. 27/56
Dunham, C. A., Co. 26/36
Grinnell Co., Inc. 26/46
Hoffman Specialty Co., Inc. 26/47
Milvaco 26/49
Milwaukee Valve Co. 26/49
Sarco Co., Inc. 26/52
Sarco-Marsh 26/52
Thermoflex 26/46
Webster, Warren, & Co. 26/44
See also 26/22; 27/15

Radiator Supply — Thermostatically Operated

Fulton Sylphon Co. 26/37
Johnson Service Co. 26/39
Powers Regulator Co. 26/42
Richmond Radiator Co., Inc. 26/69
Richvent 26/69
Sarco Co., Inc. 26/52
Sylphon 26/37
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Specifications 26/42

Reducing or Regulating Pressure

Dunham, C. A., Co. 26/36
Elkhart Brass Mfg. Co. 21/35
Fulton Sylphon Co. 26/37
Penberthy Injector Co. 26/51
Powers Regulator Co. 26/42
Sylphon 26/37
Thrush, H. A., & Co. 26/43

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Penberthy Injector Co. 26/51
See also 27/46

Relief—Pressure, Vacuum or Temperature — for Domestic Hot Water Systems

Beaton & Cadwell Mfg. Co. 26/90
Cadwell 26/90
Penberthy Injector Co. 26/51
Thrush, H. A., & Co. 26/43

Relief and Reducing—for Hot Water Heating Systems

Beaton & Cadwell Mfg. Co. 26/90
Cadwell 26/90
Penberthy Injector Co. 26/51
Thrush, H. A., & Co. 26/43

VALVES—Cont.

Vacuum Breaking for Vacuum Heating Systems

Penberthy Injector Co. 26/51
See also 26/44

Vents—Air for Steam Heating Systems

See Valves—Air—Vents—Steam and Return Main

VENTILATING

Grilles

See Grilles and Screens; Dampers or Registers

Systems—Forced Draft and/or Gravity

American Blower Corp., Div. of American Radiator & Standard Sanitary Corp. 26/2
Sturtevant, B. F., Co. 26/58
Wing, L. J., Mfg. Co. 26/59
See also 21/88; 21/89; 28/51

Systems—Forced Draft—for Library Bookstacks

Snead & Co. 21/26
Zig-Zag 21/26

VENTILATING AND HEATING

Units Combined

See Heaters; Air Conditioning Units; Ventilating—Systems

VENTILATORS

Attic Gable

See Ventilators—Attic Gables . . 7

Ceiling

(See also Ventilators — Wall — Fan Unit)
Barber-Colman Co. 26/75
Blo-Fan 26/62
Clipper 26/64
Junior 26/64
Motorfans 26/64
Pacific Breeze 26/62
Pryanco 26/62
Pryne & Co., Inc. 26/62
Senior 26/64
Trade-Wind Motorfans, Inc. 26/64
Uni-flo 26/75

Controls for

See Regulators—Damper

Grille

See Grilles and Screens; Dampers and Registers

Mushroom

Aeolus Dickinson Industrial Div. Paul Dickinson, Inc. 7/16
Aerovalve 26/57
Best Register Co. 26/74
Dickinson 7/16
Ferrocast 7/16
Knowles Mushroom Ventilator Co. 26/57
Nu-Notch 26/57
Specifications 26/57

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(See also Heaters—Unit; Coolers—Unit)
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Effico 7/22
Hirschman, W. F., Co., Inc. 7/22
LeRoy 7/22
L-U 7/22
Sturtevant, B. F., Co. 26/58
Temperator 26/36
Trane Co. 26/22

Wall and Ceiling

See Grilles and Screens; Dampers or Registers

VENTILATORS—Cont.

Wall—Fan Unit

(See also Fans—Ventilating or Exhaust)
Breezo 26/54
Buffalo Forge Co. 26/54
Clay Equipment Corp. 21/88
Emerson Electric Mfg. Co. 26/61
Ilg Electric Ventilating Co. . . . 26/60
Ilgair 26/60
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In-Bilt 26/65
Majestic Co. 26/139
Pacific Breeze 26/62
Pryanco 26/62
Pryne & Co., Inc. 26/62
Seabreeze 26/61
Signal Electric Mfg. Co. 26/63
Sturtevant, B. F., Co. 26/58
Victor Electric Products, Inc. . . . 26/65
Wallvane 26/58
West Wind Corp. 26/66
Westwind Junior 26/66
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Wall—Fuel Oil Storage Tanks

Riesner, Benjamin 26/118
Specifications 26/118

Window—Fan Unit

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VENTS

Air—Heating System

See Valves—Air Vent—Steam and Return Main—Automatic

Grille

See Grilles and Screens; Dampers and Registers

WASHERS

Air

American Blower Corp., Div. of American Radiator & Standard Sanitary Corp. 26/2
Buffalo Forge Co. 26/54
Claridge Fan Co. 26/6
Filticooler 26/58
Massachusetts Blower Div. of Bishop & Babcock Mfg. Co. . . 26/55
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Sturtevant, B. F., Co. 26/58
Trane Co. 26/22
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Feeders

See Regulators—Feed Water

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See Boiler—Low Water Protector

Temperature Regulators

See Controllers—Temperature

WIRE

Woven

See Metal Fabric—Woven

WOVEN

Metal Fabric

See Metal Fabric—Woven

ZONE

Controls

See Controls—Air Conditioning

AGP

THE WORLD'S LEADING MANUFACTURER OF

AMERICAN
GAS PRODUCTS
DIVISION
OF
AMERICAN
RADIATOR
COMPANY
NEW YORK

GAS

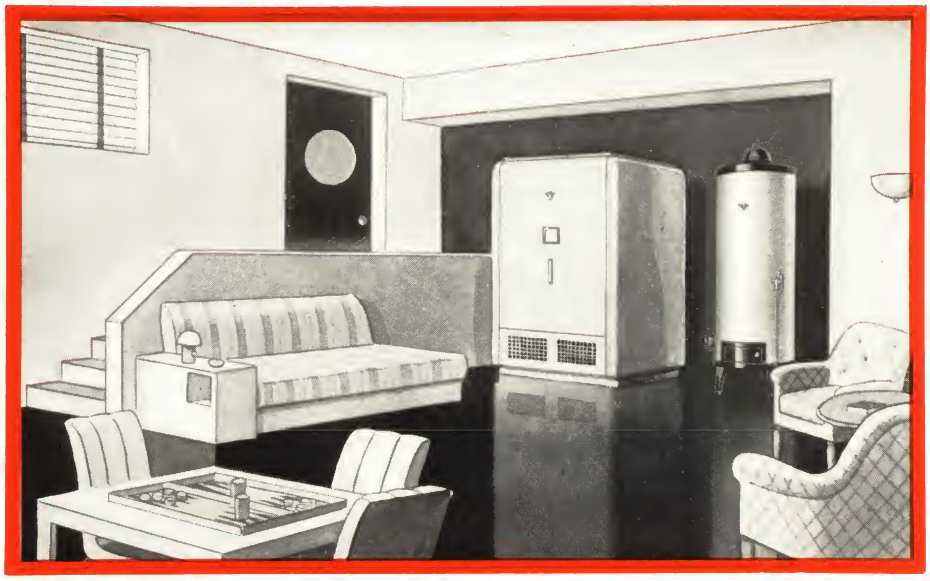




HEATING, HOT WATER and AIR CONDITIONING APPLIANCES

AGP Automatic Gas-Fired Heating Equipment

By—



AGP automatic gas-fired equipment permits conversion of basement space to useful living area. Accompanying illustration shows an AGP Empire Ideal Boiler and an AGP Dictator Water Heater. The attractive gun-metal baked enamel finish of the equipment, complete elimination of soot, dirt and fuel storage, and automatic control transform the old dusty basement to a room for study and recreation

AGP Gas-fired Automatic Heating Equipment is manufactured in an inclusive range of types and sizes for serving every domestic heating need. Any type of heating medium—steam, vapor, water and air—may be used with AGP gas-fired equipment. In addition to complete combinations of equipment designed for original installations, a line of gas convertors is manufactured for converting installed coal or oil-fired boilers or furnaces to automatic gas-fired systems.

CHARACTERISTICS OF GAS-FIRED HEATING

Gas-fired heating differs essentially from other types of heating in (1) cleanliness; (2) flexibility and greatest adaptability to automatic control; and (3) constant efficiency. Because of the nature of gas the process of combustion, once started, may be controlled automatically and mechanically maintain a desired room temperature with room thermostat controlling the operation of a valve. The efficiency of gas-fired boilers is very nearly constant, the A.G.A. approval gives a gas boiler output rating of 80% of the input.

COMPARATIVE ECONOMY

Cost of heating by gas will vary with the rate structure of the gas utility operating in a given locality, on the Btu content of the gas, climatic conditions and type and quality of building construction. Cost comparison with other fuels will likewise vary widely with specific local factors, such as the relative efficiencies of the different fuels, and the delivered efficiencies of the operating installations selected for comparison.

Gas-fired equipment, because of its relatively high efficiency, shows especially favorable results when used to heat spaces fully provided with building insulation. In addition, those items of expense which are not immediately apparent, are either entirely eliminated or are considerably diminished. Among such items are: Labor (attention to heating plant, emergency repair service, etc.); Service charges for adjusting and cleaning burners, flues, etc.; Equipment costs and depreciation; Electric charges for operating motors, fans and other accessories; and such intangible but important items as omission of basements, or basement space made available for living or recreational quarters.

RANGE OF PRODUCTS AND APPLICATION

The complete range of AGP products is described in these sheets. Full descriptions, capacity ratings, specifications, overall dimensions, data on controls and recommendations for installation are given on the following pages:

AGP Ideal Standard and AGP Ideal Empire Gas-Fired Boilers for any steam, vapor or hot water heating system or for a hot water supply system, either direct or indirect. See page 4.

AGP Air Conditioners Type 2-FE, Type 1-FP and Type K for complete automatic filtered and humidified warm-air heating by forced circulation. See pages 6, 7 and 8.

AGP Gas-Fired Floor Furnaces for ductless warm air heating by gravity circulation. See page 8.

AGP Gas-Fired Gravity Furnaces for warm air heating without forced circulation. See page 9.

AGP Gas Convertors for converting existing coal or oil-fired boilers on steam, vapor or hot water systems to completely automatic gas-fired units. See page 9.

AGP Water Heaters for automatic storage type domestic hot water supply. See page 10.

AGP Gas-Fired Steam Radiators and Unit-Ors for vented or non-vented direct space heating. See page 8.

SELECTION OF GAS-FIRED EQUIPMENT

Heat-generating capacity of gas-fired equipment can be predicted accurately within one or two percent and is not affected by condition of fuel bed or soot accumulation. Consequently all gas equipment is rated according to hourly Btu output, namely amount of steam or hot-water heat available at outlet of boiler, or warm-air heat at bonnet of furnace. Btu output rating is based on approved American Gas Association Btu input rating and A.G.A. approved average efficiency.

Output ratings may be converted to equivalent steam radiation by dividing by 240, and to equivalent water radiation by dividing by 150.

All AGP equipment is rated on the following pages according to A.G.A. output ratings (either in Btu/hr. or sq. ft. of radiation), and also according to square feet of direct C.I. radiation supplied. The latter rating is arrived at by deducting from the first, factors for piping load loss and starting load as approved by the A.G.A.

To select AGP equipment of proper capacity, calculate total heat loss in Btu of space to be heated, according to standard methods.

This total heat loss, expressed in Btu or square feet of radiation, should be equal to or not greater than AGP rating for square feet of direct C.I. radiation supplied (in the case of a steam or water boiler) and equal to or not greater than output at registers (in the case of a warm-air furnace).

For preliminary calculation or quick check on the adequacy of a boiler in buildings where glass area does not exceed ¼ of

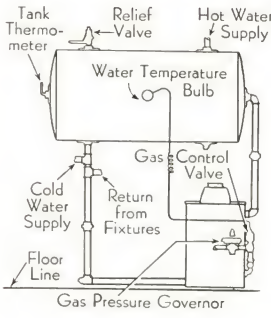
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AMERICAN GAS PRODUCTS
DIVISION OF AMERICAN RADIATOR COMPANY
40 WEST 40TH STREET
NEW YORK, N.Y.

AGP Gas-Fired Steam & Hot Water Boilers

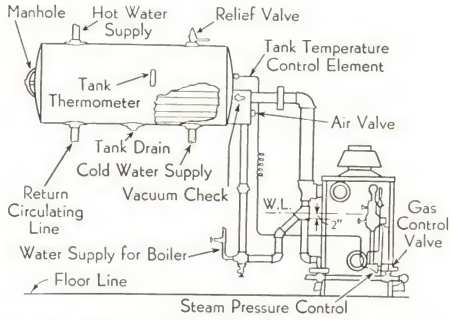
By—

I - DOMESTIC HOT WATER SUPPLY



DIRECT SYSTEM
D W Equipment

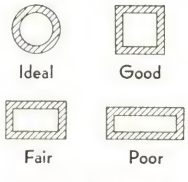
Boiler directly connected to storage tank. Recommended boilers: Types 1-GA, 2-GA, 4-GA



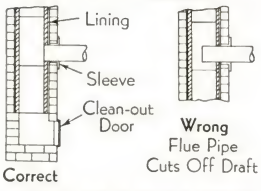
INDIRECT SYSTEM
I S Equipment

Heat Exchanger used (Excelso type or submerged pipe coil)

II - FLUE RECOMMENDATIONS



FLUE SHAPES



FLUE CONNECTIONS

FLUE SIZES

Boiler No.	Diameters (inches) Round Flues for Chimney Hts. of: *10'	40'	70'	Boiler No.	Diameters (inches) Round Flues for Chimney Hts. of: *10'	40'	70'
0-G- 4	5	5	5	4-G-22	23	20	16
0-G- 5	5	5	5	4-G-25	24	20	16
0-G- 6	6	6	6	4-G-28	26	20	16
0-G- 7	6	6	6	4-G-31	26	22	20
1-G- 4	6	6	5	4-G-33	28	22	20
1-G- 5	7	7	6	4-G-37	30	22	22
1-G- 6	8	7	7	4-G-41	32	24	22
1-G- 7	8	8	7				
1-G- 8	8	8	8	*2 Boilers*			
1-G- 9	9	9	8	4-G-21	31	24	20
1-G-10	9	9	8	4-G-22	32	26	21
1-G-11	10	9	9	4-G-25	34	26	23
				4-G-28	36	28	24
4-G- 6	11	10	9	4-G-31	38	28	26
4-G- 7	12	10	10	4-G-33	40	28	26
4-G- 8	13	11	10	4-G-37	42	30	28
4-G- 9	14	11	10	4-G-41	45	30	28
4-G-10	15	12	11				
4-G-11	16	13	12	*3 Boilers*			
				4-G-28	45	32	28
4-G-13	17	14	12	4-G-31	48	32	30
4-G-15	18	14	13				
4-G-17	20	15	14	4-G-33	50	32	30
4-G-19	21	16	15	4-G-37	52	34	32
4-G-21	22	18	15	4-G-41	55	36	34

* Flue sizes for 10-foot chimneys are for special installations where greater height is impossible or impracticable. Not recommended for general practice

Heights are measured from the boiler.

If other than round flues are used the area must be the effective equivalent of the round flue

total wall area, the following (adapted from Mills' Rule) will be found useful.

$$\text{Sq. Ft. of steam radiation} = \frac{G}{3} + \frac{W}{10} + \frac{C}{200}$$

$$\text{Sq. Ft. of hot water radiation} = \left(\frac{G}{3} + \frac{W}{10} + \frac{C}{200}\right) \times 1.6$$

G = area of glass in square feet.
W = net area of exposed wall (plus floors and ceilings if exposed).
C = content of building in cubic feet.

SPECIFICATION

When ordering AGP equipment, the following information should always be specified: (1) Identifying number and symbol of equipment unit; (2) Identifying number(s) and symbol(s) of control equipment; (3) Characteristics of available gas supply; type (manufactured, natural or mixed), Btu content, specific gravity and pressure; (4) Characteristics of available electric energy: voltage, phase and cycle where electric room temperature controls are involved.

A short form specification will be found adequate as follows: "Furnish and install according to manufacturer's instructions, where shown on the plans an Empire Ideal (or Standard Ideal) Steam (or Water) Gas Boiler with an A.G.A. output rating of ....sq. ft. of radiation. The boiler shall be manufactured by the American Radiator Company and shall be completely equipped with Type .... Equipment consisting of ..... (list items of equipment)".

This should be supplemented with paragraphs governing installation of gas supply, piping, ductwork, connections, tests, etc., as required.

INSTALLATION

Installation of all AGP equipment should conform to the following standards of good practice:

Location should allow proper clearances for all connections and controls and permit servicing. Where in a confined space, a suitable opening to outside air, 144 square inches in the clear, for the average residence installation, should be provided for adequate air supply.

Gas connection: at least equal in size to governor size with minimum number of bends and in accordance with recommendations of the local utility.

Governor vent connection: ¼" vent piping from relief opening in governor to outside point 3' above ground, with elbow faced downward, or as directed by local utility.

Flue connection: not less than full size of opening at draft-diverter and pitched upward from unit connection to flue. Separate flue to be provided, without other connection to flue.

Water connection: where required, should include valve or stopcock close to unit.

Duct system: where required, ducts should be galvanized iron or steel with double locked seams and jointed with standard "S" drive clips. Rectangular ducts shall be in accordance with the following table:

Gauge	Width of Duct	Seam	Reinforced Seam
26	Up to 12 inches	1"	.....
24	13" to 30"	1"	⅛" x 1"
22	31" to 48"	1"	⅛" x 1"
22	49" to 60"	1½"	⅛" x 1⅜"
20	61" to 90"	1½"	⅛" x 1⅜"

Where ducts pass through walls or partitions, opening shall clear duct metal by 1". Where necessary to change elevation of a duct, change should be as near 30° from horizontal as possible.

Piping: Adequate and rapid venting of air from steam heating systems is recommended to give maximum economy and minimum temperature variation.

Insulation: Insulation of pipe lines in steam and hot water systems tends to cut down pipe losses and increase the efficiency of the system. Ducts run through unheated garages or unexcavated portions of basement should be insulated with 1" air cell asbestos or equal. Warm air risers, if on outside walls, should be insulated with ½" air cell asbestos. Other warm air risers should be covered with asbestos paper.

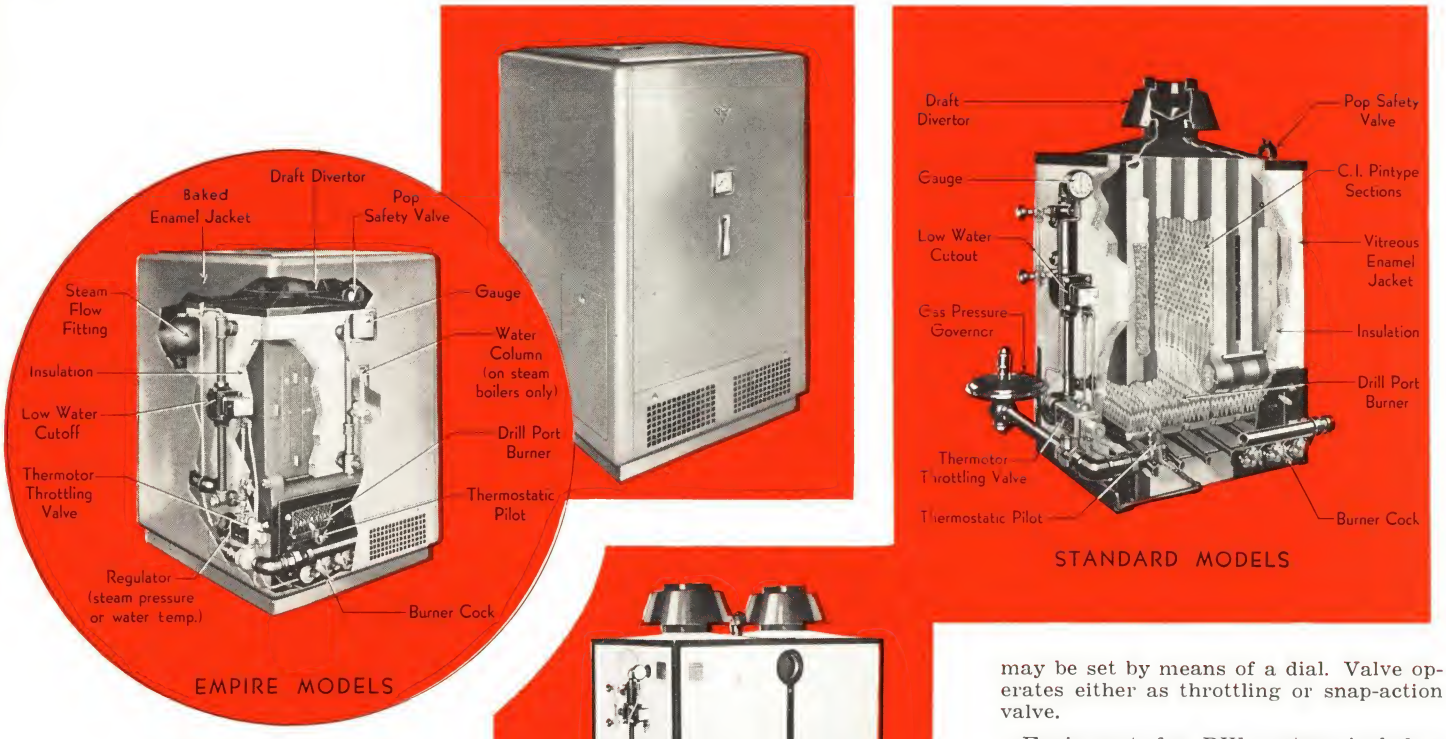
Flues: A flue of adequate size and proper construction is essential to remove products of combustion from boiler room. Chimneys should be of good construction, preferably lined with glazed tile or terra cotta with carefully filled cement mortar joints. For recommendations on sizes and shapes refer to Table II.

40 WEST 40TH STREET
NEW YORK, N.Y.

AMERICAN GAS PRODUCTS
DIVISION OF AMERICAN RADIATOR COMPANY

AGP Gas-Fired Steam & Hot Water Boilers

By—



AGP Empire Ideal Type Boilers are illustrated top center and in phantom view above. All projections are eliminated, and controls and connections encased in a baked-enamel jacket. AGP Standard Ideal Type Boilers are illustrated at the right, and in phantom view at extreme right

DESCRIPTION

Two general types of AGP automatic gas-fired boilers are manufactured for use with hot water, vapor or steam heating systems: AGP *Standard Ideal,* with exposed trim and connections, and AGP *"Empire" Ideal,* with all controls completely enclosed in a baked-enamel cabinet type jacket, and connections arranged on the rear surface so that pipes and flues may be furred into the wall.

Forty-seven sizes are available with an output range of 163 to 11,430 square feet of direct cast-iron steam radiation; and 135 to 18,286 square feet of direct cast-iron water radiation.

Basic equipment of each unit consists of a raised drilled port burner with gas valve electrically operated from a room thermostat and mechanically controlled by steam pressure or water temperature; heat-absorbing surface of patented Pin-type C.I. sections; acid-proof vitreous enamel finished canopies and diverter; and enamelled jacket insulated with cellular composition asbestos.

Controls. All control functions of AGP Ideal boilers are centered in the *AGP Thermotor Throttling Valve* which gradually reduces gas consumption as desired steam pressure or water temperature is reached. The thermotor operates from the room thermostat and embodies a mechanical limit control. Related controls include: *Low Water Cut-off* for shutting off gas supply to main burners if water line on steam boilers reaches a low point; *Steam Pressure or Water Temperature Regulator,* for controlling supply of gas to burners according to predetermined pressure or temperature; *Gas Pressure Governor,* for maintaining gas pressure at a fixed maximum; *Thermostatic Pilot* for closing gas supply valve should pilot light be extinguished. Throttling, limit and safety pilot controls function independently of current, and valve may be operated manually in the event of current failure. Controls are integrated so as to furnish completely automatic heat without manual control.

Domestic Hot Water is supplied by AGP Ideal Boilers by means of a DW (direct water) or IS (indirect steam) system. DW system uses a direct-connection to storage tank in which temperature of the water is controlled by means of a water-temperature bulb attached to main gas-control valve with a 10 foot capillary tube. Temperature of water in the storage tank may be set by means of a dial. Valve operates either as throttling or snap-action valve.

Equipment for DW system includes: Boiler with gas-control valve, thermostatic pilot and gas-pressure governor, thermometer and temperature-pressure relief valve for storage tank. Boilers in types 1-GA, 2-GA, and 4-GA in Table I are recommended for use with DW systems and are tested to 200 lbs.

IS system uses pipe-coil or Excelso indirect water heater to transmit heat generated by steam boiler to water in storage tank. Boiler operates at constant efficiency and normal low pressure. Temperature of the water in the tank is controlled by means of an immersion element connected to main gas-control valve with 10-foot capillary tube. Temperature of the water may similarly be set by means of dial.

Equipment for IS system is similar to that for DW system plus low-water cut-off. Boilers in types O-GS, 1-GS and 4-GS are all recommended for use with IS systems.

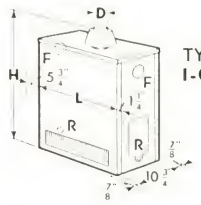
SELECTION AND SPECIFICATION

AGP boilers should be selected in accordance with procedure outlined on pages 2 and 3. Specification should include general information listed therein in addition to all items of equipment appropriate for steam or water boiler as selected, i.e., steam pressure or water temperature regulator, compound steam gauge or combination altitude gauge and thermometer, etc.

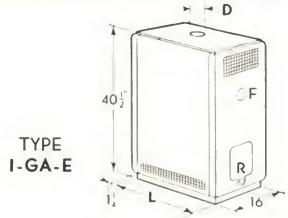
INSTALLATION

Installation should conform to good practice recommendations listed on page 3.

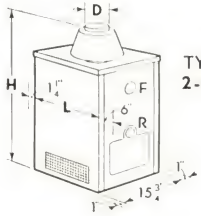
RATINGS, DIMENSIONS and CLEARANCES



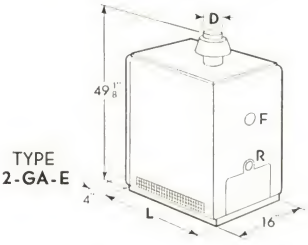
TYPE 1-GA



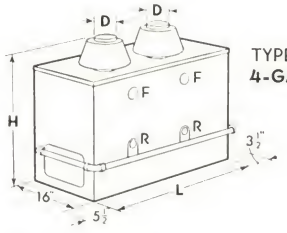
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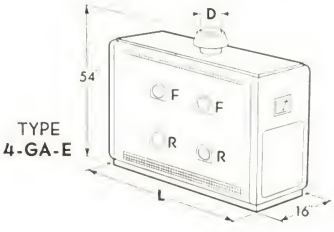
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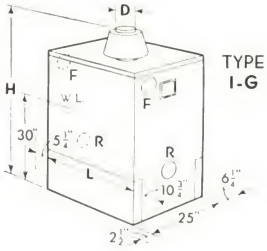
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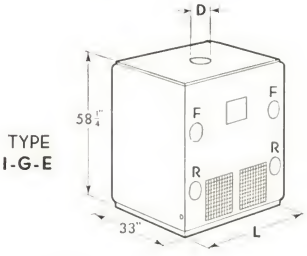
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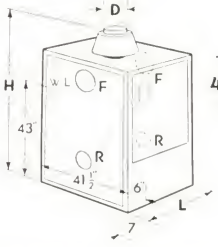
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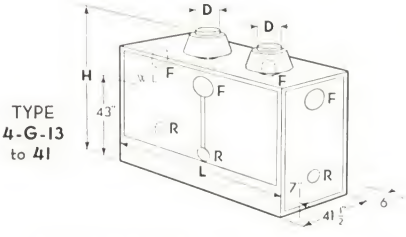
TYPE 1-G



TYPE 1-G-E



TYPE 4-G-6 to 11



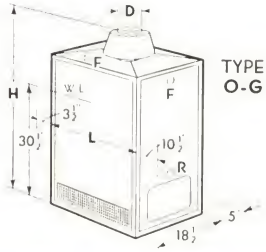
TYPE 4-G-13 to 41

* 4-G-6 to 4-G-11 - 2 - 6" Flows; 2 - 5" Returns

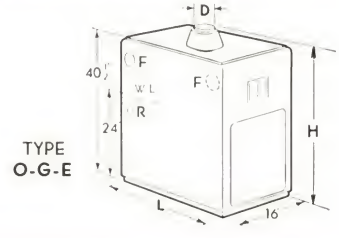
4-G-13 to 4-G-21 - 4 - 6" Flows; 3 - 5" Returns

4-G-22 to 4-G-31 - 6 - 6" Flows; 4 - 5" Returns

4-G-33 to 4-G-41 - 8 - 6" Flows; 5 - 5" Returns



TYPE O-G



TYPE O-G-E

BOILER NUMBER	RATINGS - Sq. Ft. Radiation					Dimensions (Inches)		D Diam. FLUE (Inches)
	HOT WATER (150 B.t.u. Sq. Ft.)			STEAM				
	AGA Output	Supplies Installed		AGA Output	Supplies Installed	L	H	
		Gravity	Accelerated					
TYPE 1-GA for Water Only - 2 - 1½" Flow Connections; 2 - 1½" Returns								
1-GA-4	210	126	131			13¾	37¼	3
1-GA-5	280	167	175			16¾	37¼	4
1-GA-6	350	210	220			19¾	37¼	4
1-GA-7	420	253	265			22¾	39	5
TYPE 1-GA-E for Water Only - 1 - 1½" Flow Connection; 1 - 1½" Return								
1-GA-4-E	210	126	131			19¼	40½	3
1-GA-5-E	280	167	175			22¼	40¼	4
1-GA-6-E	350	210	220			25¼	40½	4
1-GA-7-E	420	253	265			28¼	40½	5
TYPE 2-GA for Water Only - 1 - 2½" Flow Connection; 1 - 2½" Return								
2-GA-4	420	253	265			13¾	42¼	5
2-GA-5	560	342	359			16¾	42¼	5
2-GA-6	700	434	455			19¾	42¼	6
2-GA-7	840	527	554			22¾	42¼	6
TYPE 2-GA-E for Water Only - 1 - 2½" Flow Connection; 1 - 2½', Return								
2-GA-4-E	420	253	265			19¼	49⅛	5
2-GA-5-E	560	342	359			22¼	49⅛	5
2-GA-6-E	700	434	455			25¼	49⅛	6
2-GA-7-E	840	527	554			28¼	49⅛	6
TYPE 4-GA for Water Only - 2 - 2½" Flow Connections; 2 - 2½" Returns								
4-GA-9	1120	724	761			29	42½	2-5
4-GA-11	1400	931	980			35	42½	2-6
4-GA-13	1680	1149	1215			41	42½	2-6
TYPE 4-GA-E for Water Only - 2 - 2½" Flow Connections; 2 - 2½" Returns								
4-GA-8-E	980	624	656			37¼	54	7
4-GA-9-E	1120	724	761			40¼	54	7
4-GA-11-E	1400	931	980			46¼	54	8
4-GA-13-E	1680	1149	1215			52¼	54	8
TYPE 1-G for Steam or Water - 2 - 4" Flow Connections; 2 - 4" Returns								
1-G-4	980	624	656	610	408	19	51	6
1-G-5	1240	810	853	775	533	23	55½	7
1-G-6	1500	1007	1063	940	666	27	54¼	8
1-G-7	1770	1222	1294	1105	792	31	54¾	8
1-G-8	2030	1410	1493	1270	934	35	55¾	8
1-G-9	2300	1597	1691	1435	1055	39	58½	9
1-G-10	2560	1778	1882	1600	1176	43	59¼	9
1-G-11	2820	1958	2074	1765	1298	47	59¾	10
TYPE 1-G-E for Steam or Water - 2 - 4" Flow Connections; 2 - 4" Returns								
1-G-4-E	980	624	656	610	408	32	58¼	6
1-G-5-E	1240	810	853	775	533	36	58¼	7
1-G-6-E	1500	1007	1063	940	666	40	58¼	8
1-G-7-E	1770	1222	1294	1105	792	44	58¼	8
1-G-8-E	2030	1410	1493	1270	934	48	58¼	8
1-G-9-E	2300	1597	1691	1435	1055	52	58¼	9
1-G-10-E	2560	1778	1882	1600	1176	56	58¼	9
TYPE 4-G for Steam or Water - 6" Flow Connections; 5" Returns For number of connections see *								
4-G-6	3200	2222	2353	2000	1471	27	70	11
4-G-7	3840	2667	2824	2400	1765	31	70¾	12
4-G-8	4480	3111	3294	2800	2059	35	73	13
4-G-9	5120	3555	3765	3200	2353	39	73¾	14
4-G-10	5760	4000	4235	3600	2647	43	75½	15
4-G-11	6400	4444	4706	4000	2941	47	76	16
4-G-13	7680	5333	5647	4800	3529	61¼	70¾	2-12
4-G-15	8960	6222	6588	5600	4118	69¼	73	2-13
4-G-17	10240	7111	7529	6400	4706	77¼	73¾	2-14
4-G-19	11520	8000	8471	7200	5294	85¼	75½	2-15
4-G-21	12800	8889	9412	8000	5882	93¼	76	2-16
4-G-22	13440	9333	9882	8400	6176	103½	73	3-13
4-G-25	15360	10666	11294	9600	7059	115½	73¾	3-14
4-G-28	17280	12000	12706	10800	7941	127½	75½	3-15
4-G-31	19200	13333	14118	12000	8824	139½	76	3-16
4-G-33	20480	14222	15059	12800	9412	153¾	73¾	4-14
4-G-37	23040	16000	16941	14400	10588	169¾	75½	4-15
4-G-41	25600	17778	18824	16000	11765	185	76	4-16
TYPE O-G for Steam Only - 2 - 2½" Flow Connections; 1 - 1½" Return								
O-G-4				270	171	14	53	4
O-G-5				360	231	17	54	5
O-G-6				450	291	20	54	6
O-G-7				540	357	23	54	6
TYPE O-G-E for Steam Only - 3" Flow Connections; 1½" Returns (1 each, Nos. 4 to 6; 2F, 1R, Nos. 7 to 11)								
O-G-4-E				255	161	29	51¾	5
O-G-5-E				340	217	33	52¼	5
O-G-6-E				425	275	37	51¾	6
O-G-7-E				510	336	41	52¼	6
O-G-9-E				680	460	49	54¼	7
O-G-11-E				850	592	57	54¼	8

40 WEST 40TH STREET
NEW YORK, N.Y.

AMERICAN GAS PRODUCTS
DIVISION OF AMERICAN RADIATOR COMPANY

AGP Gas-Fired Air Conditioners

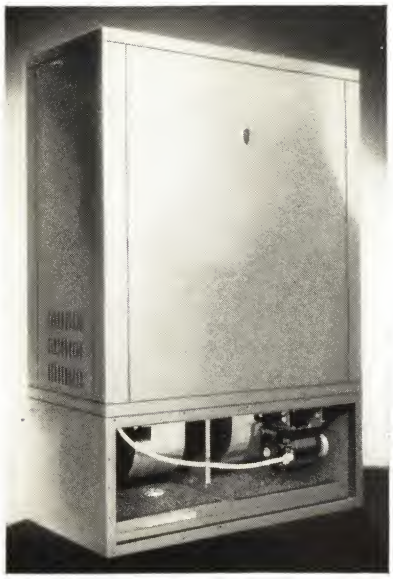
By—

The AGP Air Conditioner, Type 1-FP, as illustrated at right, is a compact, efficient, forced circulation, warm air heating unit, designed especially for installation in utility, or heater, rooms on living-room floors of small residences or apartments, or in basements of small residences where a basement is available. The fan-motor compartment is directly under the heating compartment; return air is blown up over the cast iron heating sections in the same direction as, and parallel to, the flow of the hot gases on the inside of the sections. Warm air is discharged at top.

When installed on a floor, with space for return air below the floor, the return air may be taken directly up through bottom of fan-motor compartment. Filters are located either in side inlet to fan-motor compartment, or in bottom inlet, whichever is used for the return air intake.

The Type 1-FP may also be used for the conventional type of basement installation. In this case the return air main is connected to the side inlet at base.

As a space heater, of the Unit-heater (floor) type, the Type 1-FP may be installed directly in the heated space discharging warm air, through an outlet elbow, directly from top of the casing. Return air is taken through side inlet at base.



RATINGS AND WEIGHTS — TYPE 1-FP AIR CONDITIONER

Model Number Series 2-C	AGP Guaranteed Ratings						Approx Shipping Weight Lbs.
	A.G.A. Ratings		Output at Registers B.t.u./Hr.	Conditioned Space Cu. Ft.	Max. Fan Cfm. at 70° F.	Cfm. at Discharge	
	Input B.t.u./Hr.	Output at Bonnet B.t.u./Hr.					
1-FP-4	56,000	44,800	40,300	8,300	520	600	425
1-FP-6	85,000	68,000	61,200	12,600	790	910	560
1-FP-8	100,000	80,000	72,000	14,800	930	1,070	640
1-FP-12	150,000	120,000	108,000	22,100	1,380	1,590	775

SPECIFICATIONS AND DIMENSIONS — TYPE 1-FP AIR CONDITIONER

(Dimensions in Inches)

Model Number Series 2-C	* Motor H.P.	Fan Data		Filters		No. of Sections	** Draft Diverter Diam.	Discharge (Flange of Opening)	Intake (Side or Bottom Opening)	Grille Intake for Unit Heater	Jacket Width x Depth	Jacket Height Overall
		No.	Diam.	No.	Size							
1-FP-4	1/8	1	6	1	16x25	4	4	12x14	14½x25	12¾x27½	24x32	63
1-FP-6	1/6	1	7½	2	16x16	6	5	12x20	14½x32	12¾x33	24x38	63
1-FP-8	1/4	2	6	2	15x20	8	5	12x26	14½x40	12¾x39½	24x44	63
1-FP-12	1/4	2	7½	2	16x25	12	6	12x38	14½x50	12¾x51½	24x56	63

Models 1-FP-4 and 1-FP-6 are equipped with 1 Burner; Models 1-FP-8 and 1-FP-12 are equipped with 2 Burners each. ¾″ Gas Valve and Gas Pressure Governor for all models except 1-FP-12, which requires 1″ on manufactured and ¾″ on natural size.

* Motor R.P.M. — 1725 on all sizes. ** Draft Diverter Connection at back of 1-FP-4, 1-FP-6 and on top of 1-FP-8 and 1-FP-12, allow 12″ projection for side connection and no projection for rear connection.

1 - AGP Guaranteed Ratings - Type 2-FE Air Conditioner

Model Number	AGA Rating		Output at Registers Btu/hr.	Conditioned Space Cu. Ft.	Maximum Fan CFM at 65° F.	CFM at Discharge
	Input at Btu/hr.	Output at Bonnet Btu/hr.				
2-FE- 4-100	90,000	72,000	64,800	10,600	660	785
2-FE- 4- 80	100,000	80,000	72,000	14,700	920	1060
2-FE- 5-100	112,500	90,000	81,000	13,300	830	990
2-FE- 5- 80	125,000	100,000	90,000	18,400	1150	1325
2-FE- 6-100	135,000	108,000	97,200	15,800	990	1180
2-FE- 6- 80	150,000	120,000	108,000	22,000	1375	1585
2-FE- 8-100	180,000	144,000	129,600	21,100	1320	1570
2-FE- 8- 80	200,000	160,000	144,000	29,400	1840	2120
2-FE-10-100	225,000	180,000	162,000	26,600	1660	1980
2-FE-10- 80	250,000	200,000	180,000	36,600	2290	2640
2-FE-12-100	270,000	216,000	194,400	31,700	1980	2360
2-FE-12- 80	300,000	240,000	216,000	44,000	2750	3170

The AGP Air Conditioner, Type 2-FE, as illustrated at right is a direct, gas-fired mechanical furnace which provides completely automatic, central, recirculating warm-air heating. Air is filtered, heated, humidified, delivered and returned through ducts by means of forced circulation.

The Conditioner is completely encased in an Empire type jacket of furniture steel finished in gun-metal enamel, and contains (a) *Heating Unit* consisting of cast-iron cored sections forming an efficient heating element with a single combustion chamber under the same jacket alongside the heating sections, a plenum compartment containing the humidifier, and (b) *Fan Motor Unit* mounted above the Heating Unit, the two units operating on the Counter Flow Principle of heat transfer. Air is blown down over the outer surfaces of the heating sections in opposition to the upward flow of hot gases on the inside of the heating surface, affording a high efficiency of heat transfer with minimum heating surface. For domestic hot water equipment recommended for use in combination with the AGP air conditioner see pages 10 and 11.

EQUIPMENT AND CONTROLS

Gas Burners and Gas Valves. Standard AGP burner equipment is used with a Thermotor Throttling valve, and single thermostatic pilot. Gas supply to burners is directly controlled by room thermostat, while air discharge temperature is automatically and mechanically controlled by temperature throttling and limit control element.

Fan Motor Unit has intake and discharge connections on opposite sides, for horizontal duct connections. It contains air filters of the Arco cellular replacement type, made of corrugated fibre board, viscous-coated, and an American Blower "Sirocco" multiple blade cylindrical fan mounted on rigid steel frame with rubber vibration dampeners. It may be erected with intake or outlet to conditioned space on either right or left side of assembled unit.

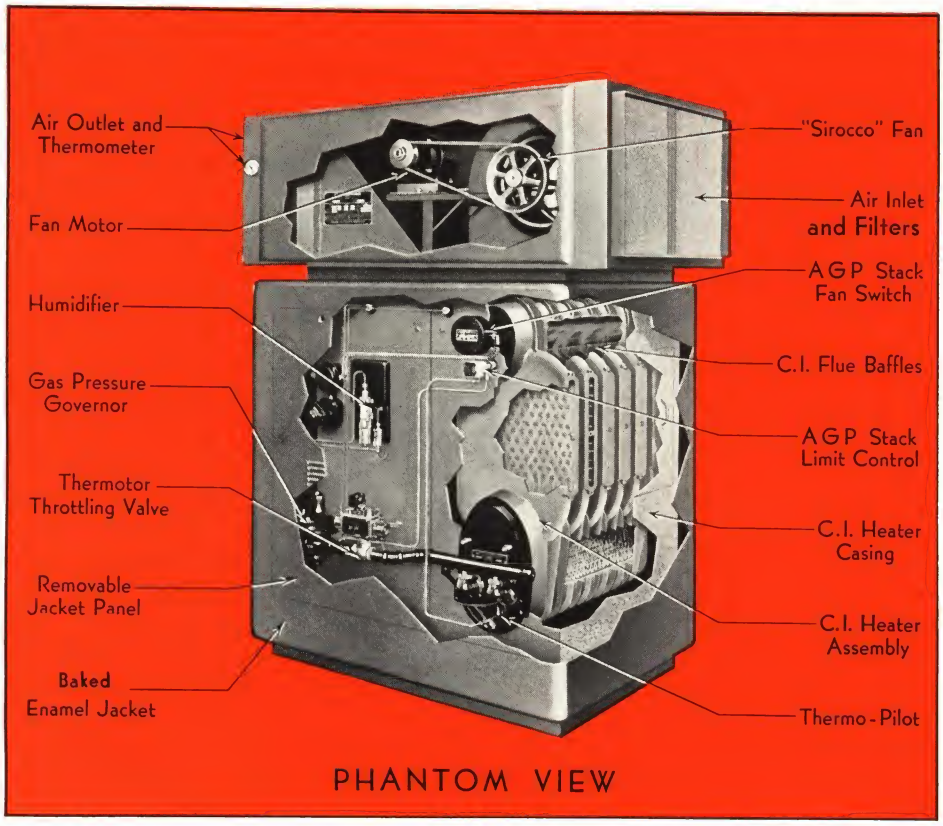
Fan Control. The fan is operated by a heat-operated stack fan switch, which turns fan on in advance of final limit of flue temperature, while thermal efficiency is relatively high, and turns fan off when flue temperature has dropped to point at which little stored heat remains in heating sections.

Humidifier Equipment. Humidification is supplied in a standard assembly by means of an evaporating plate humidifier, with adjustable water feed. Spray humidifier equipment with solenoid valve and humidistat is available as optional equipment for automatic control of humidity.

Instrument Panel. All controls are mounted on a panel placed over the front of the inner casing, and readily accessible by removal of front jacket panel.

AGP Gas-Fired Air Conditioners

By—



PHANTOM VIEW

SELECTION

Total heat loss should be calculated in the usual manner, and expressed in Btu per hour (follow standard methods). This calculation, together with a calculation of the cubic content of the space to be conditioned will permit selection of the proper size AGP air conditioner from the data given in Table 1 at left. Heat loss should not exceed AGP guaranteed rating for output at registers, and cubic content should not exceed rating for maximum conditioned space.

Two sizes of fan motor unit are available for each of 6 sizes of heating units. In each of these, the smaller fan provides adequate air delivery (4 changes per hour) in relation to heat loss for the average uninsulated house; the larger provides adequate air delivery for an insulated house, in which the heat loss is identical but the cubic content is greater.

Overall clearance dimensions and sizes of all connections are given in Table II.

Duct Design. The conditioner is ordinarily assembled with intake of return air on right hand side and discharge outlet of warm air on left hand side. This assembly is reversible. In addition, the entire fan motor unit is reversible, front to back.

Kitchens, bathrooms and garages should never be provided with return air connections, as the air which is supplied to them should not be recirculated. If exhaust fans are used in any of these spaces, the amount of air exhausted should be allowed for in estimating heat loss, selecting the conditioner and designing the supply duct. The use of stud or joist spaces for return air ducts is not considered good practice in a trunk duct system.

All duct work should be not less than 26 gauge galvanized iron or steel with double locked seams and jointed with standard "S" drive clips.

Branch ducts or risers should have a cross-sectional area not less than 18 square inches, with no dimension smaller than 3". Maximum ratio of width to depth should be not more than 3 to 1 for trunks or basement branches, and 4 to 1 for risers.

All branch take-offs should be full-size, on a radius 1½ times the width of the branch, with minimum inside radius in main and trunk lines not less than ¾ the width of the duct.

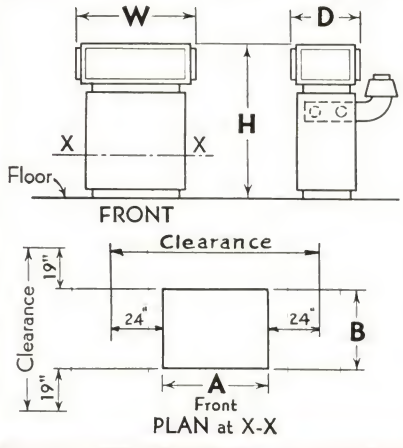
All risers and fittings should be supported from studs or joists with heavy galvanized band iron.

Volume dampers should be installed in all main ducts, and in all branch ducts near their connection with main duct. Dampers should be of locking type with indicator.

INSTALLATION

The conditioner should be located not less than 19" from front and rear walls so that all controls are accessible, and not less than 24" from side walls so that heating surfaces are readily accessible for cleaning. Installation should conform to good practice recommendations listed on pages 2 and 3. See page 8 for other conditioners.

II - CLEARANCES, DIMENSIONS and SPECIFICATIONS

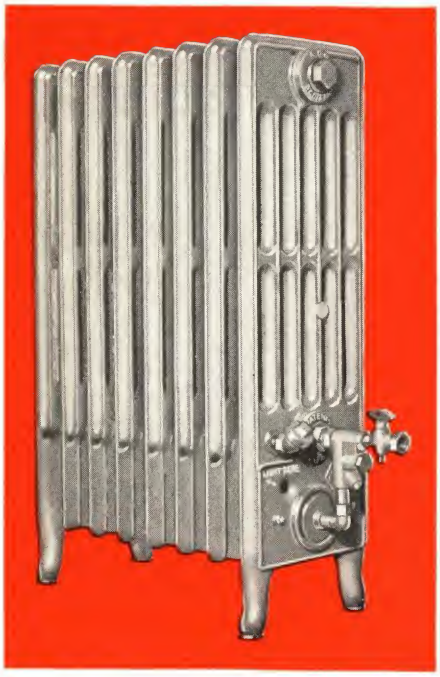


Model Number	Motor H.P.	Size of Gas Cont. Valve (inches)	Diameter of Draft Diverter (inches)	Intake and Discharge Duct Conn. (in.)	Dimensions in Inches W	H	D	A	B	Approx. Shipping Weight (lb.)
2-FE-4-100	1/6	1	5	14½ x 24	56½	72½	29	50	29	1200
2-FE-4-80	¼	1	5	14½ x 24	56½	72½	29	50	29	1210
2-FE-5-100	¼	1	6	14½ x 24	56½	72½	29	50	32	1290
2-FE-5-80	¼	1	6	18½ x 28½	60	76½	34	50	32	1355
2-FE-6-100	¼	1	6	14½ x 24	56½	72½	29	50	35	1355
2-FE-6-80	¼	1	6	18½ x 28½	60	76½	34	50	35	1420
2-FE-8-100	¼	1¼	7	18½ x 38	60	76½	44	50	50	1760
2-FE-8-80	⅓	1¼	7	18½ x 38	60	76½	44	50	50	1775
2-FE-10-100	⅓	1¼	8	14½ x 58½	60	77½	64	50	62	2275
2-FE-10-80	½	1¼	8	18½ x 58½	60	81½	64	50	62	2315
2-FE-12-100	½	1¼	8	14½ x 58½	60	77½	64	50	62	2450
2-FE-12-80	¾	1¼	8	18½ x 58½	60	81½	64	50	62	2500

40 WEST 40TH STREET
NEW YORK, N.Y.

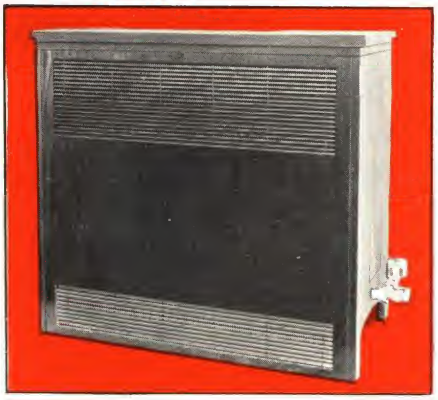
AMERICAN GAS PRODUCTS
DIVISION OF AMERICAN RADIATOR COMPANY

AGP Radiators, Floor Furnaces, Space Heaters and Conditioners By—





Two compact AGP gas-fired space heaters are illustrated: the Floor Furnace (directly above), and the Unit-or (above right)



AGP Unit-or Capacities & Dimensions

UNIT-OR Number	INPUT Btu per hr.	RATING Equiv. Sq. Ft. Steam		DIMENSIONS (ins.)	
		without flue	with flue	Height	Floor Area
1	16,800	70	56	28½	12¾ x 31
2	21,600	90	72	32½	12¾ x 31
3	26,400	110	88	38½	12¾ x 31

AGP FLOOR FURNACE Capacities and Dimensions

FLOOR FURNACE Number		INPUT Btu per hr.	OUTPUT Btu per hr.	Approx. Capacity of Space Heated (Cu. Ft.)		DIMENSIONS (inches)	
Cast Grille	Steel Grille			0°	35°	Depth (below floor)	Floor Opening
20 CG	20 SG	20,000	14,000	3,000	6,000	38	14½ x 22½
35 CG	35 SG	35,000	24,500	4,500	9,000	38	18⅜ x 26⅜
50 CG	50 SG	50,000	35,000	6,000	12,000	38	22⅜ x 28⅜
75 CG	75 SG	75,000	52,500	9,000	18,000	40	26½ x 32½

AGP GAS FIRED RADIATORS
(Vented and Unvented)

Unvented

No. of Sections	Column	Height in Inches	Rating Sq. Ft.	Length Over All
26" High: 4	6	26	34	15½"
5	6	26	41	18
6	6	26	48	20½
7	6	26	55	23
8	6	26	62	25½
9	6	26	68	28
10	6	26	75	30½
12	6	26	88	35½
15	6	26	108	43
18	6	26	129	50½
32" High: 4	6	32	42	15½
5	6	32	51	18
6	6	32	60	20½
7	6	32	70	23
8	6	32	79	25½
9	6	32	88	28
10	6	32	97	30½
12	6	32	116	35½
15	6	32	143	43
18	6	32	168	50½

Radiators—5 col.—8" in width—6 col. 9¾" in width.

Vented
26 in. and 38 in. High—5 Columns

No. of Sections	Rating Sq. Ft.		Length Inches Both 26" and 38"
	26" High	38" High	
5	15	27½	17½
6	18	33	20
8	24	44	25
10	30	55	30
12	36	66	35
15	45	82½	42½
18	54	99	45
20	60	110	50
22	66	121	55
25	75	137	62½

AGP Gas-Fired Air Conditioners

The AGP Air Conditioner, Type K is illustrated at the right. Designed as a companion to the Type 2-FE Conditioner to provide healthful comfort at moderate cost, the Type K Conditioner supplies filtered, heated and humidified air by forced circulation through a system of delivery and return ducts. It is encased in a gun-metal enamel jacket.

The AGP Gas-Fired Air Conditioner, Type K is a forced warm air furnace designed for use in the modest dwelling. It contains a heating unit of heavy Armco copper bearing steel which is acetylene welded gas-tight, and may be automatically controlled by room-thermostat.

The Type K Conditioner is equipped with air filters of the cellular viscous coated type which are readily removable for inexpensive replacement. Humidification may be supplied automatically with a Thermo-Drip Humidifier, which is furnished as optional equipment.

The complete assembly is encased in a metal jacket finished in baked-on smooth gun-metal enamel.

Capacity ratings and dimensions are listed in the accompanying table. Selection should be based on output ratings in accordance with procedure outlined on page 7. Installation should conform to standards of good practice described on page 3. Design and installation of duct-work should conform to practices outlined on page 7.



AGP Conditioner - Type K

UNIT Number	BTU per hour		DIMENSIONS (ins.)		
	Input Capacity	Register Output	H	W	D
9KS	90,000	64,800	52	27⅛	48⅛
12KS	120,000	86,400	55½	32	57¼
16KS	160,000	115,200	55½	41½	68¾
20KS	200,000	144,000	59½	46½	73¾
26KS	260,000	187,200	63½	53½	86¼

AGP Warm Air Furnaces and Gas Converters

By—



GRAVITY WARM AIR FURNACE

ITEM		Furnace Number				
		SG32-12 E	SG36-14 E	SG42-18 E	SG50-21 E	SG56-24 E
Capacity in 000's Btu/hr.	Input (M) (AGA)	90	120	160	200	260
	Output (M)	67.5	90	120	150	195
Dimensions (inches)	Width	27	32	41½	46½	53½
	Length	27	32	41½	46½	53½
	Height of Casing	52	55½	55½	59½	63½
	Height to Top of Canopy	66	69½	69½	73½	77½

Junior FORCED AIR FURNACE

ITEM		Model Number		
		9-JS	12-JS	16-JS
Capacity Btu/hr.	Input	90,000	120,000	160,000
	Register Output	64,800	86,400	115,200
Casing Dimensions (inches)	Depth	27	32	41½
	Width	27	32	41½
	Height	79¼	82¾	85¼

THE AGP GAS-FIRED JUNIOR FORCED AIR FURNACE, illustrated above, is designed for use in small dwellings, and may be installed in a closet, alcove or kitchen corner. It contains a heating element and radiation section of steel, motor and blower, encased in an insulated steel jacket finished in baked-on smooth gray enamel. Capacity ratings and dimensions are listed in the table at right.



THE AGP GAS-FIRED STEEL GRAVITY FURNACE, provides semi-automatic warm air heating by gravity circulation which may be made completely automatic by the addition of a room thermostat. It contains a steel heating element enclosed in a galvanized or gun-metal enamel finish casing; optional equipment includes either manual or automatic type humidifier.

Selection should be based on capacity ratings as listed in the accompanying table, in accordance with procedure outlined on page 3.



ITEM		AGP RECTANGULAR Convertor Number (S - Steam, W - Water, or F - Furnace)																			
		152	153	154	155	182	183	184	185	186	187	243	244	245	246	247	303	304	305	306	307
Maximum Input in Thousand Btu per hour		140	210	280	350	160	240	320	400	480	560	330	440	550	660	770	375	500	625	750	875
Minimum Dimensions Combustion Chamber (in inches)	W	15½	15½	15½	15½	18½	18½	18½	18½	18½	18½	24½	24½	24½	24½	24½	30½	30½	30½	30½	30½
	L	15¼	20	24¾	29½	16¼	21	25¾	30½	35¼	40	23	27¾	32½	37¼	42	25	29¾	34½	39¼	44

AGP RED FLASH Convertor Number (S or W)	Maximum Input Btu/hr. (in 000's)	Sq. Ft. Direct Radiation Installed	
		S	W
1-R-5	116.8	235	375
1-R-6	134.4	270	430
1-R-7	160.0	320	510
1-R-8	177.6	355	570
1-R-9	203.2	405	650
1-R-10	220.8	440	710
1-R-11	246.4	495	790

AGP ROUND Convertor Number (S, W, or F)	Maximum Input Btu/hr. (in 000's)	Diameter Burner (inches)
13-A	150	13
15-A	180	15
19-A	240	19
23-A	360	23

AGP GAS CONVERTORS for converting coal or oil-fired steam, hot water, or warm air systems to gas-fired systems controlled by room thermostat, are of three types:

AGP Rectangular Convertor for any rectangular boiler or furnace. Careful choice should be made to obtain the required input and proper burner area, suited to the individual fire box cross section.

AGP Round Gas Convertor for any round boiler or furnace, and especially designed for Arco round boilers, provides increased boiler efficiency.

AGP Redflash Convertor, for Ideal No. 1 Redflash boilers. Convertor numbers correspond to numbers of Ideal boilers for which they are designed.

Equipment includes complete burner assembly, adjustable gas orifices and air control embodied in attractive chamber which has a minimum extension into basement space.

Control equipment consists of: Thermotor gas valve with vapor tension thermostatic pilot providing complete control by room thermostat of any selection, and mechanical throttling and limit control as described under Ideal Boilers on page 4.

Selection should be based on the following formulae and input ratings given in the accompanying tables (check adequacy of existing installation).

Warm Air Installation — Btu input = heat loss of building (Btu/hr.) x 1.56.

Steam and Hot Water Installations — Btu input = heat loss of building (Btu/hr.) x F (see following table).

Sq. Ft. Steam Rad. Reqd.	Sq. Ft. H.W. Rad. Reqd.	Factor "F"
200	350	2.11
250	400	2.09
300	470	2.04
400	640	2.00
500	800	1.95
600	1000	1.90
700	1100	1.83

AGP Gas-Fired Hot Water Heaters

By—

II - CAPACITIES and DIMENSIONS

In the accompanying diagrams all dimensions are given in inches

H = overall height

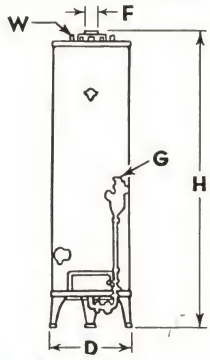
D = overall diameter

F = diameter of flue connection

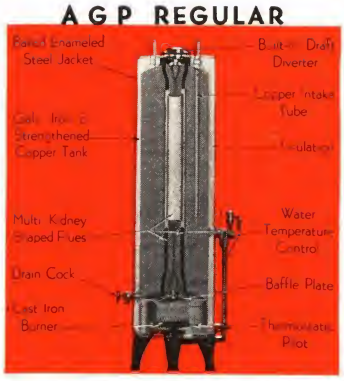
G = size of female gas connection

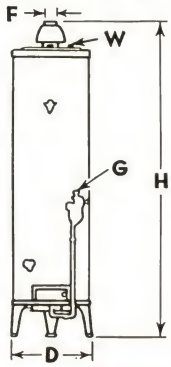
W = size of water pipe connection

Recovery gallons per hour represent U. S. Gallons raised 60°F. Recovery capacity Imperial Gallons equals Recovery capacity U. S. Gallon ÷ 1. 2

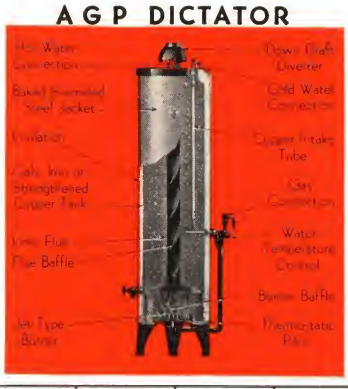


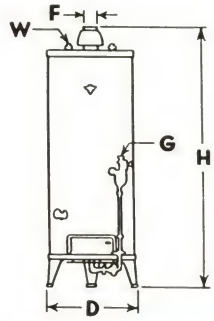
A G P REGULAR



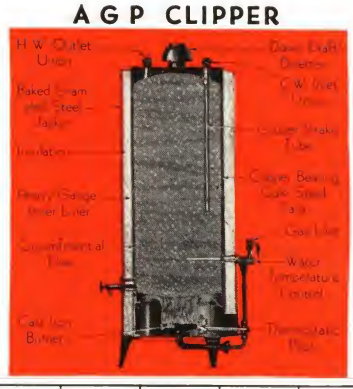


A G P DICTATOR





A G P CLIPPER



ITEM															
Unit Numbers	Steel Tank	20-S	25-S	30-S	40-S	75-S	152-S	202-S	302-S	402-S	153-S	203-S	253-S	303-S	403-S
	Strengthened Copper Tank	20-C	25-C	30-C	40-C	75-C	—	202-C	302-C	402-C	—	—	—	—	—
Capacity in Gallons		20	25	30	40	75	15	20	30	40	15	20	25	30	40
Dimensions in Inches	H Overall Height	57⅛	65⅛	54	66	66⅜	50	60	56¾	68¾	49½	49⅝	56¾	63⅞	64¼
	D Diameter	15¾	15¾	19	19	25½	15¾	15¾	19	19	18⅜	20⅝	20⅝	20⅝	22½
	F Flue Diameter	3	3	3	3	4	3	3	3	3	3	3	3	3	3
	G Size of female gas conn.	½	½	½	½	⅜	½	½	½	½	½	½	½	½	½
	W Size of water pipe conn.	¾	¾	¾	¾	1¼	¾	¾	¾	¾	¾	¾	¾	¾	¾
Btu Input		20,000	22,500	25,000	30,000	60,000	17,500	20,000	25,000	28,000	20,000	20,000	30,000	30,000	30,000
Recov. Gals. per hour (60° rise)		28.0	31.5	35.0	42.0	83.9	24.5	28.0	35.0	39.2	28.0	28.0	42.0	42.0	42.0
Gas Consumption Cu. Ft. per hour	500 Btu	40.0	45.0	50.0	60.0	120.0	35.0	40.0	50.0	56.0	40.0	40.0	60.0	60.0	60.0
	550 Btu	36.4	40.9	45.5	54.5	109.0	31.8	36.4	45.5	51.0	36.4	36.4	54.5	54.5	54.5
	800 Btu	25.0	28.1	31.3	37.5	75.0	22.0	25.0	31.3	35.0	25.0	25.0	37.5	37.5	37.5
	1000 Btu	20.0	22.5	25.0	30.0	60.0	17.5	20.0	25.0	28.0	20.0	20.0	30.0	30.0	30.0
	1150 Btu	17.4	19.6	21.7	26.1	52.2	15.2	17.4	21.7	24.3	17.4	17.4	26.1	26.1	26.1
Approx. Shipping Weight	Steel	252	275	310	362	635	206	231	282	325	218	246	270	298	350
	Copper	227	255	299	346	617	—	194	248	291	—	—	—	—	—

AMERICAN GAS PRODUCTS
DIVISION OF AMERICAN RADIATOR COMPANY
40 WEST 40TH STREET
NEW YORK, N.Y.

AGP Gas-Fired Hot Water Heaters

By—

DESCRIPTION

Three types of AGP automatic gas-fired storage water heaters are available in a wide range of sizes for domestic and small commercial use: AGP Regular, the Dictator, and AGP Clipper. Varying only in mechanical principle of flue design, all three types are manufactured in approximately similar capacities, and will yield equal efficiencies. Choice among the three types will be governed by preference for type of flue or finish color of exterior jacket.

AGP Regular is made in five sizes ranging from 20 to 75 gallons, with tank of galvanized steel or copper strengthened to withstand hydrostatic pressure of 300 pounds, and steel jacket finished in ivory and black crystalline enamel.

The Dictator is made in 4 sizes ranging from 15 to 40 gallons, with steel or strengthened copper tank, and steel jacket finished in baked-enamel in green or gray tones to match the Empire Boiler.

AGP Clipper is made in five sizes ranging from 15 to 40 gallons, with copper-bearing galvanized steel tank only, and steel jacket finished in light green baked-enamel with darker green trim.

FLUE DESIGN

AGP Regular has kidney shaped multiple flues, designed to provide ample heating surface coincident with efficient flue area. Flues form a central water column surrounded by hot flue gases, causing water to heat rapidly and recirculate through tank until adequate uniform temperature is reached. The Dictator has a single flue of large diameter with spiral baffle permitting full utilization of heating surfaces together with proper evacuation of the products of combustion. AGP Clipper has a circumferential flue surrounding tank, which utilizes all the products of combustion on the entire heating surface.

CONTROLS AND EQUIPMENT

All heaters are uniformly equipped with:

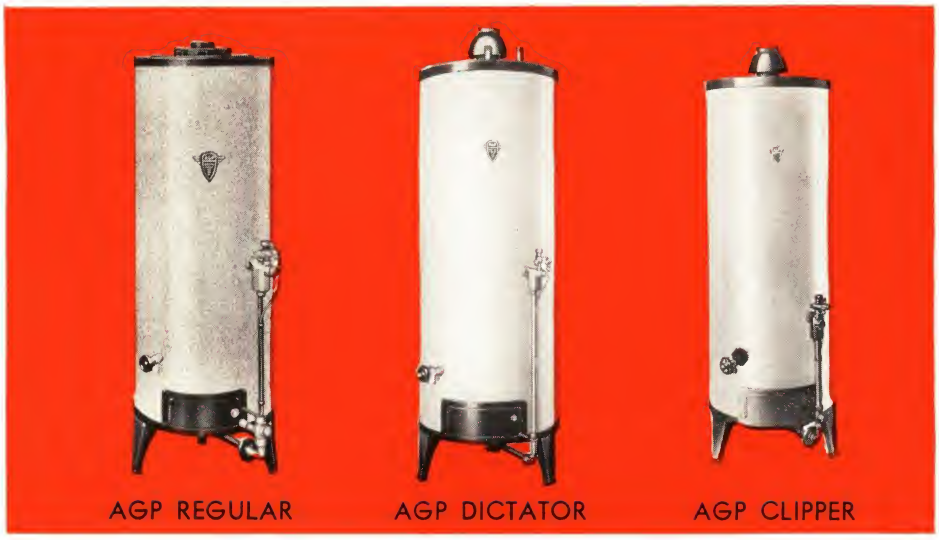
(1) a heavy blanket of rock wool *insulation,* extra thick on top surface:

(2) cold water, *Copper Intake Tube* so located that cold water injection will properly affect water temperature control element;

(3) a snap-action valve type thermostatic *water temperature control.*

Additional uniform equipment includes *draft diverter,* adequate *clean-out plugs, drain cocks* and *floor shield.*

Burner and thermostatic pilot equipment varies with type of heater. AGP Regular and Clipper have a C.I. blue-flame drill port burner and a multiport blue flame thermostatic pilot utilizing a bi-metallic element. The Dictator has a patented jet type burner, with individual brass jets, and heat-resisting alloy bell baffle. Thermostatic pilot is built within main burner, and utilizes a bi-metallic element.



Exterior appearance of AGP Gas-fired storage type water heaters is illustrated above. Reading from left to right: AGP Regular, The Dictator, and AGP Clipper. The accompanying diagram shows a standard installation with hot and cold water connections, flue connection, and gas connection indicated

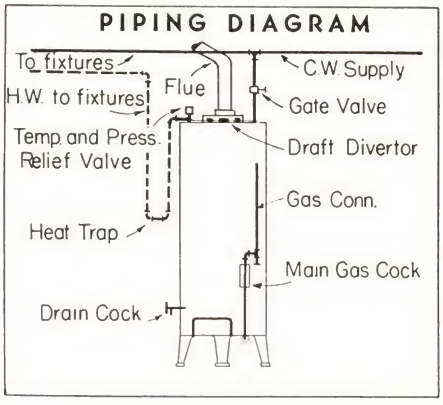
SELECTION

AGP storage water heaters may be used in conjunction with AGP boilers and air conditioners to furnish completely automatic hot water supply, or in conjunction with any heating system where domestic hot water supply is not integral.

Selection of the proper capacity heater should be based on data given in Table 2. Required capacity should be calculated in accordance with standard methods.

INSTALLATION

Installation of AGP automatic storage water heaters should conform to standards of good practice outlined on page 3.



I - RECOMMENDED USES

Legend: R-Living or Bedroom; K-Kitchen; B-Bathroom; L-Laundry Room; P-Pantry: W-Washstand; C-Barber Chair

Type of Installation	Capacities in Gallons					
	15	20	25	30	40	75
Residences	1-3R K,B,L	3-5R K,B,L	4-7R K,B,L	5-7R K,2B,L	6-9R, K,2B 5-7R, K,3B,L	8-11R, 3-4B, K,P,L
Multi-Family Dwellings						Small 2-Family Apartment
Offices (General) (Business)	✓	✓	✓	✓	✓	✓
Soda Fountains	✓	✓	✓	✓	✓	✓
Beauty Parlors	1W	2-3W	3-5W	5-7W	7-9W	10-15W
Barber Shops	1-2C	3-5C	5-7C	7-8C	8-10C	10-20C
Offices (Doctors) (Dentists)		✓				
Restaurants						✓

40 WEST 40TH STREET
NEW YORK, N.Y.

AMERICAN GAS PRODUCTS
DIVISION OF AMERICAN RADIATOR COMPANY

LOCATION OF SALES OFFICES

ATLANTA, GA.—G. J. Kollock
Norris Building
BALTIMORE, MD.—See Washington, D. C.
BOSTON, MASS.—American Gas Products
250 Stuart Street
BROOKLYN, N. Y.—J. A. McIntosh
1980 East 29th Street
BUFFALO, N. Y.—American Gas Products
1807 Elmwood Avenue
BUTTE, MONT.—Sullivan Valve & Engineering Co.
910 South Arizona Street
CHICAGO, ILL.—American Gas Products
122 South Michigan Avenue
CINCINNATI, OHIO—J. E. Brecht
Times Star Tower
CLEVELAND, OHIO—W. E. Kaiser
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AMERICAN GAS PRODUCTS

DIVISION OF AMERICAN RADIATOR COMPANY

40 WEST 40TH STREET · NEW YORK, N.Y.

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SECTION 26

CONTINUED ⟶

AMERICAN BLOWER CORPORATION

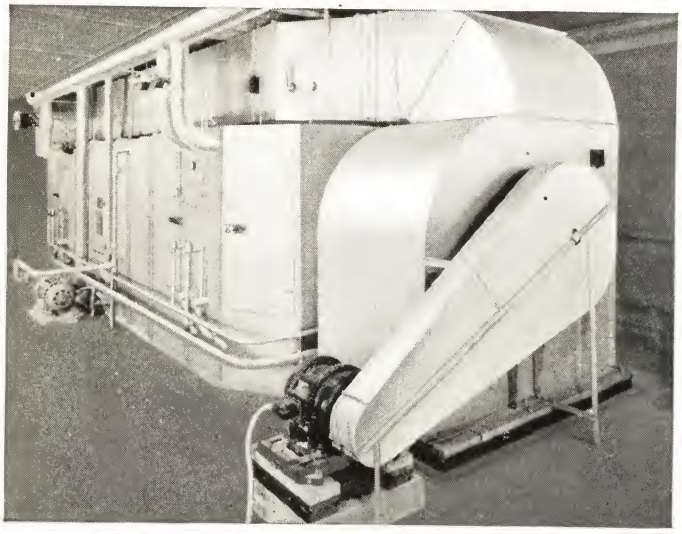
Division of American Radiator and Standard Sanitary Corporation

GENERAL OFFICES AND FACTORY

6000 Russell St., DETROIT, MICH.

BRANCHES IN ALL PRINCIPAL CITIES

AIR CONDITIONING — HUMIDIFYING — DEHUMIDIFYING — COOLING — VENTILATING — HEATING — VAPOR-ABSORPTION — DRYING — AIR WASHING AND PURIFICATION



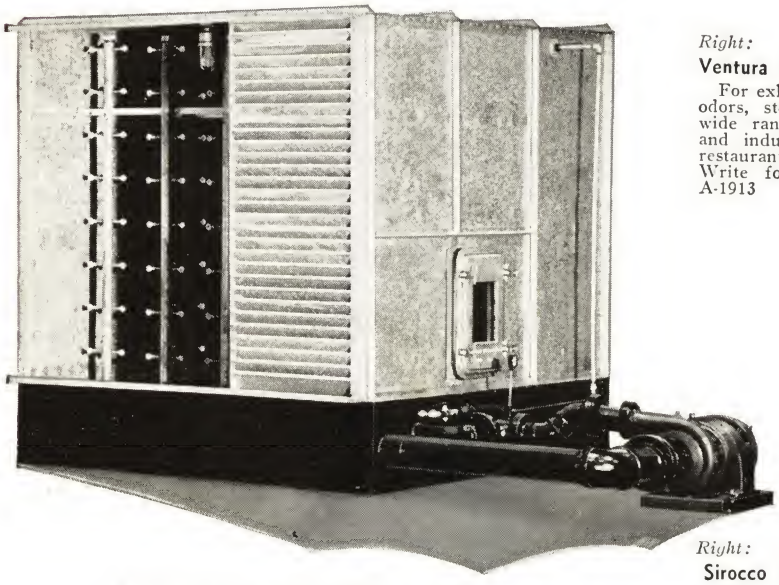
American Blower Central Air Conditioning Systems with Sirocco Fan

Standard for more than 30 years. Particularly adaptable for heating, ventilating, air washing, purifying and cooling large buildings. Write for complete data on central air conditioning systems



American Blower Multi-Blade Fan

For heating, ventilating, cooling and air conditioning system. High volumetric and mechanical efficiency. Driven by belt, steam engine, motor or turbine. Capacities 30,000 to 500,000 c.f.m. Write for Bulletin No. A-403



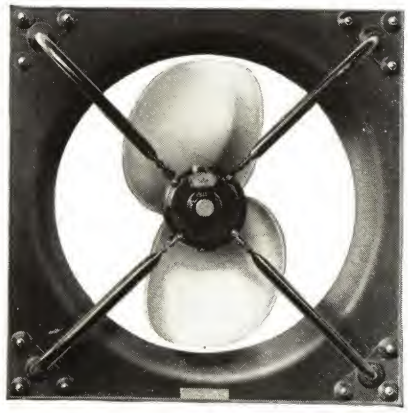
American Blower Dehumidifiers and Washers

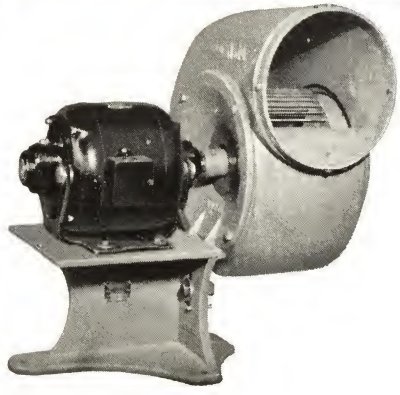
For dehumidifying, cooling and washing air in connection with central systems, for air conditioning, for process work or for use with a ventilating system where large quantities of fresh, washed air are required. Thousands of these dehumidifiers are already in operation in theaters, public buildings, office buildings, garages, hotels and industrial plants. Write for Special Bulletin No. 3523

Right:

Ventura Ventilating Fan

For exhausting bad air, odors, steam, etc., in a wide range of buildings and industrial processes, restaurants, garages, etc. Write for Bulletin No. A-1913





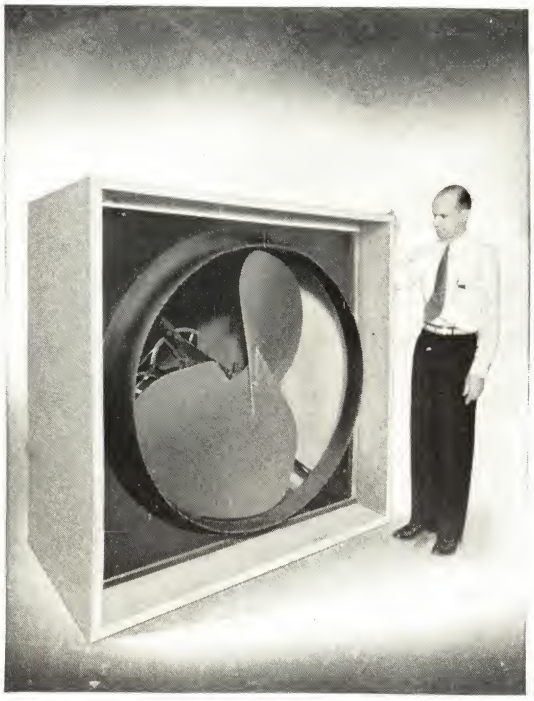
Right:

Sirocco Utility Blower

For use with a duct system in exhausting bad air, fumes, excessive heat and odors, or for furnishing fresh air. Variety of sizes for a wide range of application. Write for Bulletin No. A-18029

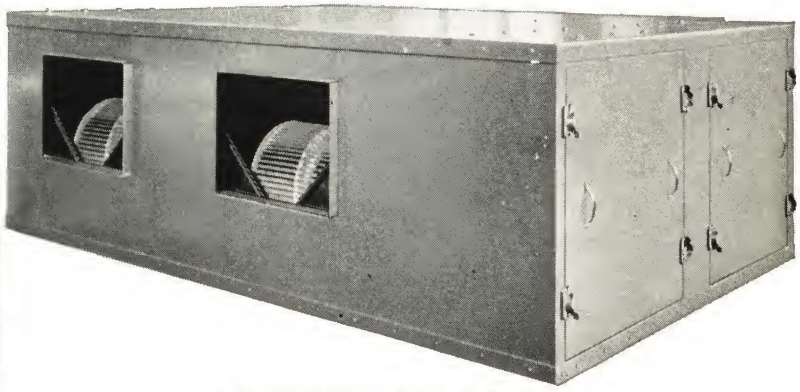
TYPES OF AMERICAN BLOWER CORPORATION AIR HANDLING AND CONDITIONING EQUIPMENT

All types of air handling and air conditioning equipment for industrial applications, process work, drying, cooling; also equipment for stores, offices, shops, public buildings, power plants, etc., and attic ventilation for homes.



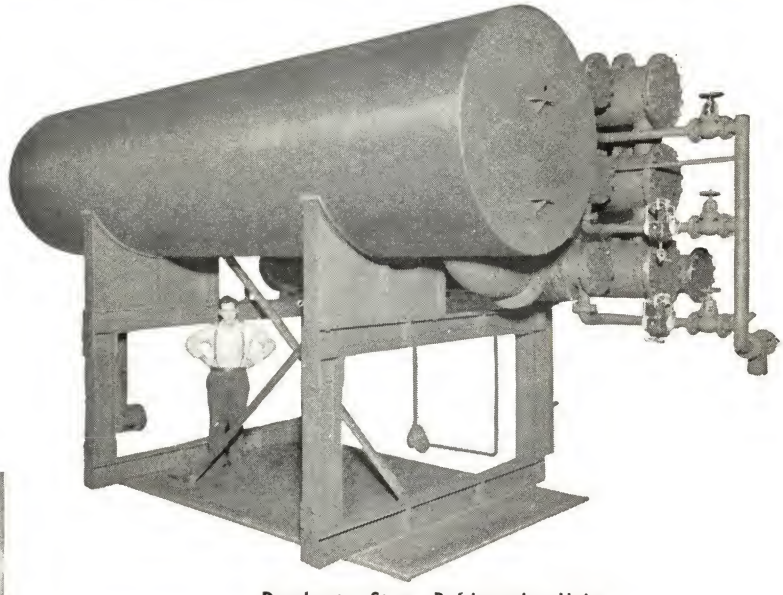
Ventura Home Conditioner

For comfort cooling by means of attic ventilation. Made in various sizes for all home needs. No refrigerating machine required. Thousands already in operation. Write for Bulletin No. A-3713



American Blower Series B Conditioner

For installation in stores, restaurants, offices and other commercial establishments. May be installed in present buildings or new buildings for cooling, ventilating, dehumidifying as well as heating and humidification. Write for technical Bulletin No. 5127



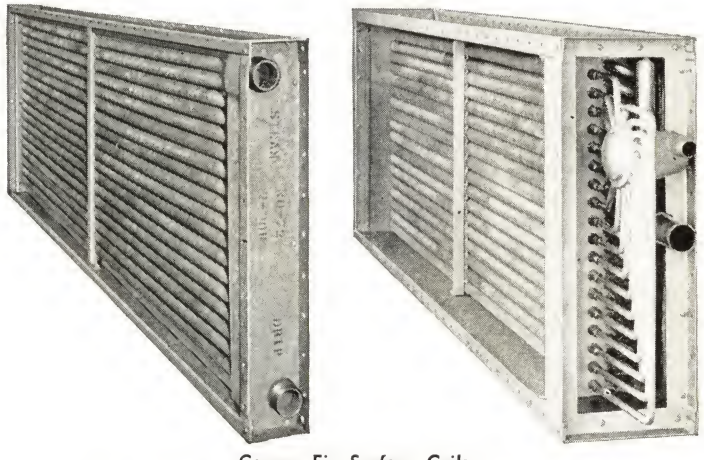
Decalorator Steam Refrigeration Units

Furnished for air conditioning and process cooling. By means of a jet of steam and the flow of condensing water, they function to produce cool, refrigerated water at any temperature above 35° F. For complete data on steam refrigeration, send for Bulletin No. 3727



American Blower Series K Conditioner

For use with a duct system in a wide variety of air conditioning applications. For complete data on this conditioner write for Bulletin No. 3927



Copper Fin Surface Coils

For cooling and blast heating. Write for Bulletin No. 32

NOTE: *For complete data on any air handling equipment of any type, telephone the nearest American Blower Branch Office, or write direct to the factory. No obligation.*

MEMORANDA

GAS HEATING • AND AIR CONDITIONING EQUIPMENT

BRYANT

THE BRYANT HEATER CO.
CLEVELAND • OHIO



BRYANT GAS HEATING AND

26
3

THE COMPANY

Over thirty years ago a small group of gas engineers perfected the first gas boiler ever made. They were Bryant Engineers.

Ever since that day, Bryant has maintained its leadership in this field by astute engineering, by steadily improving the design and efficiency of Bryant Products.

BRYANT PRODUCTS

Whether you wish to specify gas fired boilers, unit heaters, warm air furnaces (gravity or forced air) or complete winter air conditioning, the Bryant line provides exactly the equipment you need. Or, if plans call for automatic humidifying or dehumidifying equipment, Bryant offers outstanding advantages.

ADVANTAGES OF GAS

(1) It burns clean . . . (2) It burns silently and without odor . . . (3) Requires no storage space . . . (4) Is uniform in price . . . (5) Is uniform in quality . . . (6) Is dependable—its supply is insured against every imaginable contingency . . . (7) It leaves no stains or dirt on basement walls and floors, on sidewalks, lawns or driveways . . . (8) Gas uses equipment without moving parts to wear . . . (9) Is completely automatic . . . (10) Gas is already in a state to be burned, leaves no refuse.

INSTALLATION

Bryant equipment is easy to assemble and comes shipped with complete erection instructions, providing a step by step procedure in written and picture form. Ease of installation is obtained without loss of time and effort.

ENGINEERING SERVICE

The Bryant distributor or dealer in your city will help you apply the right unit to your specific problem, will aid you in estimating installation and operating costs and will cooperate to the fullest extent in the preparation of complete plans and specifications for heating and air conditioning systems. Bryant's background includes long years of field experience in the Gas Fired Heating and Air Conditioning field.



The Bryant Heater Company, Cleveland, Ohio
Office Building, Laboratory in the Distance

SALIENT FEATURES

In comparing a Bryant with other units, take these facts into consideration:

(1) Bryant has the greatest fund of engineering knowledge and manufacturing experience upon which to draw in the designing and building of gas heating and air conditioning equipment.

(2) Bryant, manufacturing gas equipment exclusively, is not forced to compromise between gas and other fuels in the design and construction of its products.

(3) Bryant Burners, because of their design, provide more economical and efficient combustion. The burner heads are cast iron and have raised drill parts to assure the proper supply of air for combustion. The burner heads and tubes are correctly proportioned by gas combustion experts.

(4) Bryant Boiler Heating Sections are of ribbed cast iron construction, with staggered gas travel, and the tubes are pitched to promote definite, rapid circulation. Bryant Furnace Sections are entirely cast iron with exclusive tubular design insuring maximum heat transfer. When you select Bryant you are assured of highly efficient performance plus long years of heating satisfaction.

(5) Bryant Controls, developed by Bryant exclusively for gas operation, are accurate and reliable. They include every desired element for positive, automatic operation, for accurate regulation of temperature, and for complete protection.

(6) Every Bryant part is tested under conditions far more severe than operating requirements.

(7) Bryant finish is attractive and durable, cabinets being of heavy metal with the pleasing Bryant Blue Crackle Finish and Chromium Trim.

(8) Bryant Products are tested, rated and approved by the American Gas Association and comply with the A.S.M.E. Boiler Code.

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AIR CONDITIONING EQUIPMENT

SPECIFICATIONS

BOILER

The Contractor shall furnish complete and erect in accordance with instructions furnished by the manufacturer, one Model .... No. .... Bryant Tubular Gas Fired Steam (Vapor or Hot Water) Boiler, as manufactured by the Bryant Heater Company, Cleveland, Ohio, with an A.G.A. Output Rating of .... square feet. This boiler to be complete with (insert proper trim S-V or W for Model 23 or 25, 443 or 455, or 63. See page 4, 5, 6).

AIR CONDITIONER

The Contractor shall furnish complete and erect in accordance with instructions furnished by the manufacturer, one Bryant Gas Fired Winter Air Conditioner No. ...., as manufactured by the Bryant Heater Company, Cleveland, Ohio, with an A.G.A. Output Rating of .... B.t.u./hour. This conditioner to be complete with cast iron heat exchanger, centrifugal blower, air filters, pan type humidifier with adjustable float tank, motor and trim as follows (insert trim for Model 78, BA88, or VB8 Unit, see page 8, 10, 11).

The blower is to supply .... C.F.M. against a total resistance of .... inches water gauge. The motor shall have the following electrical characteristics: .... volts, ... cycle, ... phase, ... H.P.

UNIT HEATER

The Contractor shall furnish complete and erect in accordance with instructions furnished by the manufacturer one No. .... Bryant Gas Fired Unit Heater, as manufactured by the Bryant Heater Company, Cleveland, Ohio, with an A.G.A. Input Rating of .... B.t.u./hour, Motor wound for .... volts, ... cycle, ... phase. This Unit Heater to be complete with the following trim (see Unit Heater, page 12, for proper trim).

HUMIDIFIER

The Contractor shall furnish complete and erect in accordance with instructions furnished by the manufacturer one Model 501 Bryant Gas Fired Humidifier as manufactured by the Bryant Heater Company, Cleveland, Ohio, with the following rating: Evaporating Capacity 15 gallons per day; Gas input 20,000 B.t.u./hour; Air Capacity 200 C.F.M.; Motor 1/60 H.P., 60 cycle, 110 volts, single phase.

The Humidifier to be complete with the following trim (insert Humidifier trim, see page 7).

DEHUMIDIFIER

The Contractor shall furnish complete and erect in accordance with instructions furnished by the manufacturer one No. .... Bryant Gas Fired Silica Gel Dehumidifier, as manufactured by the Bryant Heater Company, Cleveland, Ohio, with the following rating: .... C.F.M., Burner rate .... B.t.u./hour, ... H.P. Fan Motor .... volts, ... cycle, ... phase. This dehumidifier to be complete with all standard trim.

A No. .... Standard Dry Air Cooler shall be furnished as part of this equipment, if so required.

GRAVITY FURNACE

The Contractor shall furnish complete and erect in accordance with instructions furnished by the manufacturer one Bryant Gas Fired Gravity Furnace No. .... as manufactured by the Bryant Heater Company, Cleveland, Ohio, with an A.G.A. Output Rating of .... B.t.u./hour.

This equipment to be complete with cast iron heat exchanger, pan type humidifier and adjustable float tank, and the following trim (see Gravity Furnace, page 14, for proper trim).

GENERAL (To be included as part of gas equipment specifications)

Flue Pipe—Connect the draft hoods on the equipment to the chimney with a .... inch galvanized iron flue pipe (see specification sheets for diameter of flue pipe required).

Gas Pipe—Furnish gas supply line in accordance with local requirements. (However, at no time shall the supply line diameter be smaller than the inlet diameter of the control.)

Electrical Wiring—The equipment shall be controlled by a Series 10 Thermostat and shall have its own circuit, separately fused.

(Unit heaters are controlled by a line voltage thermostat.)

(Humidifiers and dehumidifiers are controlled by a line voltage humidistat.)

BRYANT EQUIPMENT INDEX AND CHECK LIST

(This Guide Does Not Attempt to Include All Building Applications)

TYPE OF BUILDING	BOILERS	WINTER AIR CONDITIONERS	FORCED AIR HEATERS	UNIT HEATERS	HUMIDIFIERS	GRAVITY FURNACES	CONVERSION BURNERS	DEHUMIDIFIERS
	PAGE 4—5—6	PAGE 8—9	PAGE 10—11	PAGE 11—12	PAGE 7	PAGE 14	PAGE 14	PAGE 7
APARTMENTS	✓	✓	✓		✓		✓	✓
AUDITORIUMS	✓	✓	✓	✓	✓	✓	✓	✓
BARBER AND BEAUTY SHOPS	✓	✓	✓	✓			✓	✓
CHURCHES	✓	✓	✓	✓	✓	✓	✓	✓
CLUBS	✓	✓	✓	✓	✓	✓	✓	✓
FUNERAL PARLORS	✓	✓	✓	✓	✓	✓	✓	✓
GARAGES	✓		✓	✓			✓	
HOSPITALS	✓	✓			✓		✓	✓
HOTELS	✓	✓	✓		✓		✓	✓
INDUSTRIAL PLANTS	✓		✓	✓	✓		✓	✓
LAUNDRIES	✓		✓	✓			✓	
OFFICES	✓	✓	✓	✓	✓		✓	✓
PRINTING PLANTS	✓		✓	✓	✓		✓	✓
RESIDENCES (All Types)	✓	✓	✓		✓	✓	✓	✓
RESTAURANTS	✓	✓	✓	✓		✓	✓	✓
SERVICE STATIONS	✓		✓	✓			✓	
STORES (All Types)	✓	✓	✓	✓	✓	✓	✓	✓
THEATRES	✓	✓	✓	✓	✓	✓	✓	✓
WAREHOUSES	✓		✓	✓	✓		✓	✓
WATER HEATING	✓							

The Bryant MODEL 23 AND 25 BOILER



Cutaway View of Model 25 Boiler

The Bryant Model 25 Boiler, a compact, highly efficient heating unit designed exclusively for gas, is available in six sizes for water, steam and vapor installation, and for direct and indirect hot water storage systems. This boiler, in an asbestos insulated steel jacket finished in Bryant Blue Crackle, is equipped with exclusive Bryant throttling type controls, for positive automatic operation and accurate regulation of temperature. High operating efficiency and rapid heating is obtained with Bryant Heavily Ribbed Cast Iron Tubular Sections. This boiler is also made with exposed controls known as Model 23.

RATINGS, HEATING SURFACES, WATER CAPACITY

Boiler No.	Available B.t.u. per hr. (Output)	A. G. A. Rating Sq. Ft.		Supplies Sq. Ft. Direct Cast Iron Radiation†		Gals. Per Hour 60° Rise	B. H. P.	Sq. Ft. of Heating Surface	Water Capacity to Water Line Gals.	Approx. Shipping Weight	
		Steam	Water	Steam	Water					23	25
3	54,000	230	360	145	230	108	1.61	16.5	2.6	505	575
4	72,000	300	480	190	310	145	2.15	22.0	3.3	575	645
5	90,000	380	600	245	385	181	2.68	27.5	4.0	660	730
6	108,000	450	720	290	460	217	3.22	33.0	4.7	725	795
7	126,000	530	840	340	540	253	3.76	38.5	5.4	815	885
8	144,000	600	960	385	615	289	4.30	44.0	6.1	885	955

†Selection factors providing for piping loss and starting load allowances are those recommended by the American Gas Association.

STEAM TRIM FURNISHED

Bryant (Steam) or (Vapor) Throttling Control Valve; Series 10 Solenoid Valve and Transformer; Bryant Low Water Cut-off; Bryant Combination Thermo Pilot; Pop Safety Valve (Set 15 lbs.); Compound Pressure and Vacuum Gauge and Syphon; Labeled Shut-off Valve; Pilot Cock with Screw Adjustment; Drain Cock; Draft Hood (Enclosed on 25 Model); Bryant Blue Crackle Finish Cover.

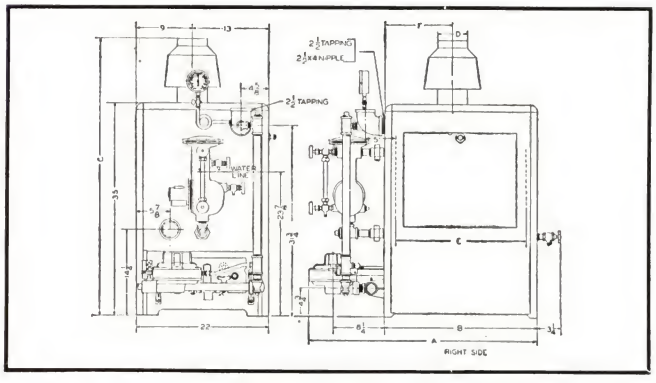
HOT WATER TRIM FURNISHED

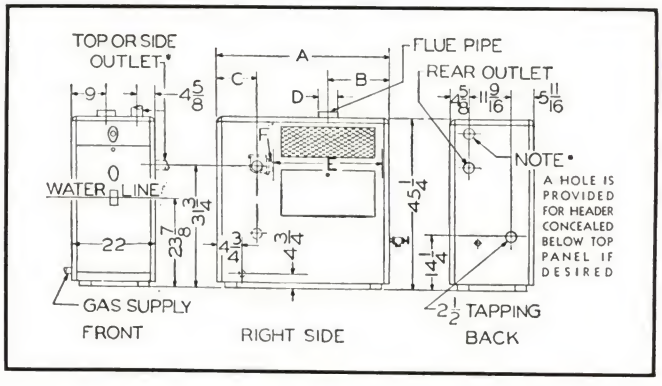
Bryant Throttling Control Valve; Bryant Temperature Controller; Series 10 Solenoid Valve and Transformer; Bryant Combination Thermo Pilot; Altitude Gauge and Thermometer; Labeled Shut-off Valve; Pilot Cock with Screw Adjustment; Drain Cock; Draft Hood (Enclosed on 25 Model); Bryant Blue Crackle Finish Cover.

All Piping Necessary for Assembly of Controls on Boiler is Supplied

GENERAL DATA

Boiler No.	Flows and Returns		Flue to Chimney	No. of Pilots	Control Size	Manifold Size	Pop Valve Size	Relief Valve Size	Meter Cap. Cu. Ft. per Hr.	
	No.	Size							500 B.t.u. Gas	1000 B.t.u. Gas
3	2	2½"	5"	1	1"	1"	¾"	½"	135	67
4	2	2½"	5"	1	1"	1"	¾"	½"	180	90
5	2	2½"	5"	1	1"	1"	¾"	½"	225	112
6	2	2½"	5"	1	1"	1"	¾"	½"	270	135
7	2	2½"	6"	1	1"	1"	¾"	½"	315	157
8	2	2½"	6"	1	1"	1"	1"	½"	360	180





DIMENSION TABLE—MODEL 23

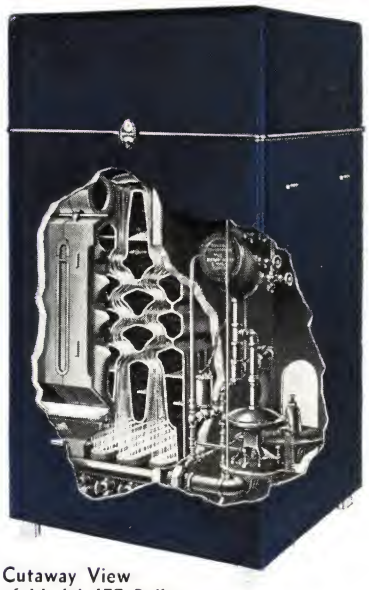
Boiler No.	Overall Width of Boiler	Overall Depth Including Trim A	Depth of Jacket Only B	Overall Height Including Draft Hood C	Height of Jacket Only	Size of Flue D	Distance Between Flow Tappings E	Flow Nipple	Flue Outlet From Front Cover F
3	22	31¼	19	45½	35	5	12¾	2½x4	7 5/16
4	22	31¼	19	45½	35	5	15 5/16	2½x4	7 5/16
5	22	37⅝	25⅜	45½	35	5	19⅛	2½x4	11⅛
6	22	37⅝	25⅜	45½	35	5	22 5/16	2½x4	11⅛
7	22	44	31¾	46 11/16	35	6	25½	2½x4	14 5/16
8	22	44	31¾	46 11/16	35	6	28 11/16	2½x4	14 5/16

DIMENSION TABLE—MODEL 25

Boiler No.	Overall Width of Boiler	Overall Height of Boiler	Overall Depth of Boiler A	Flue Outlet From Back Cover B	Flow Outlet From Front Cover C	Size of Boiler Flue D	Distance Between Flow Tappings E	Flow Nipple F
3	22	45¼	32	11 5/16	10⅛	5	12¾	2½x3
4	22	45¼	32	11 5/16	10⅛	5	15 5/16	2½x3
5	22	45¼	38⅜	14½	10⅛	5	19⅛	2½x3
6	22	45¼	38⅜	14½	10⅛	5	22 5/16	2½x3
7	22	45¼	44¾	17 11/16	10⅛	6	25½	2½x3
8	22	45¼	44¾	17 11/16	10⅛	6	28 11/16	2½x3

The Bryant MODEL 443 AND 455 BOILER

The Bryant Model 455 Boiler is built in eleven sizes covering the average range of steam, hot water, and vapor installations, also available for direct and indirect hot water storage systems. The water tube sections are of cast iron, and are designed to provide a staggered gas travel and ribbed to present a maximum area of heat absorbing surface—features of construction which are inherent with durability and high efficiency. Bryant gas-actuated controls, developed over a period of years, assure completely automatic and trouble-free operation throughout the long life of the Model 455 Boiler. . . . The metal jacket of attractive Bryant blue crackle finish is lined with asbestos insulation. This boiler is also made with exposed controls and is known as Model 443.



Cutaway View
of Model 455 Boiler

RATINGS, HEATING SURFACES, WATER CAPACITY

Boiler No.	Available B.t.u. per hour (output)	A.G.A. Rating sq. ft.		Supplies sq. ft. of Direct C. I. Radiation†		Gals. per Hour 60° Rise	B.h.p.	Sq. ft. of Heating Surface	Water Capacity to Water line, Gal.	Size flow and return tappings, in.	Approx. Ship. Wt.	
		Steam	Water	Steam	Water						443	455
3	158,400	660	1060	425	685	317	4.73	41.7	17.8	4	1180	1350
4	211,200	880	1410	565	920	422	6.30	55.1	22.2	4	1395	1550
5	264,000	1100	1760	710	1160	528	7.88	68.5	26.2	4	1605	1760
6	316,800	1320	2110	860	1410	634	9.55	81.9	31.0	4	1815	1975
7	369,600	1540	2460	1010	1665	739	11.00	95.3	35.4	4	2055	2235
8	422,400	1760	2820	1160	1935	845	12.60	108.7	39.8	4	2275	2500
9	475,200	1980	3170	1320	2190	950	14.20	122.1	44.2	4	2465	2755
10	528,000	2200	3520	1470	2445	1055	15.70	135.5	48.6	4	2770	2965
11	580,800	2420	3870	1640	2695	1160	17.30	148.9	53.0	4	2990	3200
12	633,600	2640	4220	1790	2960	1270	18.90	162.3	57.4	4	3225	3420
13	686,400	2860	4580	1965	3230	1370	20.50	175.7	61.8	4	3475	3700

†Selection factors providing for piping loss and starting load allowances are those recommended by the American Gas Association.

STEAM TRIM FURNISHED

Bryant Boiler Control (steam pressure governor and low water cut-off), Series 10 Solenoid Valve and Transformer, Bryant Throttling Control Valve, Bryant Combination Thermostatic Pilot and Escapement Burner, Pop Safety Valve (set 15 lb.), Bryant Gas Pressure Regulator, Labeled Shut-off Valve, Compound Pressure and Vacuum Gauge and Siphon, Water Level Gauge, Metal Jacketed Cover of Bryant Blue Crackle Finish, Draft Hood (Enclosed on 455 Model), Drain Cocks.

HOT WATER TRIM FURNISHED

Gas-Actuated Limit Control, Bryant Combination Thermostatic Pilot and Escapement Burner, Series 10 Solenoid Valve and Transformer, Bryant Diaphragm Snap Valve, Bryant Gas Pressure Regulator, Labeled Shut-off Valve, Altitude Gauge and Thermometer, Metal Jacketed Cover of Bryant Blue Crackle Finish, Draft Hood (Enclosed on 455 Model), Drain Cocks.

GENERAL DATA

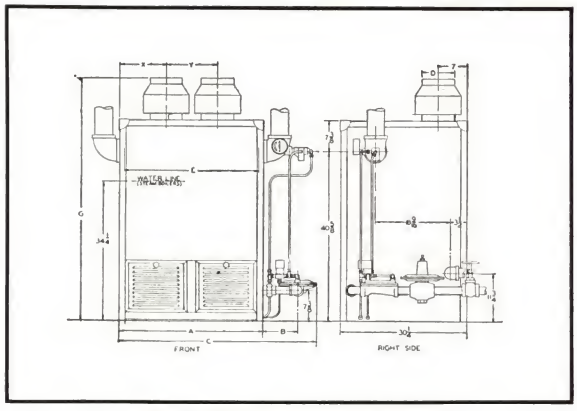
Boiler No.	Flows and Returns		Flue to Chimney	No. of Pilots	Control Size	Manifold Size	Pop Valve Size	Relief Valve Size	Drain Cocks		Meter Capacity Cu. Ft.	
	No.	Size							No.	Size	500 B.t.u. Gas	1000 B.t.u. Gas
3	2	4"	7"	1	1"	1¼"	1"	¾"	2	¾"	396	198
4	2	4"	7"	1	1"	1¼"	1"	¾"	2	¾"	528	264
5	2	4"	8"	2	1¼"	1¼"	1¼"	¾"	2	¾"	660	330
6	2	4"	9"	2	1¼"	1¼"	1¼"	1"	2	¾"	792	396
7	2	4"	9"	3	1½"	1½"	1½"	1"	2	¾"	924	462
8	2	4"	10"	4	1½"	1½"	1½"	1"	2	¾"	1056	528
9	2	4"	11"	4	1½"	1½"	1½"	1"	2	¾"	1188	594
10	2	4"	11"	4	1½"	1½"	2"	1¼"	2	¾"	1320	660
11	2	4"	12"	4	2"	2"	2"	1¼"	2	¾"	1452	726
12	2	4"	12"	4	2"	2"	2"	1¼"	2	¾"	1584	792
13	2	4"	12"	5	2"	2"	2"	1¼"	2	¾"	1716	858

BOILER DIMENSIONS—MODEL 443

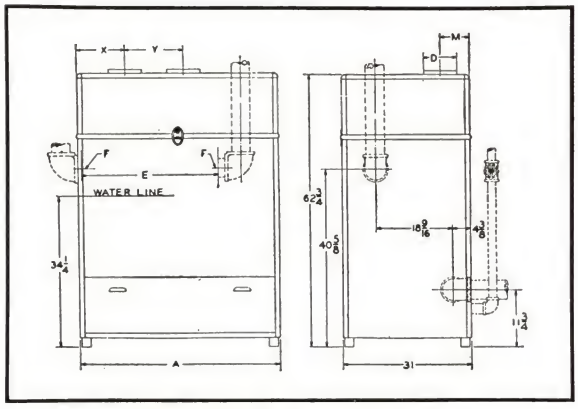
	A	B	C	D	E	G	X	Y
3	16¼"	7 1/16"	26 5/16"	One— 7"	14½"	60½"	8⅛"	.....
4	19⅞"	7 1/16"	30 9/16"	One— 7"	18⅛"	60½"	9 5/16"	.....
5	23½"	7 9/16"	35 13/16"	One— 8"	21¾"	60½"	11¾"	.....
6	27⅛"	7 9/16"	39 9/16"	One— 9"	25⅜"	61"	13 9/16"	.....
7	30¾"	8¼"	44⅜"	One— 9"	29"	61"	15⅜"	.....
8	34⅜"	8¼"	48"	One—10"	32⅝"	64½"	17 3/16"	.....
9	38"	8¼"	51⅝"	Two— 8"	36¼"	60½"	11¾"	14 3/16"
10	41⅝"	8¼"	55¼"	Two— 8"	39⅞"	60½"	11¾"	17 13/16"
11	45¼"	7¼"	57⅞"	Two— 9"	43½"	61"	11¾"	21¾"
12	48⅞"	7¼"	61½"	Two— 9"	47⅛"	61"	11¾"	25⅜"
13	52½"	7¼"	65⅛"	Three— 8"	50¾"	60½"	11¾"	14 5/16"

BOILER DIMENSIONS—MODEL 455

	A	D	M	X	Y	E	F
3	30⅛"	One— 7"	7 13/16"	7 15/16"	.....	14½"	4 x 3
4	33¾"	One— 7"	7 13/16"	9¾"	.....	18⅛"	4 x 3
5	37⅜"	One— 8"	7 15/16"	11 9/16"	.....	21¾"	4 x 3
6	41"	One— 9"	8 5/8"	13⅜"	.....	25⅜"	4 x 3
7	44⅝"	One— 9"	11⅜"	15 3/16"	.....	29"	4 x 3
8	48¼"	One—10"	11 3/16"	17"	.....	32⅝"	4 x 3
9	51⅞"	Two— 8"	7 13/16"	11¾"	14⅛"	36¼"	4 x 3
10	55½"	Two— 8"	7 15/16"	11 11/16"	17⅞"	39⅞"	4 x 3
11	59⅛"	Two— 9"	8 7/16"	11 9/16"	21¾"	43½"	4 x 3
12	62¾"	Two— 9"	8 7/16"	11 9/16"	25⅜"	47⅛"	4 x 3
13	66⅜"	Three— 8"	7 13/16"	11¾"	14 5/16"	50¾"	4 x 3

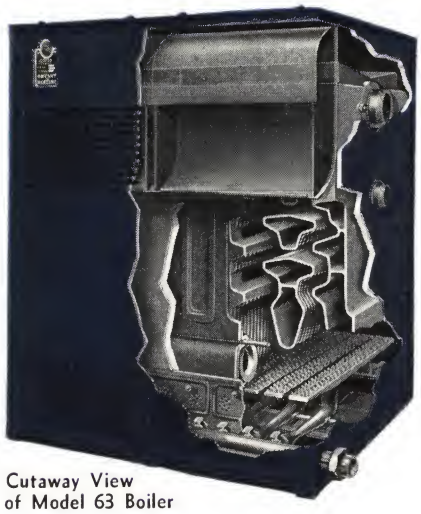


Model 443—Dimensional Drawing



Model 455—Dimensional Drawing

The Bryant MODEL 63 BOILER



Cutaway View
of Model 63 Boiler

The Model 63 Bryant Boiler is available in twelve sizes for large steam, hot water and vapor heating systems, and for indirect hot water storage systems. The cast iron sections are tubular with heavily ribbed sides and staggered gas travel which contributes to maximum efficiency. The water tubes are pitched to accelerate circulation throughout the height of the section. The sections, draft hoods, burner equipment and manifold are completely enclosed in an attractive insulated metal jacket.

RATINGS, HEATING SURFACES, WATER CAPACITY

Boiler No.	Available B.t.u. per hour (output)	A.G.A. Rating sq. ft.		Supplies sq. ft. of Direct C. I. Radiation†		Gals. per Hour 60° Rise	B.h.p.	Sq. ft. of Heating Surface	Water Capacity to Waterline, Gal.	Meter Capacity cu. ft.		Approx. Ship. Wt.
		Steam	Water	Steam	Water					500 B.t.u. Gas	1000 B.t.u. Gas	
8	710,400	2960	4740	2040	3345	1430	21.20	197.0	99.9	1776	888	4400
10	888,000	3700	5920	2575	4225	1780	26.50	246.0	122.1	2220	1110	5200
12	1,065,600	4440	7100	3120	5070	2140	31.80	294.0	144.3	2664	1332	6100
14	1,243,200	5180	8290	3680	5915	2490	37.10	343.0	166.5	3108	1554	6850
16	1,420,800	5920	9470	4230	6760	2850	42.40	391.0	188.7	3552	1776	7600
18	1,598,400	6660	10660	4760	7610	3200	47.70	440.0	210.9	3996	1998	8400
20	1,776,000	7400	11840	5280	8460	3550	53.00	488.0	233.1	4440	2220	9220
22	1,953,000	8140	13020	5810	9300	3910	58.30	537.0	255.3	4884	2442	10025
24	2,131,000	8880	14210	6340	10150	4260	63.60	585.0	277.5	5328	2664	11020
26	2,308,800	9620	15390	6870	10970	4630	68.90	634.0	299.7	5772	2886	11630
28	2,486,400	10360	16580	7400	11830	4980	74.20	682.0	321.9	6216	3108	12535
30	2,664,000	11100	17760	7930	12670	5330	79.50	731.0	344.1	6660	3330	13450

†Selection factors providing for piping loss and starting load allowances are those recommended by the American Gas Association.

STEAM TRIM FURNISHED

Bryant Boiler Control (combined steam pressure governor and low water cut-off), Series 10 Solenoid Valve and Transformer, Bryant Throttling Control Valve, Bryant Combination Thermostatic Pilot and Escapement Burner, Pop Safety Valve (Set 15 lbs.), Bryant Gas Pressure Regulator, Labeled Shut-off Valve, Compound Pressure and Vacuum Gauge and Siphon, Water Level Gauge, Metal Jacketed Cover, Draft Hood, Drain Cocks.

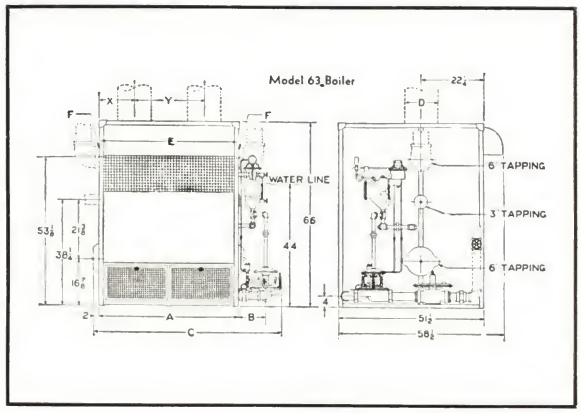
HOT WATER TRIM FURNISHED

Gas-Actuated Limit Control, Bryant Combination Thermostatic Pilot and Escapement Burner, Series 10 Solenoid Valve and Transformer, Bryant Diaphragm Snap Valve, Bryant Gas Pressure Regulator, Labeled Shut-off Valve, Altitude Gauge and Thermometer, Metal Jacketed Cover, Draft Hood, Drain Cocks.

GENERAL DATA

Boiler No.	Size Flow and Return Tappings*	Flue to Chimney	No. of Pilots	Control Size	Manifold Size	Pop Valve Size	Drain Cocks No.	Size
8	6″	14″	2	2″	2″	2″	2	¾″
10	6″	16″	3	2″	2″	2″	2	¾″
12	6″	16″	4	2½″	2½″	2½″	2	¾″
14	6″	18″	4	2½″	2½″	2½″	2	¾″
16	6″	20″	5	2½″	2½″	2½″	2	¾″
18	6″	20″	6	2½″	2½″	3″	2	¾″
20	6″	20″	6	2½″	2½″	3″	2	¾″
22	6″	20″	7	3″	3″	3″	2	¾″
24	6″	22″	7	3″	3″	3″	2	¾″
26	6″	24″	8	3″	3″	3½″	2	¾″
28	6″	24″	9	3″	3″	3½″	2	¾″
30	6″	26″	9	3″	3″	3½″	2	¾″

*6-in. boilers have two additional return tappings for 3-in. pipe, located 6 in. below the water line. Do not bush flow tappings; use reducing elbows if necessary.



BOILER DIMENSIONS

Boiler No.	Width of Boiler A	To CL of Trim B	Over-all Width C	No. and Size of Boiler Flues D	Flue Outlet from Side Cover X	Distance between Flue Outlets Y	Size of Flue to Chimney	Width between Flow Tappings E	Flow Nipples and Returns F	Height including Draft Hood G
8	35	10	50¼	One-14	17½	....	14	33½	Two-6x3¼	66
10	42¼	10	57½	Two-12	10⅝	21	16	40¾	Two-6x3¼	66
12	49½	10	66½	Two-12	12⅜	24¾	16	48	Two-6x3¼	66
14	56¾	10	73¾	Two-14	14 3/16	28⅜	18	55¼	Two-6x3¼	66
16	64	10	81	Two-14	14 3/16	35⅝	20	62½	Two-6x3¼	66
18	71¼	10	88¼	Three-12	12⅜	23¼	20	69¾	Two-6x3¼	66
20	78½	10	95½	Three-14	14 3/16	25 1/16	20	77	Two-6x3¼	66
22	85¾	9¾	102½	Three-14	14 3/16	28 1/16	20	84¼	Two-6x3¼	66
24	93	9¾	104¾	Three-14	14 3/16	32 1/16	22	91½	Two-6x3¼	66
26	100¼	9¾	117	Four-14	14 3/16	25**	24	98¾	Two-6x3¼	66
28	107½	9¾	124¼	Four-14	14 3/16	25**	24	106	Two-6x3¼	66
30	114¾	9¾	131½	Four-14	14 3/16	32 5/16**	26	113¼	Two-6x3¼	66

**Two center flue outlets on No. 26 boiler are 21¾ in. apart; No. 28 boiler, 29 in. apart; No. 30 boiler, 21¾ in. apart.

The Bryant SILICA GEL DEHUMIDIFIER

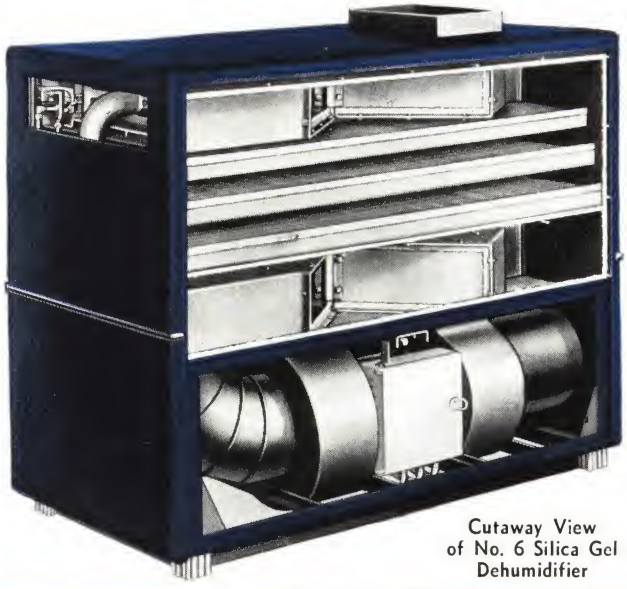
The essential elements of both comfort and industrial air conditioning are the control of the two distinctly different properties of air—humidity and temperature.

The Bryant Dehumidifier removes moisture from air by the process of physical adsorption. With this method, the moisture carried in the air in the form of vapor (humidity) is condensed within the pores of Silica Gel, (the most effective solid absorbent known), transforming the latent heat into sensible heat, which is subsequently removed by surface coolers. The Silica Gel beds are reactivated by passing air, heated by a gas burner, over them. This permits the beds to be used continously without changing the Gel. Humidity in air is thus controlled by this dehumidifier as a direct operation without resort to low temperature cooling. Temperature control is accomplished as a separate and distinct operation by whatever means is best and cheapest for the particular installation.

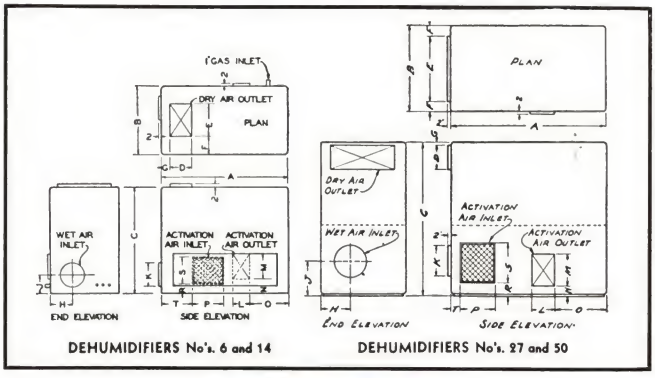
SPECIFICATIONS

Unit No.	Air Capacity C.F.M.	Air Capacity Lbs. Min.	Gas Consumption B.t.u./Hr.	Burner Rate B.t.u./Hr.	Power K.W.H.	Fan Motor H.P.	Damper Motor H.P.	Snap Valve	*Standard Power Characteristics	*Alternate Power Characteristics	Appprox. Shipping Weight, Lbs.
6	600	42.8	70,000	100,000	0.60	½	⅛	1″	110 Volts, single phase, 60 cycle	220 Volts, single phase, 60 cycle; 115 Volts D.C.; 230 Volts D.C.	900
14	1300	92.8	147,000	210,000	1.63	1½	⅛	1″	220 Volts, single phase, 60 cycle	220 Volts, three phase, 60 cycle; 230 Volts D.C.	1600
27	2700	193	262,000	375,000	3.00	3	⅛	1¼″	220 Volts, three phase, 60 cycle	220 Volts, single phase, 60 cycle; 230 Volts D.C.	4000
50	5000	357	525,000	750,000	5.00	5	⅛	2″	220 Volts, three phase, 60 cycle	440 Volts, three phase, 60 cycle; 230 Volts D.C	7000

* Note—All alternating current units must be furnished with a 110 volt single phase service to operate the control circuit, and all direct current units must have 115 volt D.C. service for control circuit.



Cutaway View of No. 6 Silica Gel Dehumidifier



DEHUMIDIFIERS No's. 6 and 14 DEHUMIDIFIERS No's. 27 and 50

DIMENSIONS

No.	A	B	C	D	E	F	G	H	J
6	57	30	46 5/8	9	14	8	4	9 5/8	8 3/8
14	66	37	59 5/8	13	15 1/2	10 3/4	3 1/4	11 1/2	9 3/8
27	93 1/2	50 1/2	79 1/2	11 3/4	39 1/8	5 11/16	1 5/8	16 1/2	16
50	120 1/4	66 1/2	118 3/16	19 1/8	50 1/8	8 3/16	2	21 3/8	26 1/2

No.	K	L	M	N	O	P	R	S	T	WA	DA	AA
6	10	7 1/8	10 1/2	6 5/8	17 5/16	14	4	12	13 9/16	95	95	70
14	13 1/2	8 3/8	11 3/4	7 1/4	21 3/8	26	6 3/4	13	7 1/4	200	200	100
27	16 1/16	11 3/4	15	4 7/8	32	35	3	20	8 1/4	400	400	200
50	25	18 3/4	25 1/2	6 3/4	40	27	8 1/8	32	7	800	800	475

Note—Columns WA, DA and AA give the minimum areas recommended for the wet air inlet, dry air outlet and activation air outlet ducts, in square inches.

The Bryant MODEL 501 GAS FIRED HUMIDIFIER

The Bryant Gas-Fired Humidifier is a supplementary unit for maintaining the proper degree of humidity in homes, offices, stores or other interiors where healthful comfort is desired.

It operates as a completely independent unit and can therefore be used with any type of heating system—steam, vapor, hot water or warm air—regardless of the fuel used for heating. Compact in size, the dimensions are 46⅝ in. long, 17⅝ in. wide, and 14 3/16 in. high.

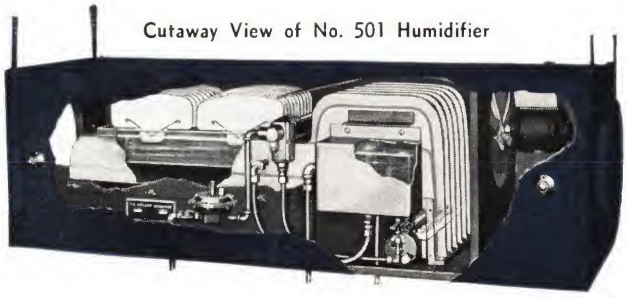
RATINGS

Evaporating Capacity .....10 Gallons per Day
Gas Input .....15,000 B.t.u. per Hour
Air Capacity .....200 Cubic Feet per Minute
Fan Motor .....1/60 Horsepower
Net Weight, 180 pounds.....Shipping Weight, 220 pounds

STANDARD EQUIPMENT

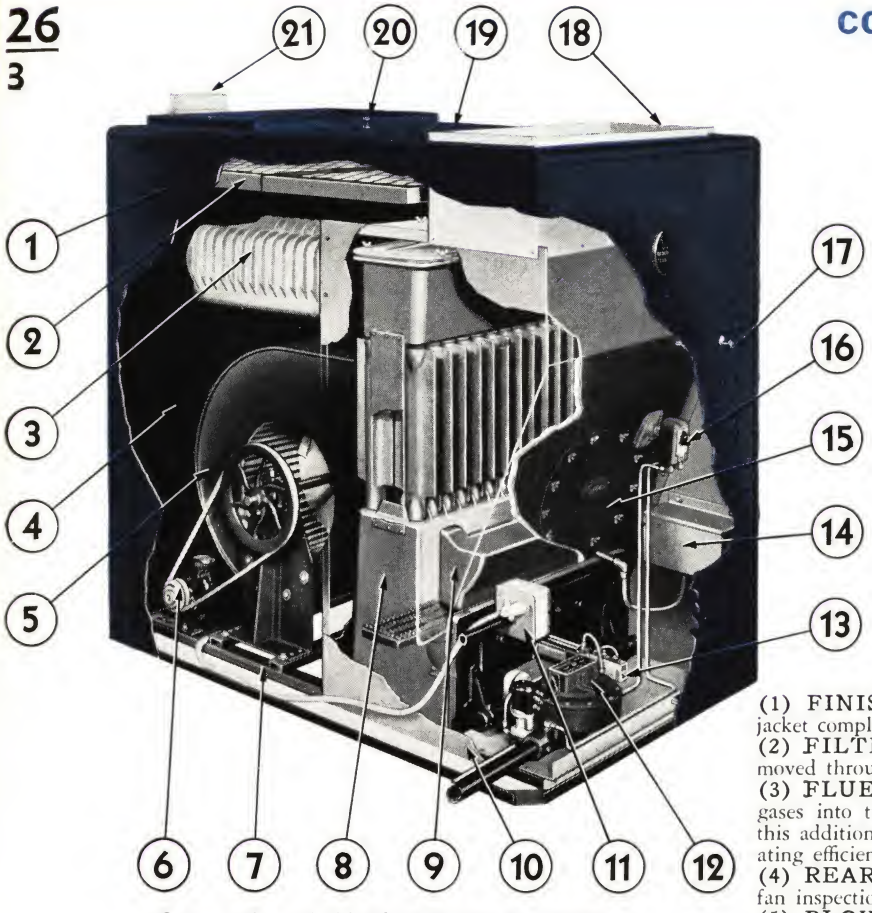
Porous Refractory Evaporating Plates
Porcelain Finished Water Pan
Automatic Float Tank
Cast Iron Finned Heat Exchanger for Preheating Air
Cast Iron Combustion Chamber and Raised Drilled-port burner
Thermostatic Safety Control
Snap-acting Thermostatic Gas Valve
1/60 H.P. Fan Motor with Rubber Insulated Mounting Bracket
8″ Propeller Fan
Gas Pressure Regulator
Gas Cock
Horizontal Draft Hood
Bryant Blue Crackle Finished Jacket
Strap Hanger Supports

Cutaway View of No. 501 Humidifier



The Bryant MODEL AC-78 WINTER AIR CONDITIONER

26
3



Cutaway View of 132-AC-78 Winter Air Conditioner

COMPLETELY FITTED WITH . . .

Bryant Warm Air Throttling Control Valve
Bryant Temperature Controller
Bryant Combination Thermostatic Pilot
Series 10 Solenoid Valve and Transformer
No. T-11-A Room Thermostat
Pan Humidifier and Adjustable Float Tank
110V-220V Interchangeable Fan Motor with Built-in Motor Overload Protector
Fan Control
Extra Large Capacity Blower Fan
Adjustable Pulley and Belt Drive
Junction Box Assembly with all Conduit Connections
Exterior Pilot Lighter—Push Button Type
All Cast Iron Heating Section—Exclusive Streamline Tubular Design
Ribbed Cast Iron Flue Economizer
Cast Iron Burner Heads—Raised Drilled Ports
Complete Inner Pressure Chamber
Bryant Blue Crackle Finished Cover
Large Removable Doors for Access to Control and Fan Chambers
Removable Summer Air Door
Dustop Air Filters
Draft Diverter
Gate Valve
Pilot Cock—with Screw Adjustment

GENERAL DESCRIPTION

The Bryant Model AC-78 Winter Air Conditioner is a compact, highly efficient gas-fired unit which very effectively performs the four functions of complete winter air conditioning; namely, heating, large volume air circulation, humidification, and air cleaning.

EFFICIENT—The all cast iron heating section, with its exclusive streamlined tubular design and the ribbed cast iron flue economizer, insures heating efficiencies heretofore thought unattainable with forced air equipment. Reliable Bryant time-tested controls insure carefree, automatic operation.

HEALTHFUL—The gas-actuated throttling control system assures a more healthful living condition because of the longer periods of full air circulation. This eliminates stagnant air conditions and uncomfortable temperature stratification.

ATTRACTIVE—The unit is completely enclosed in a Bryant Blue Crackle Finished metal jacket with polished chromium trim. The pleasing proportions and attractive exterior of the Model AC-78 are in harmony with modern basement design.

(1) **FINISH**—Bryant Blue Crackle Finished, heavy gauge steel jacket completely enclosing all component parts.
(2) **FILTERS**—Large in area, are conveniently inspected or removed through top door.
(3) **FLUE ECONOMIZER**—Of cast iron divides the flue gases into two separate passages. Surrounded by return air flow, this additional effective heat transfer surface insures maximum operating efficiency.
(4) **REAR PANEL**—Removable, providing access for motor and fan inspection and oiling.
(5) **BLOWER FAN**—Is extra large, 16" in diameter by 16" wide. Moves large volumes of air at very slow fan speeds. . . . Eliminates fan vibrations and reduces air noise to an absolute minimum.
(6) **FAN MOTOR**—Is the rubber mounted capacitor type, eliminating all operating noises and radio interference, slotted motor base and adjustable motor pulley for adjusting fan speeds to installation requirements.
(7) **BASE**—Motor, fan, heating section, and base plate bolted to heavy steel base channels extending the entire depth of the unit, permitting exact alignment of all parts despite uneven basement floors.
(8) **HEATING SECTION**—Is all cast iron. Exclusive staggered, streamlined, tubular design. All joints accurately machined for pressure tightness.
(9) **HUMIDIFIER**—Cast iron humidifier pan located in the best position for rapid water heating. The surface of the water is swept with warm air producing a very high rate of evaporation. The pan is triangular in cross section for regulation of exposed water surface and resulting evaporating capacity.
(10) **HEATING CHAMBER**—Complete inner pressure chamber enclosing blower outlet and heating section. This inner chamber is blanketed by return air, eliminating radiation losses and costly leakage of warm air to the basement.

RATINGS

Unit Number	A.G.A. Input B.t.u./Hr.	A.G.A. Output B.t.u./Hr.	Motor		Fan		Size of Control Valve	Number of 16"x25" Filters	Approx. Shipping Weight
			H.P.	Watts	*C.f.m.	No. Size			
100-AC-78	100,000	80,000	1/4	285	1000	1 16"x16"	1"	2	1100
132-AC-78	132,000	105,600	1/3	350	1300	1 16"x16"	1"	2	1250
200-AC-78	200,000	160,000	1/2	510	2000	2 16"x16"	1"	4	2000
264-AC-78	264,000	211,200	1/2	510	2600	2 16"x16"	1"	4	2300
300-AC-78	300,000	240,000	3/4	785	3000	3 16"x16"	1"	6	3000
364-AC-78	364,000	291,200	3/4	785	3600	3 16"x16"	1"	6	3450

*The large 16 in. diameter x 16 in. wide fan wheels furnished as standard equipment have ample reserve capacities.

(11) ELECTRICAL JUNCTION BOX — Shippped completely assembled with conduit connections, transformer mounted in place.

(12) THROTTLING VALVE — This compact, multiple-function control valve unfailingly and accurately governs the fuel supply to fulfill completely the most exacting comfort and safety requirements. It very effectively performs the following four individual operations: (1) "On" and "Off" control in response to the room thermostat; (2) Pressure regulation; (3) Throttling of the gas supply to maintain a constant bonnet temperature; (4) High limit cut-off at a fixed bonnet temperature. The large momentary flare of the pilot and full line pressure to the burners at the instant of burner ignition provide an ideal and positive lighting condition at all times.

(13) PILOT—The Bryant combination thermostatic pilot and escapement burner is operated from outside by push button on front.

(14) FLOAT TANK—Copper with adjustable water level feature.

(15) HUMIDIFIER PANEL—Removable for inspection of humidifier pan.

(16) TEMPERATURE CONTROLLER — Actuates the throttling valve to maintain a predetermined bonnet temperature.

(17) CONTROL PANEL — Large removable control access panel with push button type door latches.

(18) WARM AIR OUTLET—Less than 4½ feet above floor line, providing ample head clearance for full sweep duct elbow.

(19) TOP PANEL—Between supply and return connections, for inspection of filters and heating section. Can be conveniently removed for circulation of filtered basement air during the summer.

(20) RETURN AIR CONNECTION—Located at same level as warm air outlet.

(21) Approved Bryant draft hood.

CAST IRON HEATING SECTION

The Bryant Model AC-78 heating section is made entirely of the highest grade grey cast iron. Two standard sizes with inputs of 100,000 and 132,000 B.t.u./Hr. make up the various combinations of Model AC-78 sizes. The large volume combustion chamber insures complete combustion and the flue gases are directed continually upward, eliminating possibilities of insufficient draft during starting periods. The top is easily removed for inspection and cleaning. All joints are gas tight, being accurately machined and carefully assembled at the factory.

STAGGERED AIR TRAVEL

The cast iron heat exchanger tubes are staggered and streamlined in cross section, as illustrated in Figure 1. As the hot flue gases pass upward through the interior of each tube, large volumes of air sweep over the exterior surface. This exclusive streamlined tubular design presents a minimum amount of resistance to the air flow and a maximum amount of effective heat-transfer surface (8650 sq. inches in the 132,000 B.t.u. section — proportionate amount in 100,000 B.t.u. section). This not only produces very high operating efficiencies, but also a compactness which is very important in modern basement applications.

LARGE CAPACITY BLOWER

An extra large capacity blower is installed directly behind the heating section. The fan contains a 16-inch diameter by 16-inch width blower wheel delivering a large volume of air at very slow fan speeds.

QUIET—Extremely quiet operation is one of the most important features of the Model AC-78 and this quietness is the result of the extra-capacity, efficient, slow-moving fan. These standard fans will deliver additional air capacities for year-round installations.

THROTTLING TYPE CONTROLS

Bryant control design is based on time-tested principles, and experience gained in thirty years of gas appliance manufacture.

Bryant gas-actuated throttling control system automatically regulates the gas supply in accordance with bonnet temperature. Longer periods of full air circulation, brought about by automatic reduction in the gas burning rate, eliminates stagnant air conditions and uncomfortable temperature stratification. Healthful living conditions are assured by the almost constant circulation of large quantities of filtered, tempered and humidified air.

The gas-actuated throttle valve also permits safe gravity operation during periods of electrical current failure.

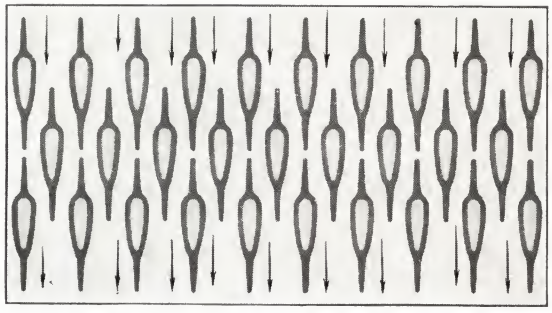
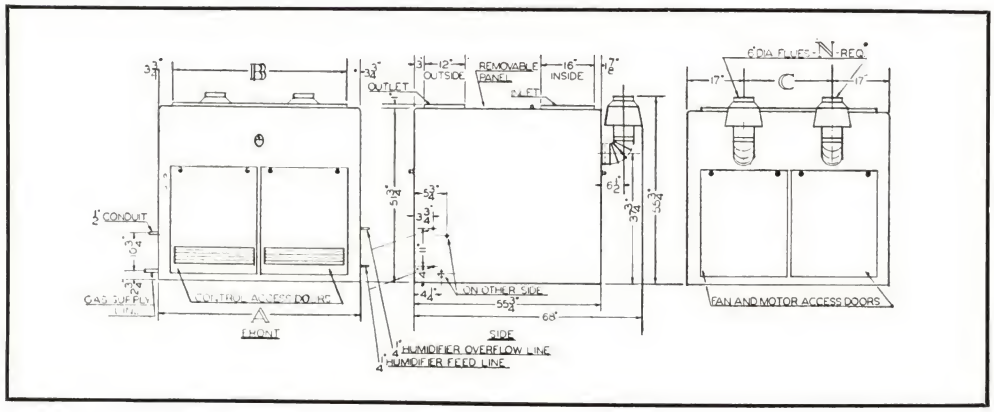


Fig. 1—Cross Section of Heating Element

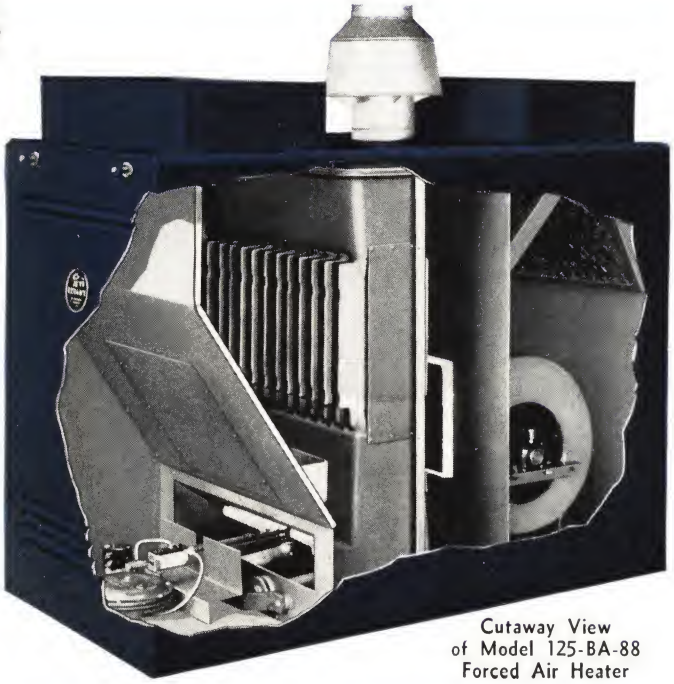
DIMENSIONS

Unit Number	Number and Size of Heating Sections		Overall Width A	Width of Inlet and Outlet	Width Between Flues C	Number of 6" Flues N	Size of Flue Pipe
	100,000	132,000					
100-AC-78	One	—	34"	26½"	—	One	6"
132-AC-78	—	One	34"	26½"	—	One	6"
200-AC-78	Two	—	60½"	53"	26½"	Two	8"
264-AC-78	—	Two	60½"	53"	26½"	Two	8"
300-AC-78	Three	—	87"	79½"	26½"*	Three	10"
364-AC-78	One	Two	87"	79½"	26½"*	Three	10"

*Dimension between each of three flues.



The Bryant MODEL BA-88 FORCED AIR HEATER



Cutaway View
of Model 125-BA-88
Forced Air Heater

GENERAL DESCRIPTION

The Model BA-88 Forced Air Heater is a completely automatic, gas-fired unit with an all cast iron tubular heating section. Available with air filters and an automatic pan-type humidifier, as extra equipment, to provide complete winter air conditioning. Made in four standard sizes as listed under "Ratings".

It is low in cost, despite having a cast iron heating section usually offered in expensive equipment only. It is especially suitable for the small, moderately priced home. Also, for offices and stores. The heater takes little floor space, and is attractive in appearance, being completely enclosed in a Bryant Blue Crackle Finished Jacket.

The compact, fully enclosed design permits installation in the basement, attic, or main floor.

STANDARD EQUIPMENT

Bryant Combination Snap Valve and Pressure Regulator

Series 10 Solenoid Valve and Transformer

Bryant Combination Thermo Pilot

Fan Control

Warm Air Limit Control

All cast iron Heating Element with Streamlined, Staggered Cast Iron Heat Exchanger Tubes

Cast Iron Burner Heads with Raised Drilled Ports

Centrifugal Blower Type Fan

Rubber Mounted Fan Motor, with Built-in Motor Overload Protector

Adjustable Motor Pulley and Belt Drive

Bryant Blue Crackle Finished Jacket

Large Removable Doors for access to control Chamber and Fan Assembly

Draft Hood

Labeled Gate Valve

Pilot Cock with Screw Adjustment

Provision for installation of Filters and Automatic Humidifier

Standard Equipment does not include Thermostat, Air Filters or Humidifier, but these are available as optional equipment.

OPERATION AND CONSTRUCTION

Air is drawn into the heater through the filters by the large capacity fan and conducted through the castiron heating section. Moisture is added in passing over the heated, cast-iron evaporating pan. (Filters and humidifier are optional equipment.) The abundant supply of properly conditioned air is then delivered to the distribution system and the conditioned space.

The beautiful Bryant-blue crackle-finished jacket completely encloses the unit and is constructed of durable heavy gauge steel. The all cast iron heating section, with exclusive staggered streamlined tubes presenting minimum air resistance and maximum heat transfer surface, produces high operating efficiency. The quiet 12-inch low-speed blower provides full rates air delivery against the average duct resistance encountered. Fan and motor are mounted on heavy rubber insulators which absorb mechanical vibration. All parts are readily accessible for convenient inspection and service.

CONTROLS

The room thermostat controls the burner operation by actuating the Bryant gas diaphragm valve. The valve will not open unless the thermostatic safety pilot is burning.

The fan operation is automatically regulated by the fan control, its operation dependent on the outlet air temperature, thus preventing delivery of cold air during starting periods.

A warm air high-limit control is provided to prevent any possibility of overheating the unit. If the outlet air temperature exceeds the setting of this control, the gas flow is automatically cut off until the temperature returns to normal.

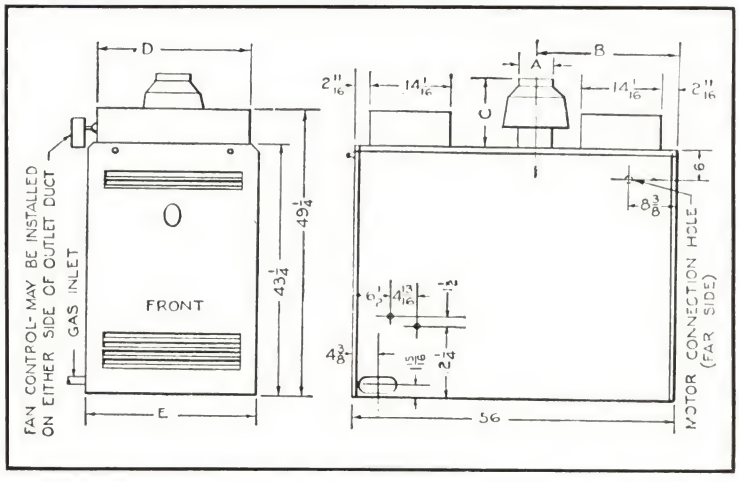
RATINGS

Model Number	A.G.A. Ratings		Air Delivery* Cu. Ft./Min.	Motor H.P.	Approx. Wt.	
	Input B.t.u./Hr.	Output at Bonnet B.t.u./Hr.			Net	Ship
85-BA-88	85,000	68,000	850	¼	570 lbs.	680 lbs.
100-BA-88	100,000	80,000	1000	¼	655 lbs.	790 lbs.
125-BA-88	125,000	100,000	1250	¼	730 lbs.	860 lbs.
170-BA-88	170,000	136,000	1700	½	1025 lbs.	1200 lbs.

*An adjustable motor pulley is provided to obtain rated air delivery against the normal range of duct resistances.

DIMENSIONS

Model No.	A	B	C	D	E
85	5	27½	11¾	26⅛	29½
100	6	27½	13	26⅛	29½
125	6	27½	13	26⅛	29½
170	5 (Two)	27½	11¾	55⅜	59⅛



The Bryant MODEL VB-8 VERTICAL FORCED AIR HEATER

GENERAL DESCRIPTION

The Bryant Model VB-8 Vertical Forced Air Heater is an efficient, all cast iron heating unit usually installed directly in the heated space. Low in price, it is specially suitable for small homes and apartments, offices, stores and similar applications where floor space is at a premium. It is completely automatic.

It is approximately 2 feet square and 6 feet high and is encased in a beautiful Bryant Blue Crackle Finished Jacket.

APPLICATIONS

The compact, fully enclosed design permits a wide variety of applications. The heater may be installed in a closet, kitchen or hallway on the main floor, in the attic wherever space is available.

Apartment House Installations—Ideal for individual suite installations, the unit may be located in a small closet, using a minimum of concealed duct work.

Basement Installation—The usual warm air delivery and cold air return ducts are required. Because of its forced air delivery system, the unit need not be centrally located as required with gravity heating plants.

Main Floor Installations—Warm air is discharged either into ceiling duct system or directly into the heated space through a 90° elbow and grille installed at the outlet connection. Return air is drawn into the heater at floor level, insuring good circulation and elimination of cold floors. The large capacity blower fan permits the use of small rectangular supply and return ducts, concealed in the ceiling and floor, and insures rated air delivery over a wide range of duct resistances.

Attic Installations—Warm air is delivered through ceiling registers and return air is drawn into ducts originating at the floor level.

STANDARD TRIM

Bryant Combination Snap Valve and Pressure Regulator
Cast Iron Burner Heads with Raised Drilled Ports
Bryant Combination Thermo Pilot
Series 10 Solenoid Valve and Transformer
Centrifugal Blower Type Fan
Rubber Mounted Fan Motor, Adjustable Pulley
Bryant Blue Crackle Jacket
Fan Control
Built-in Motor Overload Protector
High Limit Control
Draft Hood
Labeled Gate Valve
Removable Doors for Access to Control Chamber and Fan Assembly
All Cast Iron Heating Element with Streamlined, Staggered Cast Iron Heat Exchanger Tubes

OPERATION

Air enters the heater from the return duct at the bottom; is forced up by the powerful blower; is guided by baffles through and around the cast iron heat exchanger tubes which heat it to a high point; and is discharged through the warm air duct at the top.

Heating Element—The burner heads and entire heat exchanger are of double cast iron. The cast iron heat transfer tubes are streamlined and staggered to minimize resistance to air flow and provide intimate contact and effective wiping action of the air stream over the full area of each tube. This results in high operating efficiency and large volume air delivery.

Blower—The fan discharge is in a vertical position. Rubber insulating pads separate it and the ¼ H.P. motor from the unit and absorb mechanical vibration. The large fan wheel operates at relatively low speed, insuring quiet operation. The adjustable motor pulley and belt drive permit regulation of fan speed to deliver the rated air volume.

CONTROLS

The burner operation can be controlled by means of a room thermostat. When this thermostat calls for heat, the solenoid valve opens the main gas supply valve and the burner is lighted by a thermostatic pilot. Not until the air is heated sufficiently to actuate the fan control in the bonnet does the blower operate. This prevents delivery of cold air during starting periods. A high limit control is provided to prevent overheating the unit should the fan motor fail to operate.

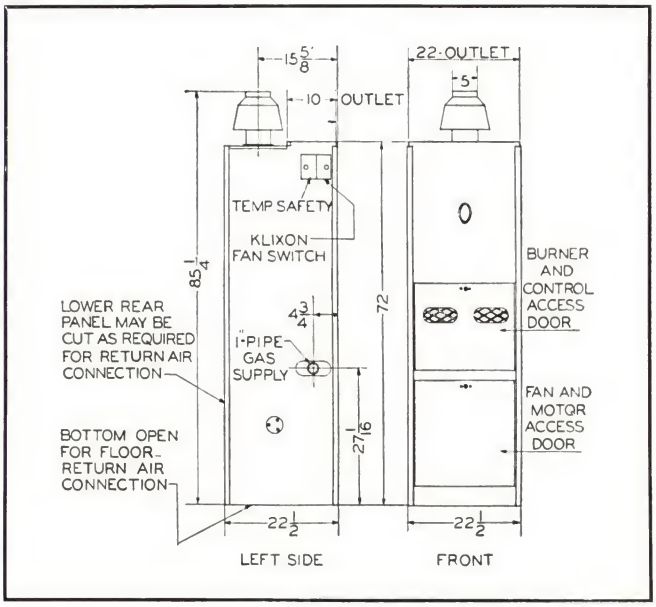
The gas supply valve is a combination snap valve and gas pressure regulator. It employs a single leather diaphragm as both a snap valve and regulator diaphragm. The regulator is the dead weight type, maintaining a constant manifold pressure. The solenoid valve cannot be energized to open the main gas supply valve unless the safety pilot is burning.



Cutaway View of Model VB-8

RATINGS

A.G.A. Rating—B.t.u./Hr. Input	A.G.A. Rating—B.t.u./Hr. Output	Air Delivery Cu. Ft. Per Min.	Motor H.P.	Approx. Wt. Net	Approx. Wt. Ship.
75,000	60,000	700	One ¼	505 Lbs.	610 Lbs.



The Bryant GAS FIRED UNIT HEATERS MODEL 85 AND 85C

DOUBLE UNIT



SINGLE UNIT

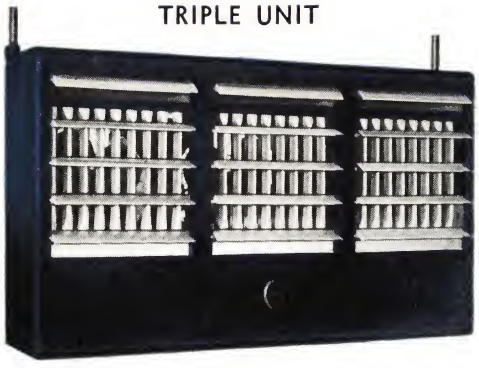


Rear View



Front View

TRIPLE UNIT



GENERAL DESCRIPTION

Bryant Unit Heaters are ductless, warm air heaters for offices, stores, factories and other commercial and industrial applications. These heaters are suspended from the ceiling, requiring no floor space. They are made in two models, identical in outward appearance, size, and ratings:

MODEL 85—Units have heavy gauge, sheet steel combustion chambers and flue collectors and steel heat exchanger tubes.

MODEL 85-C—Units have cast iron combustion chambers and flue collectors and chromium steel alloy heat exchanger tubes.

TWO TYPES—Each model is available in either of two types: *Type "A"* is standard for normal installations. *Type "AG"*, or *"Garage Type"*, designed for public garages and airplane hangars, is provided with fine mesh burner doors.

APPROVED—Both models and types are approved by the American Gas Association and by the Underwriters' Laboratories. Bryant *Type "A"* units are designated by the underwriters as *Style "B"*, and *Type "AG"* as *Style "BH"*.

APPEARANCE—These heaters are enclosed in a durable steel jacket finished in beautiful Bryant Blue. Motor supports and fan guard in the rear are cadmium plated.

SUSPENSION—The draft hood is built-in and the flue outlet is in the rear. This permits mounting the unit close to the ceiling and eliminates unsightly draft hood connections. The hanger supports are properly placed, with relation to weight distribution, to insure perfect vertical alignment of the unit. Refinements in appearance make the Bryant Unit Heater entirely acceptable and unobtrusive in any interior setting.

SIZES—Bryant Unit Heaters are made in three sizes: *Single*, *Double* and *Triple*. The *Double* and *Triple* units are essentially multiples of the *Single* unit assembled in tandem. Large air capacity and resultant even temperatures are important advantages. Ratings and capacities are listed below.

SPECIFICATIONS FOR STANDARD EQUIPMENT

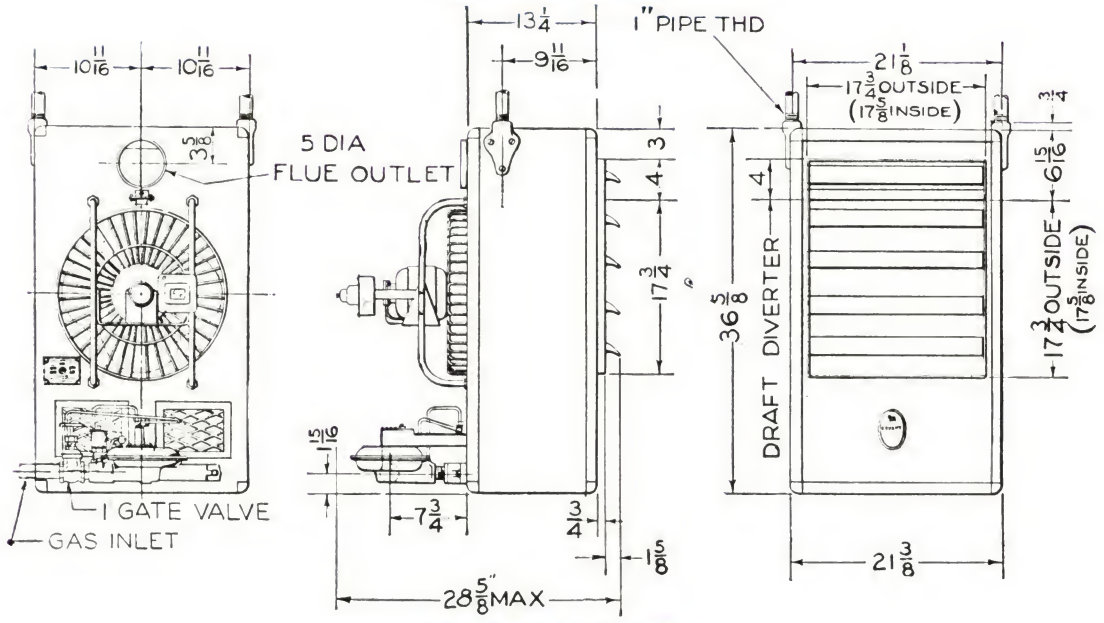
Bryant Combination Gas-actuated Diaphragm Snap Valve and Gas Pressure Regulator
Labeled Gate Valve
Built-in Draft Diverter
Rear Flue Outlet
Adjustable Horizontal or Vertical Louvres (Interchangeable)
Series 10 Solenoid Valve and Transformer
Safety Limit Control
Bryant Thermostatic Pilot
Cast Iron Burner Heads with Raised Drilled Ports
Removable Burner Doors
Pilot Cock—with Screw Adjustment
Fixed Burner Orifices
Totally Enclosed Motor—Built-in Sequence Control on Number 2 and 3 Units
Four-blade Scientifically Designed Quiet Fan—Individual Fan and Motor for each Heating Unit
Bryant Blue Crackle Finished Jacket
Steel Streamlined Heat Exchanger Tubes and Heating Unit—Model 85
Chromium Steel Alloy Streamlined Heat Exchanger Tubes and Cast Iron Combustion Chamber and Flue Collector—Model 85-C
Gate Valve

RATINGS AND CAPACITIES

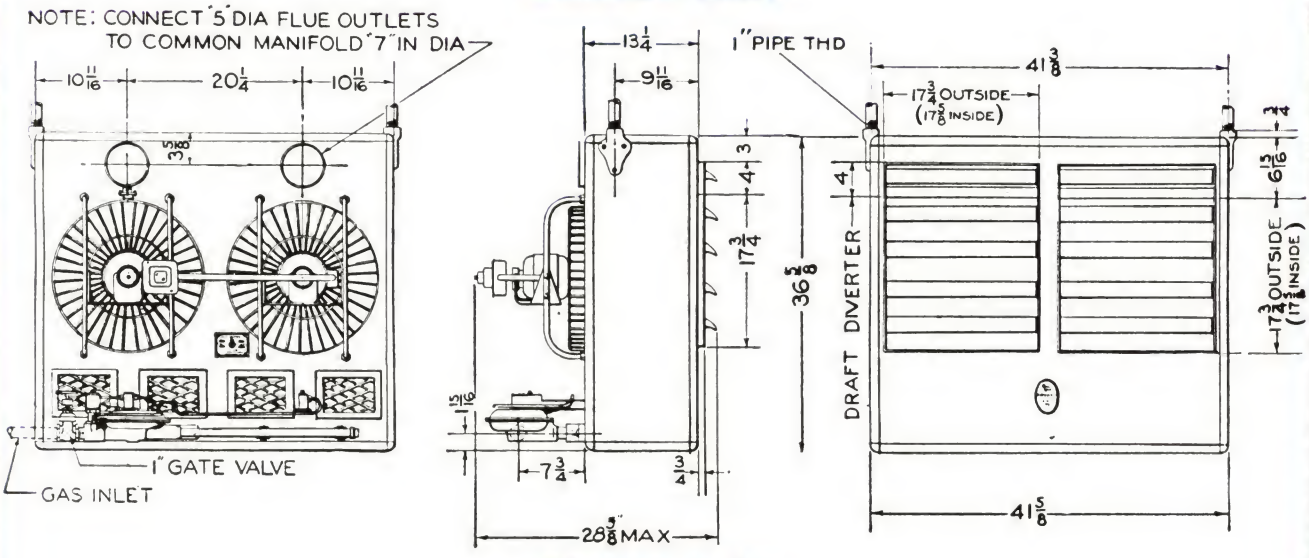
Model Number	A.G.A. Input	Vented Output Rating*		Air Delivery C.F.M.	Fan R.P.M.	Motor H.P.	Weight, Lbs.	
	B.t.u./hr.	B.t.u./hr.	Equivalent Sq. Ft. Steam Rad.				Net	Shipping
1-A-85 1-A-85C	85,000	70,550	294	1300	1140	One-1/20	200 245	240 285
2-A-85 2-A-85C	170,000	141,100	588	2600	1140	Two-1/20	360 450	435 525
3-A-85 3-A-85C	255,000	211,650	882	3900	1140	Three-1/20	500 675	600 775

NOTE: Manufacturer's output rating based on capacity of vented unit heater located in space being heated.

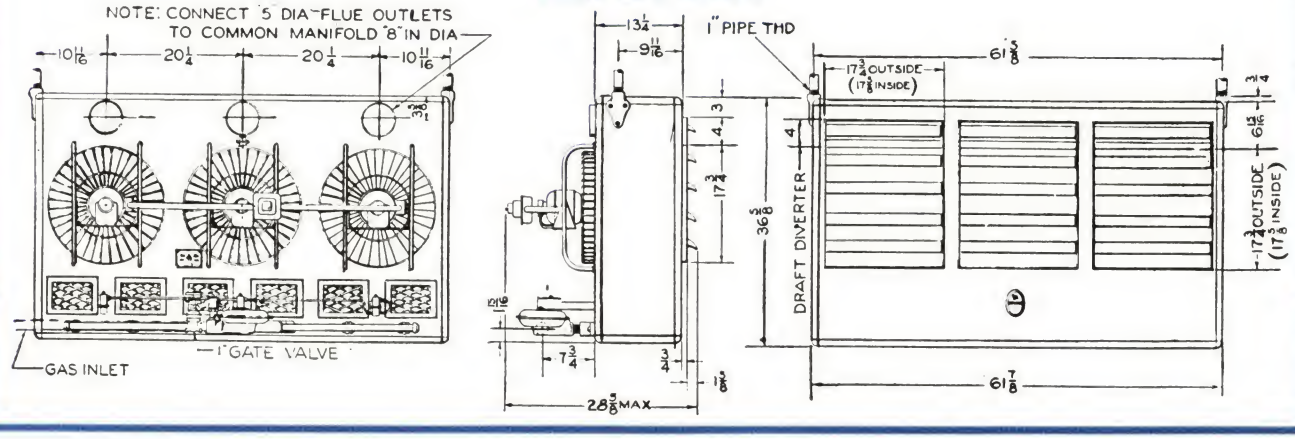
SINGLE UNIT



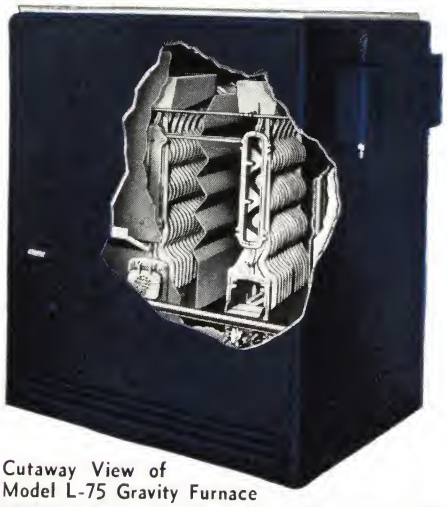
DOUBLE UNIT



TRIPLE UNIT



The Bryant MODEL L-75 GRAVITY FURNACE



Cutaway View of
Model L-75 Gravity Furnace

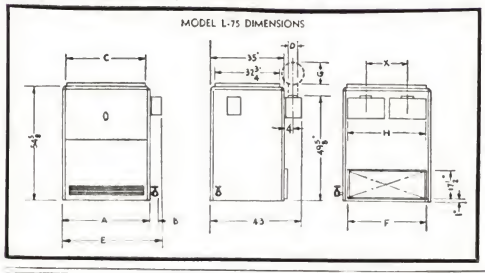
The Bryant Model L-75 is available in six sizes for gravity warm air heating systems, the multiple-unit design of individual sections and burners permitting the selection of the correct size for each installation. The correct spacing of the sections provides even heat distribution and positive air circulation.

The patented Bryant controls are gas actuated—simple, trouble-free, and positive acting. The jacket of Bryant blue crackle finish completely encloses the controls, and the draft diverter is built into the jacket as an integral part . . . presenting an exterior of unusual appeal.

Large capacity cast-iron evaporating pans, located at the top of each section and controlled by an automatic float valve, provide proper humidification at all times.

COMPLETELY FITTED WITH

Bryant Blue Crackle Finished Cover
Built-in Draft Diverter
Gas Operated Limit Control
Bryant Thermostatic Pilot Control
Bryant Escapement Burner
Bryant Gas Pressure Regulator
Bryant Snap Valve
Series 10 Solenoid Valve and Transformer
Labeled Gate Valve
No. T 11-1 Room Thermostat
Automatic Humidifier
Cast Iron Evaporating Pans
Adjustable Float Tank
Copper Water Supply and Drain Tubing

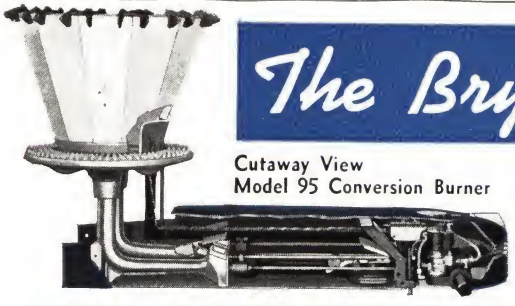


RATINGS

Furnace Number	A.G.A. Rating		Maximum Leader Area, Sq. In.		Approx. Shipping Weights
	B.t.u. Input	B.t.u. Output	Two Floor Plan Based on 137 B.t.u. per sq in.	One Floor Plan Based on 111 B.t.u. per sq. in.	
2-L-75	88,000	66,000	481	594	800
3-L-75	132,000	99,000	722	892	1100
4-L-75	176,000	132,000	963	1189	1450
5-L-75	220,000	165,000	1203	1487	1750
6-L-75	264,000	198,000	1445	1783	2050
7-L-75	308,000	231,000	1686	2081	2350

DIMENSIONS

Size	A	B	C	D	E	F	H	X	Trim and Manifold Size	Flue to Chimney G
2-L-75	32¼"	5"	30"	5"	38⅛"	28"	28⅛"	....	1"	....
3-L-75	47¼"	5"	45"	6"	53⅛"	43"	43⅛"	....	1"	....
4-L-75	62¼"	5"	60"	2-5"	68⅛"	58"	58⅛"	30"	1¼"	7"
5-L-75	77¼"	5"	75"	1-5" / 1-6"	83⅛"	73"	73⅛"	37½"	1¼"	8"
6-L-75	92¼"	5"	90"	2-6"	98⅛"	88"	88⅛"	45"	1¼"	8"
7-L-75	107¼"	5"	105"	1-6" / 2-5"	113⅛"	103"	103⅛"	30" / 37½"	1¼"	9"



Cutaway View
Model 95 Conversion Burner

The Bryant MODEL 95 CONVERSION BURNER

The Bryant Model 95 Conversion Burner will convert any coal furnace or boiler into a modern, fully automatic gas heating plant. All controls are completely enclosed. The Push Button Pilot Lighter is one of many exclusive features.

STANDARD BURNER EQUIPMENT

High Limit Control—One of following as specified on order: Bryant Steam Limit Control; Bryant Warm Air Limit Control; Bryant Hot Water Limit Control (Surface Type).

Bryant Combination Snap Valve and Gas Pressure Regulator; Bryant Blue Crackle Cover with Chromium Trim enclosing all Controls; Bryant Thermo Pilot with Compensated Element; Outside Push Button Pilot Lighter complete with wiring; Automatic Dual Air Door; Adjustable Front Supporting Legs; Manifold and Piping; Adjustable Burner Orifices; Cast Iron Burner Heads with Raised Drilled Ports.

Cast Iron Machined Burner Tubes with Primary Air Shutters

Cast Iron Baffle Bowl Containing Pilot Protecting Housing—Type "R" Burner

Self-supporting Radiant Baffles and Cast Iron Clips—Type "R" Burner

Series 10 Solenoid Valve with Manual Control Knob and Automatic Recycling Feature

No. T 11-A Heat Accelerated Room Thermostat and Transformer

NOTICE: Select burner to fit fire box at grate level and adjust input to meet installation requirements.

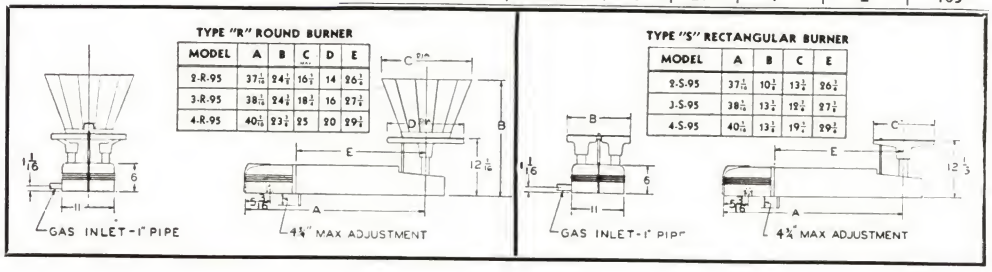
RATINGS

TYPE "R" ROUND BURNER

Burner Number	Rating B.t.u./Hr. Input		Minimum Firebox Diameter	Control Size	No. of Heads and Tubes	Approx. Shipping Wt., Lbs.
	Maximum	Minimum				
2-R-95	150,000	60,000	15"	1"	1	110
3-R-95	200,000	90,000	17"	1"	2	125
4-R-95	300,000	125,000	21"	1"	2	155

TYPE "S" RECTANGULAR BURNER

			Width	Length			
2-S-95	150,000	60,000	12"	15"	1"	1	80
3-S-95	200,000	90,000	15"	14"	1"	2	90
4-S-95	300,000	125,000	15"	21"	1"	2	105



The Bryant GAS HEATING CONTROLS

Bryant controls are engineered exclusively for gas. Designed by Bryant Gas Combustion Engineers, they stand as a pioneering achievement. These controls represent the solutions to the problems of automatic gas control and substantiate the claims that gas is the one best fuel for automatic heating.

They are attractive in appearance, employ compactness and simplicity of construction. They are easy to install, adjust and service. Gas combustion is controlled accurately and efficiently in every type of heating system. They provide greater freedom from attention and temperature fluctuation. They are reliable, safe, and fool-proof in operation.

Rigidly inspected and tested at the factory, manufactured with the American Gas Association seal of approval, they bring to the user the best in Gas Heating Controls.

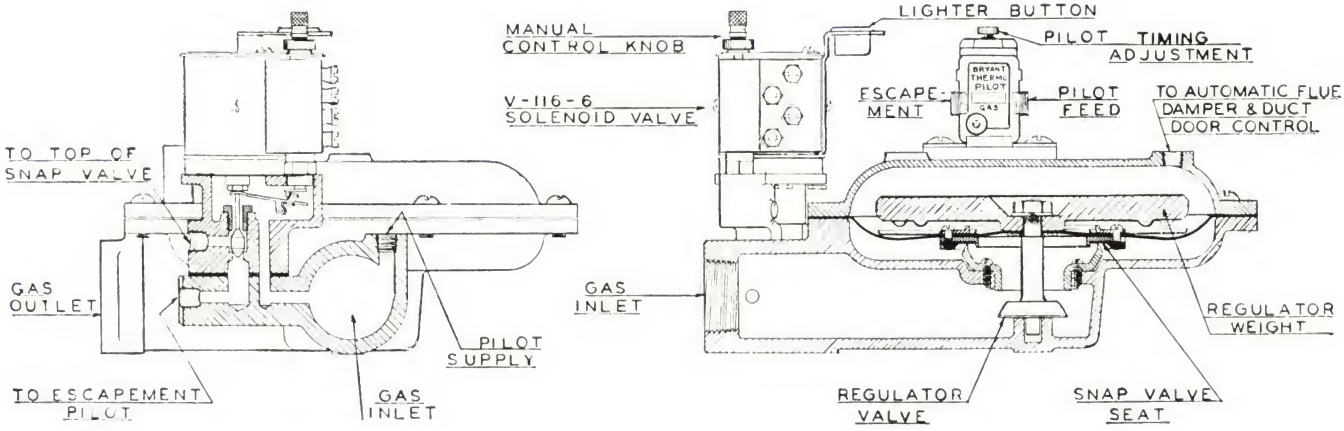


Snap Value and Pressure Regulator
(Basic Control)

SNAP VALVE AND PRESSURE REGULATOR

Illustrated above is the master control valve of the Bryant control system. This combination snap valve and gas pressure regulator performs two functions: regulation of gas pressure and control of gas flow to the burners. It operates on the time tested Bryant gas-actuated principle whereby the energy of the gas is utilized to open the valve and the unfailing force of gravity to close it. Should any control in the system cease to function, the master control valve will shut off the gas. The only moving part is the leather diaphragm. The burner ignition is positive and prompt, due to the momentary increased pilot flame and by full line pressure only at the time of lighting. The room thermostat actuates this control through the solenoid valve. All Bryant controls function around this basic valve.

BASIC CONTROL VALVE



THROTTLING CONTROLS

Bryant Throttling Type Controls, in addition to the basic functions of snap valve operation and automatic gas pressure regulation, provide close throttling of gas input in accordance with heat demand.

THE STEAM THROTTLING CONTROL is used on steam boilers to maintain a constant predetermined pressure by throttling the flow of gas to the burners when the steam reaches the desired pressure. Incorporated in this control is a high limit cut-out to shut off the gas flow should the pressure rise due to very low steam demand.

THE VAPOR THROTTLING CONTROL is used on boilers for vapor systems to maintain a constant predetermined pressure by throttling the flow of gas to the burners when the pressure tends to exceed the desired amount. Incorporated in this control is a high limit cut-out to shut off the gas flow should the pressure rise at very low steam demand.

THE WATER AND WARM AIR THROTTLING CONTROL is used to maintain a constant predetermined water or warm air outlet temperature by throttling the flow of gas to the burners when the air or water reaches the desired temperature. Incorporated in this control is a high limit cut-out to shut off the flow of gas should the temperature continue to rise.

LIMITING CONTROLS

THE LOW-WATER CUT-OFF is a safety control used on steam and vapor boilers to shut off the flow of gas to the burners when the water in the boiler reaches a predetermined low level.

THE STEAM PRESSURE LIMIT CONTROL is used on steam boilers and with conversion burners to shut off flow of gas under excessive steam pressures.

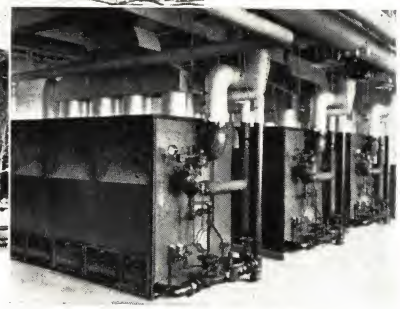
THE TEMPERATURE LIMIT CONTROL is used on water boilers, conversion burners and winter air conditioners to shut off the flow of gas to the burners when the temperature exceeds a predetermined setting.

THERMOSTATIC PILOT

The pilot assures positive lighting of the gas burners. Provided with a heat actuated element, which cools if pilot goes out and automatically shuts off gas supply to the burners.



This Apartment Heated with 151 Individual Bryant Units



Bryant "Heavy Duty" Boilers



Restaurant Air Conditioned with Bryant Equipment



Telephone Building, Heated by Bryant



Another Bryant Equipped Home



THIRTY YEARS OF EXPERIENCE IN HEATING THOUSANDS OF BUILDINGS PROVES BRYANT ENGINEERING AND EQUIPMENT

Bryant is the pioneer in gas heating equipment. Its products are used for heating buildings of all types, in every section of the country. Residences, schools, hospitals, churches, public buildings, factories, hotels, and other structures, regardless of size, find Bryant heating convenient, dependable and economical.

For complete heating satisfaction . . . let the Bryant Pup be the furnace man . . . and weather man, too.

THE BRYANT HEATER CO.
CLEVELAND • OHIO

The BURNHAM Complete Line

of

Heating

Equipment

and

Accessories



Burnham Boiler Corporation

IRVINGTON, NEW YORK

BURNHAM

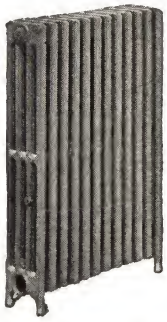
UNIT SYSTEM OF WINTER AIR CONDITIONING

EFFICIENT • FLEXIBLE • INEXPENSIVE

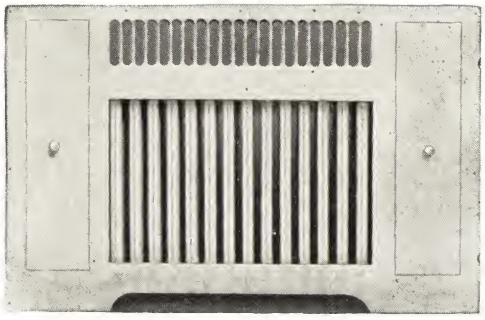
THE UNITS OF THE SYSTEM



Unit Air Conditioner



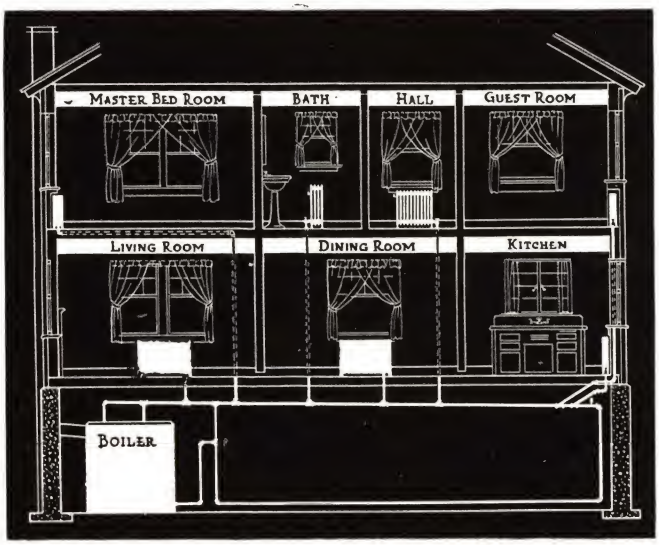
Slenderized Radiators



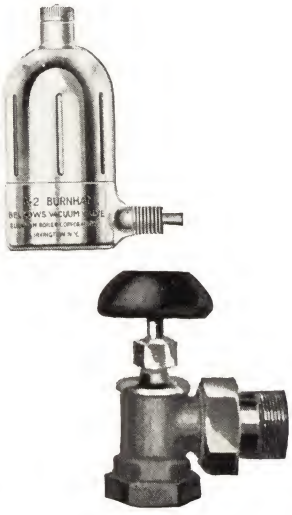
Panel Front Recess Type Slenderized Radiator



Burnham Built-In Oil Burning Boiler



Showing the Simplicity of the Burnham Unit-Air Conditioning System of Heating



Radiator and Vacuum Valves

What Constitutes a Burnham Unit System of Winter Air Conditioning

THE BOILER UNIT

- Coal Burning Hand or Stoker Fired
- Oil Burning
- Conversion—Oil or Coal
- Gas Burning

HOT WATER SUPPLY

- Biltin Taco Heater (Oil Boilers)
- Domestic Hot Water Supply Boiler
- Burnham-Taco Tank

HEAT DISTRIBUTING UNITS

- Air Conditioner, Filtering, Humidifying, Heating and Circulating Conditioned Air under Thermostatic Control
- Burnham Slenderized Radiators 40% Faster Heat—40% Less Space
- Burnham Enclosed Slenderized Radiators
- Burnham Electric Auxiliary Radiators
- Burnham Venting and Radiator Valves

Advantages of the Burnham Unit System

IN THE BUILDING

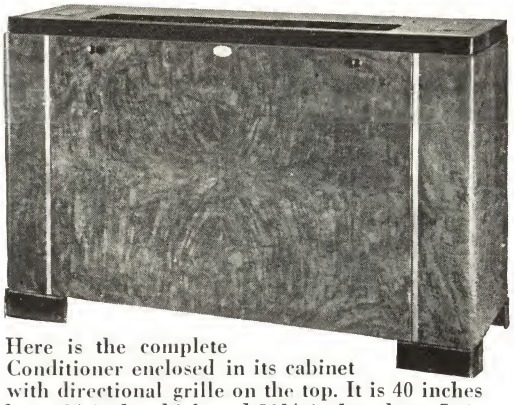
- No Ducts Required—No Tinsmithing
- No Special Framing of Floors or Partitions
- No Floor or Baseboard Registers
- Air Conditioners, Freestanding, Partly Recessed or Completely Recessed
- Slenderized Radiators Require Less Space or can be Recessed
- Requires only Space for the Boiler in the Basement

TO THE OWNER

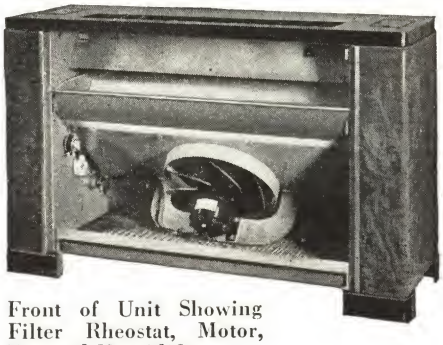
- No Floor Drafts
- Air or Odors Not Circulated Through the House
- Air Filtered, Humidified, Heated and Circulated in Rooms Requiring It
- Air Never Overheated
- Direction of Wind No Problem
- Any Room May Be Isolated In Case of Sickness Without Affecting System
- Individual Room Control

BURNHAM UNIT AIR CONDITIONER

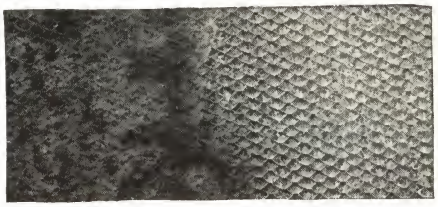
For Winter Air Conditioning And For Circulating Air In Summer



Here is the complete Conditioner enclosed in its cabinet with directional grille on the top. It is 40 inches long, 24 inches high and 13½ inches deep. It is connected to a steam vapor or hot water system the same as any radiator. Can be used on old or new installations.



Front of Unit Showing Filter Rheostat, Motor, Fan and Humidifier.



This shows the double spun glass filter after 3 months use. Half was cleaned off to show how effectually it cleans the air. Glass is oil-impregnated. Catches the finest of dust particles, even to the pollens so trying to asthma and hay fever victims.

This Unit Air Conditioner is a room type unit which is used in conjunction with any old or new type of radiator heat—Steam, Vapor or Hot Water.

No ducts, registers, big blowers or tinsmithing is required.

The performance of each unit is completely under thermostatic control.

The complete unit consists of an unusually handsome cabinet, heating element, humidifier with hand or automatic valve and overflow, filter, rheostat, fan, motor and thermostat.

Cabinet

40" long, 24" high and 13½" wide finished in Burled Walnut body with black top and legs, trimmed with satin finish stainless steel moulding. Cabinet encloses all piping and fittings. Special grill in top directs heat away from walls and draperies. Two invisible doors in top permit access to all controls within cabinet.

Heating Element

Heating element is of the finned type with a capacity of eighty (80) square feet, tapped both ends 1¼". Can be used with one or two pipe systems.

Humidifier

Humidifier is of the evaporator type, and includes the humidifier pan, hand valve and overflow. Evaporation capacity varies from 6 to 10 gallons per day. Automatic humidifier controls can be furnished at additional cost.

Filter

Filters are spun glass impregnated with an odorless oil which will clean the air of approximately 96% of dirt, dust, germs and pollen. They are of the inexpensive throw-away type and under average conditions should last one heating season. They are easily replaced by removing front panel of cabinet.

Rheostat

Rheostat controls speed of fan and capacity of heating element. At maximum speed, (900 R.P.M.) fan develops approximately four hundred (400) cubic feet of air per minute and heating element forty (40) square feet capacity.

At slowest speed (400 R.P.M.) fan develops one hundred fifty (150) cubic feet of air per minute and heating element forty (40) square feet capacity.

Any speed and capacity between maximum and minimum may be obtained by adjustment of Rheostat.

Fan

Fan is special design of multiple blades and dynamically balanced for noiseless operation. For Fan capacity, refer to information under "Rheostat."

Motor

Motor is of the shaded pole type and with occasional oiling (once per heating season) will last indefinitely. Although it is substantial in size and ruggedly built, it consumes only sixty-three (63) watts at top speed, nine hundred (900) R.P.M. and twenty-seven (27) watts at low speed, four hundred (400) R.P.M. Its horsepower rating is only 1/100th.

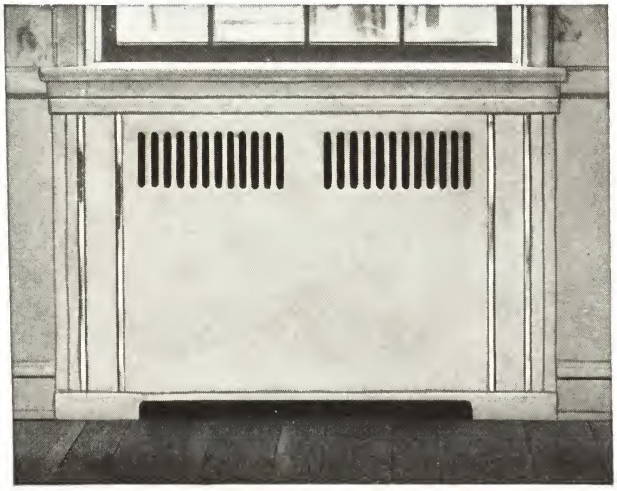
Can be furnished in 110 V. 60 cycle A.C., 120 V. 40 and 25 cycle A.C., and 115-120 V. D.C.

Thermostat

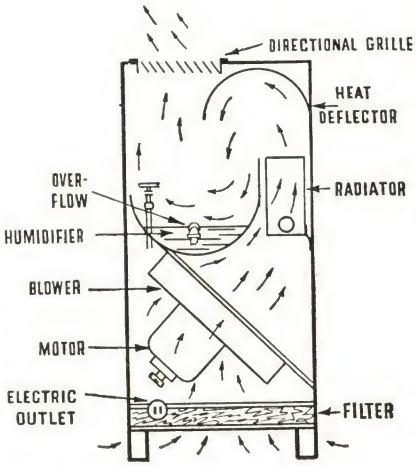
Thermostat is furnished complete with summer-winter switch. It is hooked up direct to the fan. When desired room temperature is reached the Thermostat stops the fan and no more heat is developed from heating element.

By throwing switch over to summer side. Thermostat controls temperature by circulation of room air only.

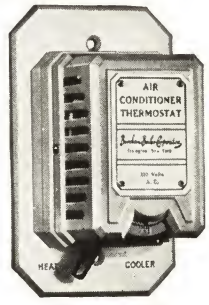
When desired, the unit can be either partially or entirely recessed with a special front panel.



Front for enclosing Built-in Conditioner



This diagramatic sketch shows how the cold layer of air is picked up from the floor, filter cleaned, heated, humidified and then evenly distributed throughout the entire room.



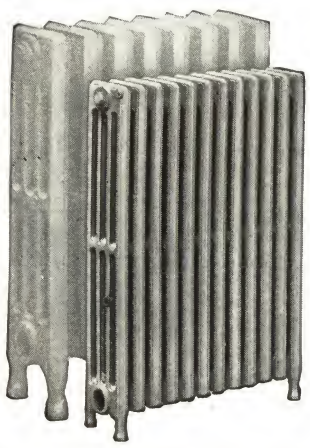
Thermostat

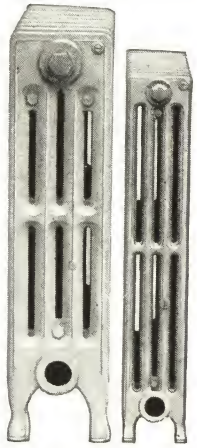
26
4

Require 40% Less Room — Heat 40% Quicker

The Slenderized Radiator being very narrow, a recess space can be made between the studding under the window, and the radiator set in it entirely out of the way. So good looking is this radiator, that it is being used extensively without any panel front or grille.

Because there is 40% less air to be pushed out for steam, and 40% less water to be moved for hot water, combined with the freer circulation of air between tubes and consequent increased contacting of the surfaces, heating is that much quicker.





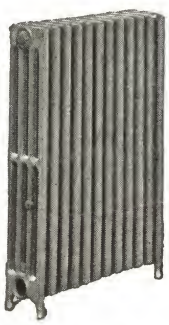
Compare the Size of the Old Type Radiator with the Burnham "Slenderized" Radiator — Both have the same capacity.

THREE-TUBE / FIVE-TUBE

Number of Sections	Length 1½ Ins. Per Section	19-inch Height — 1.1 Sq. Ft. Per Sec. — 0.733 Sq. Ft. Per Lineal In.	22-inch Height — 1.3 Sq. Ft. Per Sec. — 0.867 Sq. Ft. Per Lineal In.	25-inch Height — 1.5 Sq. Ft. Per Sec. — 1.000 Sq. Ft. Per Lineal In.	20-inch Height — 1.8 Sq. Ft. Per Sec. — 1.200 Sq. Ft. Per Lineal In.	23-inch Height — 2.1 Sq. Ft. Per Sec. — 1.400 Sq. Ft. Per Lineal In.	26-inch Height — 2.4 Sq. Ft. Per Sec. — 1.600 Sq. Ft. Per Lineal In.	32-inch Height — 3.0 Sq. Ft. Per Sec. — 2.000 Sq. Ft. Per Lineal In.
2	3	2.2	2.6	3	3.6	4.2	4.8	6
4	6	4.4	5.2	6	7.2	8.4	9.6	12
6	9	6.6	7.8	9	10.8	12.6	14.4	18
8	12	8.8	10.4	12	14.4	16.8	19.2	24
10	15	11.0	13.0	15	18.0	21.0	24.0	30
12	18	13.2	15.6	18	21.6	25.2	28.8	36
14	21	15.4	18.2	21	25.2	29.4	33.6	42
16	24	17.6	20.8	24	28.8	33.6	38.4	48
18	27	19.8	23.4	27	32.4	37.8	43.2	54
20	30	22.0	26.0	30	36.0	42.0	48.0	60
22	33	24.2	28.6	33	39.6	46.2	52.8	66
24	36	26.4	31.2	36	43.2	50.4	57.6	72
26	39	28.6	33.8	39	46.8	54.6	62.4	78
28	42	30.8	36.4	42	50.4	58.8	67.2	84
30	45	33.0	39.0	45	54.0	63.0	72.0	90
32	48	35.2	41.6	48	57.6	67.2	76.8	96
34	51	37.4	44.2	51	61.2	71.4	81.6	102
36	54	39.6	46.8	54	64.8	75.6	86.4	108
38	57	41.8	49.4	57	68.4	79.8	91.2	114
40	60	44.0	52.0	60	72.0	84.0	96.0	120
42	63	46.2	54.6	63	75.6	88.2	100.8	126
44	66	48.4	57.2	66	79.2	92.4	105.6	132
46	69	50.6	59.8	69	82.8	96.6	110.4	138
48	72	52.8	62.4	72	86.4	100.8	115.2	144
50	75	55.0	65.0	75	90.0	105.0	120.0	150



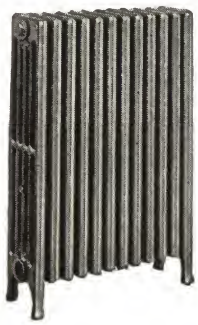
Three Tube
3¼" Wide



Four Tube
4 7/16" Wide

FOUR-TUBE / SIX-TUBE

Number of Sections	Length 1½ Ins. Per Section	19-inch Height — 1.4 Sq. Ft. Per Sec. — 0.933 Sq. Ft. Per Lineal In.	22-inch Height — 1.6 Sq. Ft. Per Sec. — 1.067 Sq. Ft. Per Lineal In.	25-inch Height — 1.8 Sq. Ft. Per Sec. — 1.200 Sq. Ft. Per Lineal In.	14-inch Height — 1.5 Sq. Ft. Per Sec. — 1 Sq. Ft. Per Lineal In.	17-inch Height — 1.8 Sq. Ft. Per Sec. — 1.2 Sq. Ft. Per Lineal In.	20-inch Height — 2.2 Sq. Ft. Per Sec. — 1.47 Sq. Ft. Per Lineal In.	26-inch Height — 2.9 Sq. Ft. Per Sec. — 1.93 Sq. Ft. Per Lineal In.
2	3	2.8	3.2	3.6	3.0	3.6	4.4	5.8
4	6	5.6	6.4	7.2	6.0	7.2	8.8	11.6
6	9	8.4	9.6	10.8	9.0	10.8	13.2	17.4
8	12	11.2	12.8	14.4	12.0	14.4	17.6	23.2
10	15	14.0	16.0	18.0	15.0	18.0	22.0	29.0
12	18	16.8	19.2	21.6	18.0	21.6	26.4	34.8
14	21	19.6	22.4	25.2	21.0	25.2	30.8	40.6
16	24	22.4	25.6	28.8	24.0	28.8	35.2	46.4
18	27	25.2	28.8	32.4	27.0	32.4	39.6	52.2
20	30	28.0	32.0	36.0	30.0	36.0	44.0	58.0
22	33	30.8	35.2	39.6	33.0	39.6	48.4	63.8
24	36	33.6	38.4	43.2	36.0	43.2	52.8	69.6
26	39	36.4	41.6	46.8	39.0	46.8	57.2	75.4
28	42	39.2	44.8	50.4	42.0	50.4	61.6	81.2
30	45	42.0	48.0	54.0	45.0	54.0	66.0	87.0
32	48	44.8	51.2	57.6	48.0	57.6	70.4	92.8
34	51	47.6	54.4	61.2	51.0	61.2	74.8	98.6
36	54	50.4	57.6	64.8	54.0	64.8	79.2	104.4
38	57	53.2	60.8	68.4	57.0	68.4	83.6	110.2
40	60	56.0	64.0	72.0	60.0	72.0	88.0	116.0
42	63	58.8	67.2	75.6	63.0	75.6	92.4	121.8
44	66	61.6	70.4	79.2	66.0	79.2	96.8	127.6
46	69	64.4	73.6	82.8	69.0	82.8	101.2	133.4
48	72	67.2	76.8	86.4	72.0	86.4	105.6	139.2
50	75	70.0	80.0	90.0	75.0	90.0	110.0	145.0



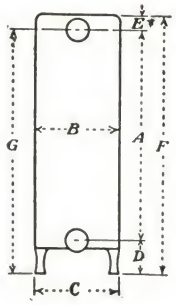
Five Tube
5 11/16" Wide



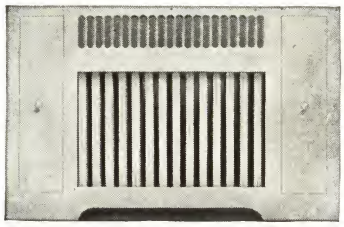
Six Tube
6 15/16" Wide

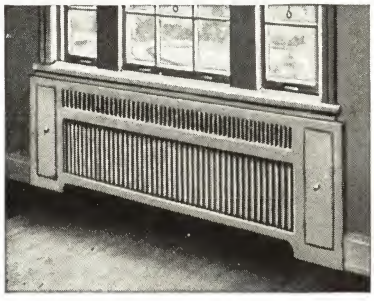
DIMENSIONS

Size	Dimensions, in inches A	B-C	D	E	F	G
26-6	21 7/16	6 15/16	3½	1 1/16	26	24 15/16
20-6	15 7/16	6 15/16	3½	1 1/16	20	18 15/16
17-6	12 7/16	6 15/16	3½	1 1/16	17	15 15/16
14-6	9 7/16	6 15/16	3½	1 1/16	14	12 15/16
32-5	27 7/16	5 11/16	3½	1 1/16	32	30 15/16
26-5	21 7/16	5 11/16	3½	1 1/16	26	24 15/16
23-5	18 7/16	5 11/16	3½	1 1/16	23	21 15/16
20-5	15 7/16	5 11/16	3½	1 1/16	20	18 15/16
25-4	21 7/16	4 7/16	2½	1 1/16	25	23 15/16
22-4	18 7/16	4 7/16	2½	1 1/16	22	20 15/16
19-4	15 7/16	4 7/16	2½	1 1/16	19	17 15/16
25-3	21 7/16	3¼	2½	1 1/16	25	23 15/16
22-3	18 7/16	3¼	2½	1 1/16	22	20 15/16
19-3	15 7/16	3¼	2½	1 1/16	19	17 15/16



BURNHAM PANEL FRONTS FOR RECESSED RADIATORS



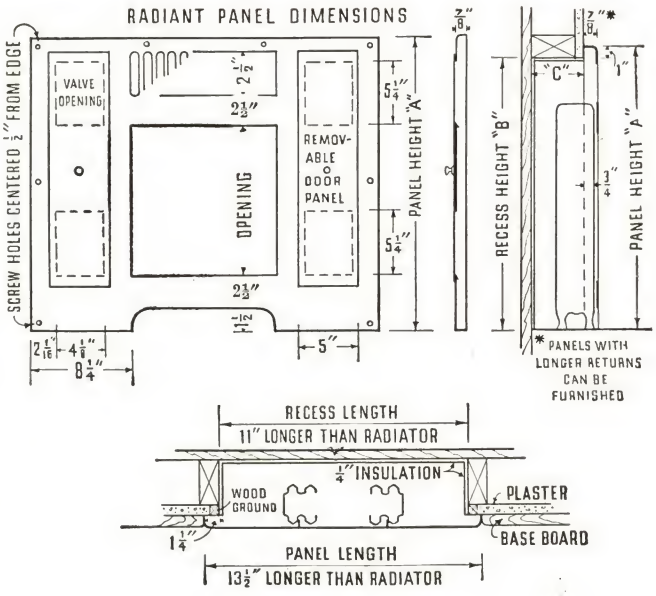


Panel Front

The Panel Front for the Recessed Slenderized Radiator screws directly on wall. Extends in room less than an inch. Removable panels on sides for reaching control valve. Main grille is formed by exposed radiator itself giving radiant heat. Top grille gives convected heat.

Radiators must be installed so that the front of radiator extends ¾" beyond plaster line.

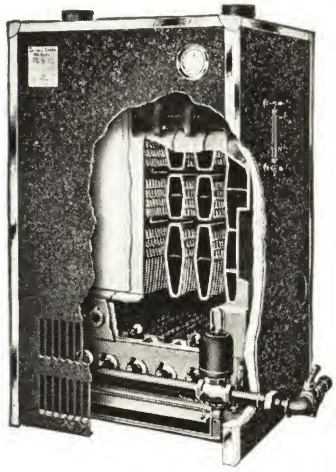
Radiators must be centered lengthwise in recess.



Radiator Height	"A" Panel Height	"B" Recess Height
19" or 20"	23¾"	22¾"
22" or 23"	26¾"	25¾"
25" or 26"	29¾"	28¾"

Radiator Width	"C" Recess Depth
3 Tube	3¼" Min.
4 Tube	4⅜" Min.
5 Tube	5⅝" Min.

BURNHAM SIMPLEX GAS BOILERS



JACKET — Rust-resisting steel, backed with thick improved air-cell insulation. Beautiful two-tone baked enamel finish. Jacket may be assembled after all piping has been installed and completely encloses all controls.

BURNHAM-SIMPLEX Gas Boilers may be installed in connection with the present radiators and piping. These boilers are constructed in accordance with the A. S. M. E. Code, and have been tested and approved under the recent and most rigid requirements of the American Gas Association Testing Laboratory.

BURNHAM-SIMPLEX Gas Boilers are equipped with dependable controls which supervise the operation of the heating plant with unfailing accuracy. A thermostatic pilot prevents the flow of gas to the burners unless the pilot is lighted. Steam pressure or water temperatures are always maintained within predetermined limits.

RATINGS

STEAM			WATER			STEAM AND WATER								
Steam Boiler No.	A.G.A. Steam Rating Sq. Ft.	Sq. Ft. Direct, C. I. Radn.	Water Boiler No.	A.G.A. Water Rating Sq. Ft.	Sq. Ft. Direct C. I. Radn.	Output B.T.U.	Boiler H. P.	Gas Consumption Cu. Ft. per Hour		Dimensions			Water Line Inches	No. and Size Sup. and Ret. Tappings
								500 B.T.U. Gas	1000 B.T.U. Gas	Hgt. Ins.	W. Ins.	D. Ins.		
2-SS	290	185	2-SW	470	300	70,000	2.1	175	87	55	15¼	36	40½	2-4"
3-SS	550	355	3-SW	880	575	132,000	3.9	330	165	55	19¾	36	40½	2-4"
4-SS	770	500	4-SW	1230	815	184,000	5.5	460	230	55	24½	36	40½	2-4"
5-SS	1000	660	5-SW	1600	1085	240,000	7.2	600	300	55	29	36	40½	2-4"
6-SS	1250	830	6-SW	2000	1380	300,000	9.0	750	375	55	33½	36	40½	2-4"
7-SS	1500	1010	7-SW	2400	1670	360,000	10.7	900	450	55	38	36	40½	2-4"
8-SS	1750	1190	8-SW	2800	1960	420,000	12.5	1050	525	55	42¾	36	40½	2-4"
9-SS	2020	1390	9-SW	3230	2280	484,000	14.5	1210	605	55	49¾	36	40½	2-4"
10-SS	2250	1560	10-SW	3600	2555	540,000	16.1	1350	675	55	54¼	36	40½	2-4"
11-SS	2500	1740	11-SW	4000	2860	600,000	17.9	1500	750	55	58¾	36	40½	3-4"
12-SS	2750	1885	12-SW	4400	3145	660,000	19.7	1650	825	55	63½	36	40½	3-4"
13-SS	3000	2110	13-SW	4800	3430	720,000	21.5	1800	900	55	68	36	40½	3-4"
14-SS	3250	2290	14-SW	5200	3715	780,000	23.3	1950	975	55	72½	36	40½	3-4"
15-SS	3520	2490	15-SW	5630	4020	844,000	25.2	2110	1055	55	79½	36	40½	3-4"
16-SS	3750	2665	16-SW	6000	4290	900,000	26.9	2250	1125	55	84⅛	36	40½	3-4"
17-SS	4000	2860	17-SW	6400	4575	960,000	28.7	2400	1200	55	88¾	36	40½	3-4"
18-SS	4250	3040	18-SW	6800	4860	1,020,000	30.4	2550	1275	55	93¼	36	40½	4-4"
20-SS	4770	3405	20-SW	7630	5450	1,144,000	34.1	2860	1430	55	105	36	40½	4-4"
22-SS	5250	3750	22-SW	8400	6000	1,260,000	37.6	3150	1575	55	114	36	40½	4-4"

BURNHAM OIL BURNING CAST IRON BOILER

Designed Exclusively for Use with Oil—Summer-Winter Hot Water

26
4

Capacities: Steam 725-1350 Sq. Ft. — Water 1160-2160 Sq. Ft.

FOR USE WITH ANY GOOD GUN TYPE OIL BURNER

DESIGN

This highly efficient jacketed boiler is designed especially for securing greatest economy with oil fuel, and is not limited to use of any particular oil burner.

Equipped for all-year-around hot water supply with provision made for six automatic controls insuring positive action and safety.

CONSTRUCTION

Cast iron square sectional, encased in heavy gauge steel jacket, attractively finished in two tone grey. Jacket of boiler is heavily insulated against heat and sound. Everything is built-in. Controls are in burner division, reached through door at back. Refractory furnished with boiler, also water heater, low water cut-off and draft adjuster.

The combustion chamber is lined with a special refractory, or fire-resisting material. Once it is hot, it holds the heat for an unbelievably long time. This is of great importance in causing the oil spray to at once vaporize the instant the burner starts. Insures perfect combustion and freedom from soot or smoke. It is the old principle of the warm engine of your car starting easily and developing full power quickly.

EQUIPMENT FURNISHED

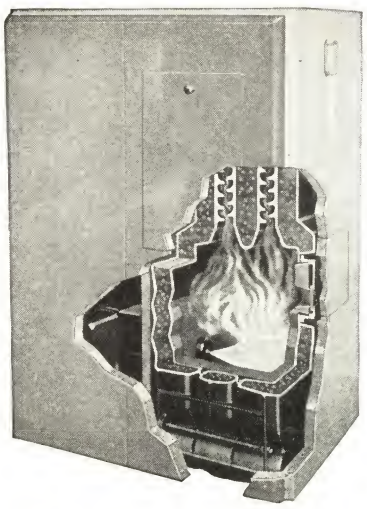
Steam Boilers—Water Heater, Low Water Cut-Off, Combustion Chamber Refractory, Metal Jacket (encloses Oil Burner and all controls), Steam Gauge, Safety Valve, Gauge Glass and Fittings, Try Cocks, Adapter for Stackswitch and Flue Cleaning Brush. Draft Adjuster furnished on request.

Water Boilers—Water Heater, Draft Adjuster, Combustion Chamber Refractory, Metal Jacket (encloses Oil Burner and all controls), Altitude and Pressure Gauge, Thermometer, Adapter for Stackswitch and Flue Cleaning Brush. Draft Adjuster furnished on request.

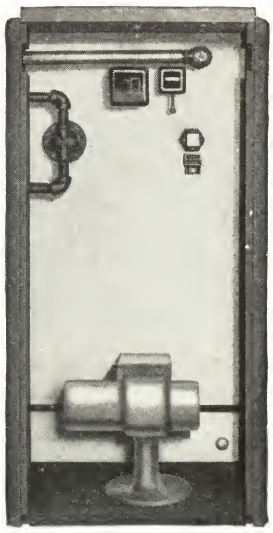
RATINGS

Steam		Water		*Water Heater Capacity Boiler 180°	Oil Req. to maintain Rated Capacity	No. & Size Sup. and Return Tappings
Boiler No.	Inst. Radn. Sq. Ft.	Boiler No.	Inst. Radn. Sq. Ft.			
SB	510	WB	820	66 Gals.	1.5 Gals.	2-3″
SC	760	WC	1220	66 Gals.	2.25 Gals.	2-3″
SD	960	WD	1540	66 Gals.	3.00 Gals.	2-3″

*Larger capacity water heaters can be supplied—See Price Sheet.



Note the strictly vertical flues and that the combustion chamber is completely surrounded by water. Also that Oil Burner is inside Jacket.



Showing convenient location of all controls when rear door of Jacket is removed. Note, too, that Oil Burner is protected from boiler heat by a heavy air cell insulating board.

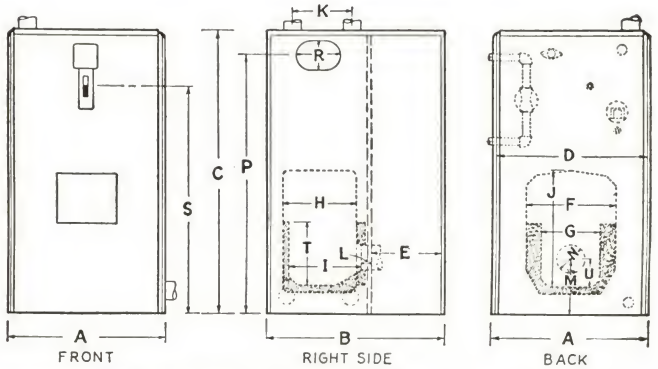


One of the intermediate or in-between sections where the temperature gases come in direct contact with the teeth hereon, so effectually that 1600 to 1800 degrees of heat is absorbed by the patented fin flue walls and given to the water in about 19 inches of fire travel.



Taco Built-In Water Heater extends into every section of Boiler at the hottest point just below water line.

DIMENSIONS



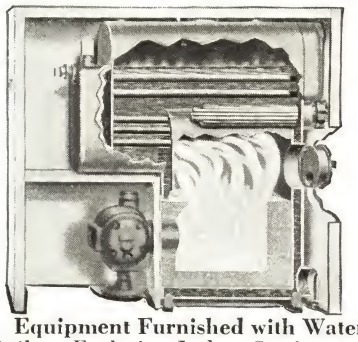
DIMENSIONS INCHES

Boiler No.	A	B		C	D	E		F	G	H	I	J	K	L	M	N	P	R	S	T	U
		Short Jacket	Long Jacket			Short Jacket	Long Jacket														
B	29″	40″	50″	58″	28″	19″	29″	18⅜″	12¼″	15¼″	14½″	25½″	12⅛″	3″	11½″	5″	50½″	8″	46″	13″	5⅝″
C	29″	46″	56″	58″	28″	19″	29″	18⅜″	13¼″	21⅜″	17″	25½″	18¼″	3″	11½″	5″	50½″	9″	46″	13″	6⅛″
D	29″	52″	62″	58″	28″	19″	29″	18⅜″	14″	27½″	20″	25½″	24⅜″	3″	11½″	5″	50½″	11″	46″	13″	6⅛″

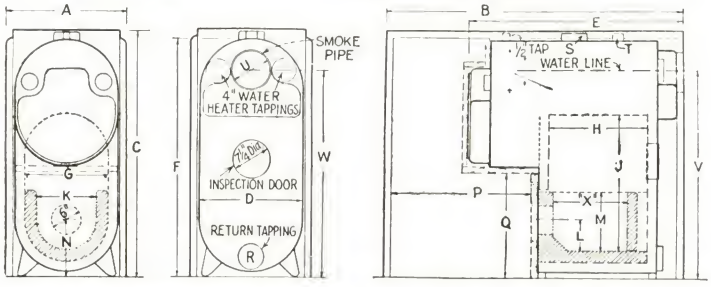
BURNHAM RESIDENCE TYPE WELDED STEEL BOILERS

OB Series — Exclusively for Oil





Equipment Furnished with Water Boiler—Enclosing Jacket, Combustion Chamber Refractory, Combination Altitude Gauge and Thermometer, Storage Type Taco Coil—capacity 66 Gallons, Flue Brush. Draft Adjuster furnished on request.



This series is of a modern design, compact in size and highly efficient. Two pass tubular construction with combustion chamber completely surrounded by water.

Built in accordance with A.S.M.E. Code.

Equipment Furnished with Steam Boiler—Enclosing Jacket, Combustion Chamber Refractory, McDonnell Low Water Cut-Off, Steam Vacuum and Pressure Gauge, Water Gauge Glass, Cocks and Tri Cocks, Safety Valve, Pressure Relief Door, Taco Storage Type Coil—capacity 66 Gallons, Flue Brush. Draft Adjuster furnished on request.

RATINGS

Steam			Water			Heating Surface Sq. Ft.	Furnace Volume Cu. Ft.	Oil Req. Gallons per Hr.
Boiler No.	S.H. B.I. Rating Sq. Ft.	Net Load Rating Sq. Ft.	Boiler No.	S.H. B.I. Rating Sq. Ft.	Net Load Rating Sq. Ft.			
OB- 50-S	500	385	OB- 50-W	800	615	29.4	5.2	1.35
OB- 70-S	750	578	OB- 70-W	1200	925	44.1	5.2	1.65
OB-100-S	1000	771	OB-100-W	1600	1235	58.9	9.5	2.00
OB-120-S	1250	964	OB-120-W	2000	1545	73.5	9.5	2.50
OB-150-S	1500	1157	OB-150-W	2400	1855	88.2	13.2	3.50
OB-170-S	1750	1350	OB-170-W	2800	2165	102.9	13.2	4.50

DIMENSIONS — INCHES

No. Boiler	A	B	C	D	E	F	N	P	Q	R	S	T	U	V	W	X
50	24	59	49½	22	45	48	11½	29	22½	4	4	1	8	41¾	39½	Adjustable to flame
70	24	59	49½	22	45	48	11½	29	22½	4	4	1¼	8	41¾	39½	
100	29	64	56½	27	50	55	12	29	25½	4	4	1¼	9	48	46⅛	
120	29	64	56½	27	50	55	12	29	25½	4	4	1¼	9	48	46⅛	
150	32	69	59½	30	59	58	13	29	26	5	5	1¼	10	50⅛	48¼	
170	32	69	59½	30	59	58	13	29	26	5	5	1¼	10	50⅛	48¼	

BURNHAM CAST IRON ROUND SECTIONAL BOILERS

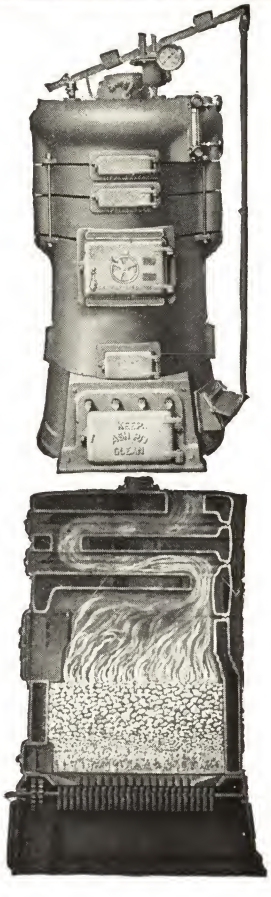
FOR COAL, OIL, GAS, STOKER FIRING — NOT JACKETED
Ratings: Steam 200-1040 Sq. Ft. — Water 330-1720 Sq. Ft.
FOR SMALL AND MEDIUM SIZE RESIDENCES
Small Stores, 2 Apartment Buildings, etc.

EQUIPMENT FURNISHED

Steam Boilers—Steam Gauge, Safety Valve, Gauge Glass and Fittings, Try Cocks, Automatic Damper Regulator, Set of Firing Tools consisting of Hoe, Poker and Flue Cleaning Brush.

Water Boilers—Set of Firing Tools consisting of Hoe, Poker and Flue Cleaning Brush.

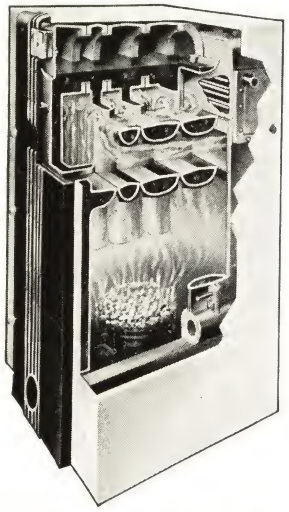
Note—20", 23", 26" and 29" Boilers can be furnished with flat grates when so ordered.



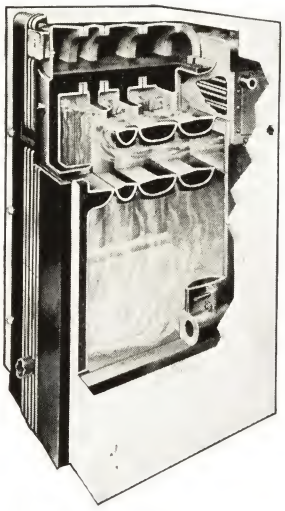
RATINGS (For Coal, Oil, Gas or Stoker)

Boiler No.	Steam Rating Square Feet			Boiler No.	Water Rating Square Feet			Steam and Water				
	Installed Radiation	Hgt. Ins.	Dia. Ins.		Installed Radiation	Hgt. Ins.	Dia. Ins.	Dia. Comb. Chamb.	Gals. Oil per Hour	Chimney Size Inches	Chimney Size Feet	Sup. & Ret Tappings, Inches
S-1804	200	48	26	W-1804	330	42	26	18"	—	8x 8	30	2-2½
S-1805	220	53	26	W-1805	360	47	26	18"	.90	8x 8	30	2-2½
S-1806	240	58	26	W-1806	390	52	26	18"	1.00	8x 8	30	2-2½
S-2004	260	49	28	W-2004	430	43	28	20"	—	8x 8	30	2-3
S-2005	290	54	28	W-2005	480	48	28	20"	1.00	8x 8	30	2-3
S-2006	320	59	28	W-2006	530	53	28	20"	1.17	8x 8	30	2-3
S-2304	340	51	31	W-2304	560	45	31	23"	—	8x 8	30	2-3
S-2305	380	57	31	W-2305	625	50	31	23"	1.50	8x 8	30	2-3
S-2306	420	62	31	W-2306	690	55	31	23"	1.67	8x 8	35	2-3
S-2604	520	52	34	W-2604	860	45	34	26"	—	8x 8	35	2-3½
S-2605	570	58	34	W-2605	940	51	34	26"	2.00	8x 8	35	2-3½
S-2606	620	63	34	W-2606	1020	56	34	26"	2.16	8x 8	35	2-3½
S-2904	690	54	37	W-2904	1140	47	37	29"	—	10x10	35	2-4
S-2905	750	59	37	W-2905	1240	52	37	29"	2.53	10x10	35	2-4
S-2906	810	64	37	W-2906	1340	57	37	29"	2.73	10x10	40	2-4
S-31-4	900	56	41	W-31-4	1480	49	41	31"	—	11x11	40	2-4
S-31-5	970	62	41	W-31-5	1600	54	41	31"	3.00	11x11	45	2-4
S-31-6	1040	67	41	W-31-6	1720	60	41	31"	3.50	11x11	45	2-4

26
4



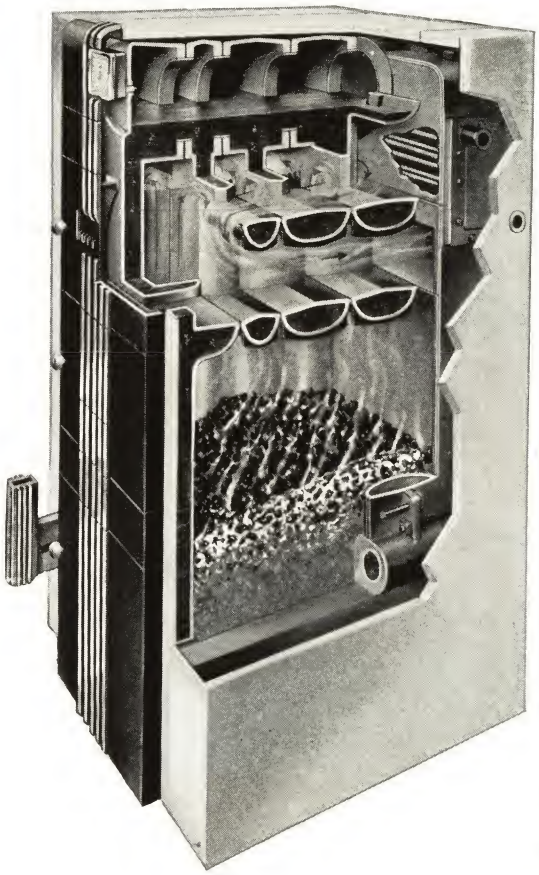
Having an extra high base, extra width between legs of section, and extra high crown sheet, makes it admirable for stoker firing. Stoker may be installed at front or rear.



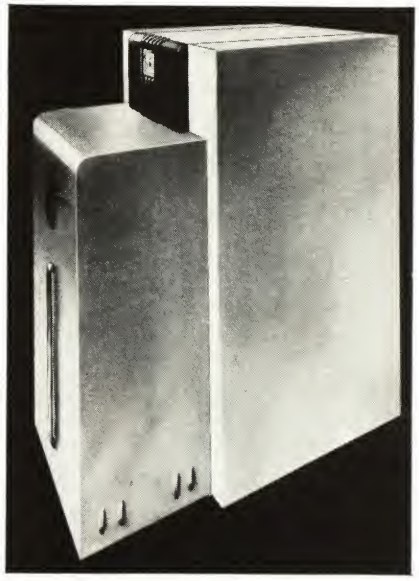
Gas or oil, burners may be installed either front or rear. Off period firing losses are reduced by the down draft heat trap.



This section shows you the fire shine, or direct fire surfaces extending from bottom crown sheet to top of boiler.



Note that the Taco hot water supply heater is built entirely inside the boiler, not only being entirely out of sight, but so placed as to take full advantages of circulation of water at its hottest point. It's the only boiler having an entirely Biltin Tankless or storage tank heater.



Exterior with jacket extension enclosing burner when oil fuel is used. This extension is optional. It's the only boiler made today having this removable extension.

FEATURES OF THE
YELLO-JACKET BOILER
THAT STINGS THE FUEL BILL

Of first importance are its combined horizontal and vertical direct surfaces, those most effective surfaces on which the fire directly shines. In this boiler they are not alone those surfaces directly over the fire—or crown sheet—but those that extend in center of boiler to its top.

In addition, there are the back and forth horizontal surfaces or fire travel. Extra heat absorbing fins are on both the crown sheet and the fire travel directly above it. The combination of these features result in a boiler of decided economy when using coal, gas, or oil.

The jacket is finished in an attractive two coat, dandelion yellow enamel, baked on. When oil is used, the jacket extension is available, which easily slips over the burner, and is removable to get at burner. It is equipped with a Biltin Taco hot water supply heater, either the tankless or storage tank type.

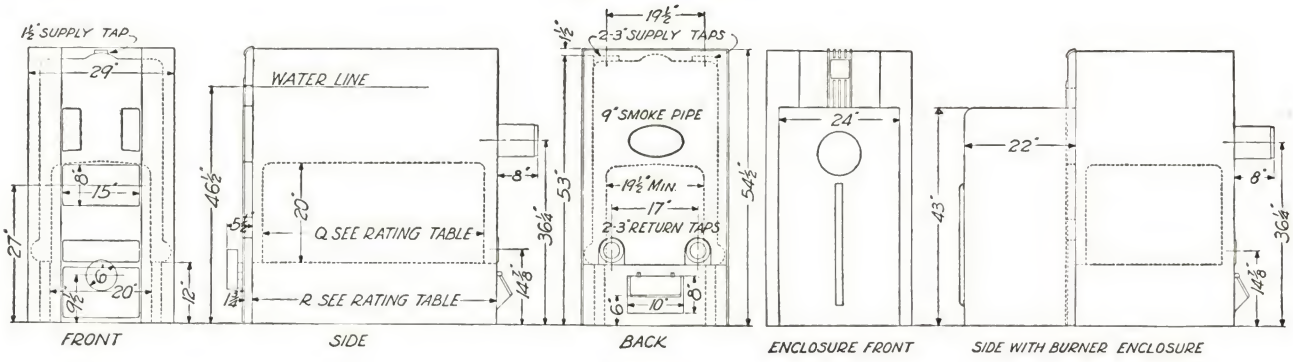
SMALLER SIZE

In addition to the Yello-Jacket Boiler shown, and rated, there also is a smaller one for the average 4 or 5 room house.

BURNHAM BOILER CORPORATION

YELLO-JACKET BOILER DIMENSIONS AND RATINGS

DIMENSIONS



RATINGS

Boiler Number		Installed Radiation Sq. Ft.*	Grate Area Sq. Ft.	Minimum Oil Required Gallons per Hour	Htg. Surface Sq. Ft.	"Q" Length Comb. Chamber	"R" Length Boiler Proper	Furnace Volume—Cu. Ft.	
Hand Fired	Automatic Fired							Grate to Crown	Floor to Crown
Steam									
YS-30	YS-30-A	325	2.34	1.1	29.64	16"	20¾"	3.9	6.2
YS-35	YS-35-A	400	2.86	1.3	35.64	19½"	24¼"	4.8	7.6
YS-40	YS-40-A	475	3.37	1.5	41.08	23"	27¾"	5.6	9.0
YS-45	YS-45-A	550	3.89	1.7	47.08	26½"	31¼"	6.4	10.4
YS-50	YS-50-A	625	4.40	1.9	52.52	30"	34¾"	7.3	11.7
YS-55	YS-55-A	700	4.91	2.1	58.52	33½"	38¼"	8.2	13.1
YS-60	YS-60-A	775	5.43	2.3	63.96	37"	41¾"	9.0	14.5
Water									
YW-30	YW-30-A	520	2.34	1.1	29.64	16"	20¾"	3.9	6.2
YW-35	YW-35-A	640	2.86	1.3	35.64	19½"	24¼"	4.8	7.6
YW-40	YW-40-A	760	3.37	1.5	41.08	23"	27¾"	5.6	9.0
YW-45	YW-45-A	880	3.89	1.7	47.08	26½"	31¼"	6.4	10.4
YW-50	YW-50-A	1000	4.40	1.9	52.52	30"	34¾"	7.3	11.7
YW-55	YW-55-A	1120	4.91	2.1	58.52	33½"	38¼"	8.2	13.1
YW-60	YW-60-A	1240	5.43	2.3	63.96	37"	41¾"	9.0	14.5

* RATING NOTICE—Ratings listed under "Installed Radiation" are based on net installed radiation and guaranteed, provided the quantity of installed radiation is sufficient to properly heat the building and computed in accordance with methods adopted by the American Society of Heating and Ventilating Engineers, the Heating, Piping and Air Conditioning Contractors' National Association or as recommended by us.

Nothing need be added for normal piping (20–25%) or pickup but allowances must be made for Domestic Hot Water Supply, before selecting boiler, as follows:

With Storage Tank

Steam System—Add one (1) square foot per gallon water required to installed radiation.

Water System—Add two (2) square foot per gallon water required to installed radiation.

With Tankless Heater

Steam System—Add fifty (50) square feet for each bathroom to installed radiation.

Water System—Add eighty (80) square feet for each bathroom to installed radiation.

Fuel Requirements

Heat value of Coal must not be less than 12,500 B.t.u. per pound.

Heat value of Oil must not be less than 140,000 B.t.u. per gallon.

EQUIPMENT FURNISHED

Hand Fired Boilers

Steam—Insulated Jacket; Vacuum and Pressure Gauge; Chromium Water Gauge Set; Automatic Damper Regulator; Chromium Safety Valve; Set Fire Tools.

Water—Insulated Jacket; Altitude, Pressure Gauge and Thermometer; Automatic Damper Regulator; Set Fire Tools.

Automatically Fired Boilers

Steam—Insulated Jacket; Vacuum and Pressure Gauge; Chromium Water Gauge Set; Chromium Safety Valve; Flue Brush.

Water—Insulated Jacket; Altitude, Pressure Gauge and Thermometer; Flue Brush.

BILTIN TACO HEATERS

Sizes Can Be Furnished as Follows:

†Hand Fired Boilers		‡Automatically Fired Boilers	
No. of Heater	Gallons Capacity	No. of Heater	Gallons Capacity
YJ40	40	YJ64	66
YJ64	82	YJ1510	100
YJ1510	150	TANKLESS	
		YJ1-210	210

† Capacity of heaters for Hand Fired Boilers is based on 212° Boiler Water 100° rise in 3 hours.

‡ Capacity of heaters for Automatically Fired Boilers is based on 180° Boiler Water 100° rise in 3 hours except Tankless Heater which is rated on the basis of 1 hour. Note: Tankless Haters not recommended in areas where excessive lime is present in the water.

BURNHAM CAST IRON SQUARE SECTIONAL BOILERS

Coal or Oil Burning—Jacketed or Unjacketed

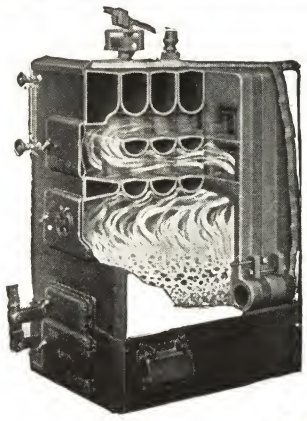
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Capacities: Steam 220-4920 Sq. Ft. Steam Radiation
Water 340-7880 Sq. Ft. Hot Water Radiation

The superiority of this type of construction has been proven by years and years of unequalled service.

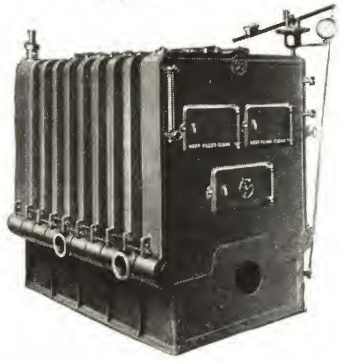
The combination of features herein listed provide for safe, economical and dependable performance.

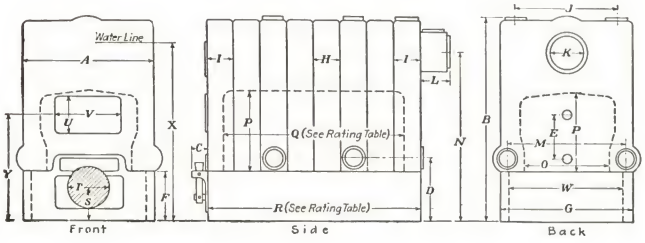
A minimum of six (6) small balanced flueways
Tube-type rounded surface construction
Rust-proof section assembly
Short tie-bolted sections
Large nipple openings for faster circulation
Interchangeable sections
Extra heavy construction
Double-trussed, ridge-shaped grates
Clean-out doors all at front
Large fire doors
Ample size combustion chamber
Large steam generating area
Boilers tapped for hot water heaters and water feeders.





Jacketed No. 1 Series
For coal or oil







MEASUREMENTS

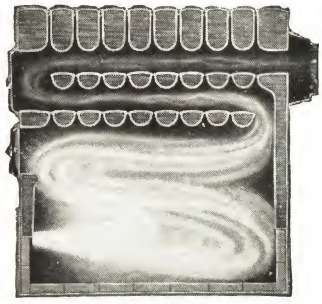
Series	A	B	C	D	E	F	G	H	I	J†	K	L	M†	N	O	P	S*	T*	U	V	W	X	Y
17″	24½	48	5	13	10	10	29	4	6	15¾	9	13½	17	39	17½	16	9½	7½	8	14	25	39	24
21″	29½	52½	5	16	10	13	25½	5	5	.....	10	4½	....	40¾	21	17½	9½	7½	8	14	21½	43¼	27½
27″	36½	58	5	17	10¼	14	36½	6	6	.....	12	5½	....	46	27	19¾	9½	7½	9	16	32½	47	30
36″	46	65	5	17½	10½	14	41	6	7	.....	15	7½	....	48½	36	23½	9½	7½	10	17½	36½	52	31½

* Apply to Oil Burning Boilers only. † Apply to 17″ Series only.

RATINGS (For Coal, Oil, Gas or Stoker)

Steam			Steam and Water				Water		
Jacketed Boiler No.	Unjacketed Boiler No.	Installed Radiation sq. ft. Coal or *Oil	Supply and return tappings, in.	Grate area sq. ft.	Over-all length, in.	Chimney size in.—ft.	Installed Radiation sq. ft. Coal or *Oil	Unjacketed Boiler No.	Jacketed Boiler No.
17-inch Series									
53-S	531-S	220	2-3	1.5	36½	8x 8x30	340	531-W	53-W
63-S	631-S	295	2-3	2.0	40½	8x 8x30	465	631-W	63-W
74-S	741-S	370	2-3	2.5	44½	8x 8x30	590	741-W	74-W
84-S	841-S	445	2-3	3.0	48½	8x12x35	715	841-W	84-W
95-S	951-S	520	2-3	3.5	52½	8x12x35	840	951-W	95-W
105-S	1051-S	595	2-3	4.0	56½	8x12x35	965	1051-W	105-W
116-S	1161-S	670	2-3	4.5	60½	8x12x40	1090	1161-W	116-W
126-S	1261-S	745	2-3	5.0	64½	8x12x40	1215	1261-W	126-W
21-inch Series									
2-S- 6	2106-S	625	2-3	4.01	40	12x12x35	1000	2106-W	2-W- 6
2-S- 7	2107-S	775	2-3	4.74	45	12x12x35	1240	2107-W	2-W- 7
2-S- 8	2108-S	925	3-3	5.47	50	12x12x40	1480	2108-W	2-W- 8
2-S- 9	2109-S	1075	3-3	6.20	55	12x12x40	1720	2109-W	2-W- 9
2-S-10	2110-S	1225	3-3	6.93	60	12x16x40	1960	2110-W	2-W-10
2-S-11	2111-S	1375	4-3	7.66	65	12x16x40	2200	2111-W	2-W-11
27-inch Series									
3-S- 6	2706-S	1000	2-4	5.86	47½	12x12x40	1600	2706-W	3-W- 6
3-S- 7	2707-S	1250	2-4	6.98	53½	12x16x40	2000	2707-W	3-W- 7
3-S- 8	2708-S	1500	2-4	8.11	59½	16x16x45	2400	2708-W	3-W- 8
3-S- 9	2709-S	1750	3-4	9.23	65½	16x16x50	2800	2709-W	3-W- 9
3-S-10	2710-S	2000	3-4	10.34	71½	16x20x50	3200	2710-W	3-W-10
3-S-11	2711-S	2250	3-4	11.48	77½	16x20x55	3600	2711-W	3-W-11
3-S-12	2712-S	2500	4-4	12.61	83½	20x20x60	4000	2712-W	3-W-12
36-inch Series									
.....	3606-S	1500	2-4	8.13	52	16x20x45	2400	3606-W	.....
.....	3607-S	1880	3-4	9.63	58	16x20x50	3010	3607-W	.....
.....	3608-S	2260	3-4	11.13	64	20x20x50	3610	3608-W	.....
.....	3609-S	2640	3-4	12.63	70	20x20x50	4220	3609-W	.....
.....	3610-S	3020	3-4	14.13	76	20x20x55	4830	3610-W	.....
.....	3611-S	3400	4-4	15.63	82	20x20x55	5440	3611-W	.....
.....	3612-S	3780	4-4	17.13	88	20x24x60	6050	3612-W	.....
.....	3613-S	4160	5-4	18.63	94	24x24x60	6660	3613-W	.....
.....	3614-S	4540	5-4	20.13	100	24x24x60	7270	3614-W	.....
.....	3615-S	4920	5-4	21.63	106	24x24x60	7880	3615-W	.....

*When boilers are wanted for oil burning, use boiler numbers as shown, preceded by the letter "O."



Square Sectional Conversion Boiler Equipped for Oil
By changes in base can be used for coal

Conversion Boiler

This boiler for oil burning can, by changes in the base, be easily converted for burning coal in case of coal becoming cheaper than oil, or for any objection to oil.

Smokeless

Smokeless Ratings and Data same as regular coal burning boilers. When Smokeless Boilers are wanted, use numbers as shown, preceded by the letter "S."

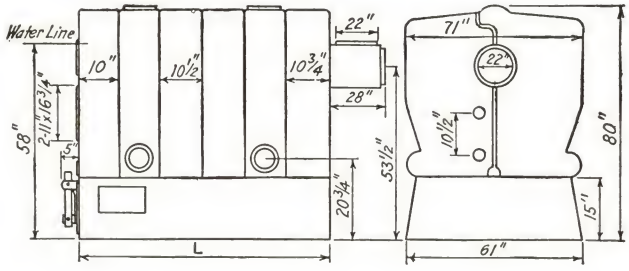
BURNHAM CAST IRON SQUARE SECTIONAL BOILERS

50" Twin Section Series—For Coal, Oil, Gas, Stoker Firing

Capacities: Steam 5000-14600 Sq. Ft.
Water 8000-23360 Sq. Ft.



Its looks deceive you. Looks as if it was no larger than the 36 inch. Looks that way, because of its *right proportions*. It is square shouldered and broad chested, just as you would expect of such a husky. The water boiler stands only 80 inches high over all. Is 71 inches wide.



RATINGS—COAL FIRED

Boiler No.	Steam Rating Sq. Ft. Installed Radiation	Boiler No.	Water Rating Sq. Ft. Installed Radiation	Steam and Water						
				No. of Sections	Sup. & Ret. Tappings Inches	Grate Area Sq. Ft.	Size of Grate Inches	Chimney-Size Inches	Chimney-Size Feet	L Length Base
5006-S	5000	5006-W	8000	6	3-5	19.27	50x 55½	24x28	70	63
5007-S	6200	5007-W	9920	7	3-5	22.92	50x 66	24x28	75	73½
5008-S	7400	5008-W	11840	8	4-5	26.56	50x 76½	24x28	80	84
5009-S	8600	5009-W	13760	9	4-5	30.20	50x 87	24x28	85	94½
5010-S	9800	5010-W	15680	10	5-5	33.85	50x 97½	30x36	85	105
†5011-S	11000	†5011-W	17600	11	5-5	37.50	50x108	30x36	95	115½
†5012-S	12200	†5012-W	19520	12	5-5	41.15	50x118½	30x36	100	126
†5013-S	13400	†5013-W	21440	13	5-5	44.80	50x129	36x36	100	136½
†5014-S	14600	†5014-W	23360	14	5-5	48.45	50x139½	36x36	100	147

† 10 Grates and Bridgewall furnished with these sizes.

BURNHAM FIRE TUBE WELDED STEEL BOILERS

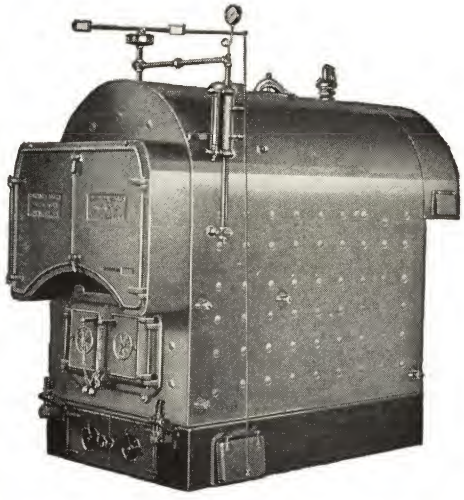
Compact Series—For Coal, Oil, Gas, Stoker or Smokeless

RATINGS

Hand Fired		Oil or Gas Fired		Stoker Fired High Firebox		Heating Surface Sq. Ft.	Grate Area Sq. Ft.	Water Line		Height Boiler Inches	
Boiler No.	S.H.B.I. Rating Sq. Ft.	Boiler No.	S.H.B.I. Rating Sq. Ft.	Boiler No.	S.H.B.I. Rating Sq. Ft.			Hand Gas or Oil Fired	Stoker Fired High Firebox	Coal Oil Gas	High Firebox
36- 48	1800	36- 48	2190	A- 48	2190	129	7.9	57½"	60"	67⅞	70⅜
36- 58	2200	36- 58	2680	A- 58	2680	158	8.9	57½"	60"	67⅞	70⅜
36- 68	2600	36- 68	3160	A- 69	3160	186	9.7	57½"	61"	67⅞	71⅜
36- 78	3000	36- 78	3650	A- 79	3650	215	10.5	57½"	61"	67⅞	71⅜
42- 61	3500	42- 61	4250	B- 61	4250	250	11.4	66"	72¼"	81	87¼
42- 69	4000	42- 69	4860	B- 70	4860	286	12.2	66"	72¼"	81	87¼
42- 78	4500	42- 78	5470	B- 78	5470	322	13.4	66"	72¼"	81	87¼
42- 86	5000	42- 86	6080	B- 87	6080	358	14.5	66"	72¼"	81	87¼
48- 89	6000	48- 89	7290	C- 90	7290	429	16.4	68¼"	72⅜"	82¾	86⅞
48-104	7000	48-104	8500	C-104	8500	500	18.1	68¼"	73⅜"	82¾	87⅞
54- 88	8500	54- 88	10330	D- 87	10330	608	20.5	80½"	88½"	97	105
54-103	10000	54-103	12150	D-102	12150	715	22.5	80½"	90½"	97	107
60- 96	12500	60- 96	15180	E- 96	15180	893	25.6	90½"	100¼"	107½	117¼
60-114	15000	60-114	18220	E-114	18220	1072	28.4	90½"	103¼"	107½	120¼
66-118	17500	66-118	21250	F-118	21250	1250	30.9	92¾"	109¾"	111	126
72-121	20000	72-121	24290	G-121	24290	1429	33.2	95"	110½"	113¾	129¼
78-138	25000	78-138	30360	H-137	30360	1786	37.4	95½"	117¾"	116¾	139
84-118	30000	84-118	36430	J-118	36430	2143	41.2	113"	141"	136	164
84-137	35000	84-137	42500	J-137	42500	2500	44.7	113"	148"	136	171

Note—First set of numbers in Boiler No. indicates width; second, length of shell.

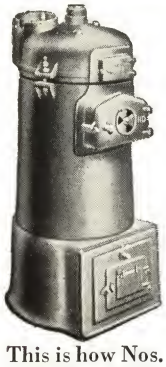
Capacities: Steam 1800-42500 Sq. Ft.



These electrically welded compact Steel Boilers are built in accordance with the A.S.M.E. Code and are rated in conformity with the Steel Heating Boiler Institute Code for rating low pressure boilers. Heating surface shown does not include bridge wall.

BURNHAM HOT WATER SUPPLY BOILERS

Test Pressure 300 lbs.—Working Pressure 120 lbs.



This is how Nos. 110, 112 and 114 look. Made in two sections and does a real job with very little fuel and bother.

These boilers are particularly adapted for furnishing hot water to residences, apartment houses, office buildings, hospitals, stores, theatres, restaurants.



DIMENSIONS AND RATINGS — ROUND SERIES

Boiler Size →	*110	*112	*114	H-1804	H-1805	H-2004	H-2005	H-2304	H-2305
Gallons Capacity—100° Rise 6 Hrs.....	175	275	375	550	700	800	950	1100	1300
Rating, sq. ft.	125	200	300	550	600	725	810	990	1115
Diameter Grate, inches.....	10	12	14	18	18	20	20	23	23
Overall Height, inches.....	33¼	36⅝	39	42¼	47½	43¼	48½	45	50¼
Diameter Base, inches.....	16	18	20	26	26	28	28	31	31
Height Base, inches.....	9½	10⅝	11¾	11½	11½	12	12	13	13
Center Floor to Return Line Tapping, in.	11½	12¼	14⅛	14½	14½	14¾	14¾	16	16
Diameter Smoke Box, inches.....	5	5	7	7	7	7	7	8	8
Dimension Rear of Smoke Box to Center of Supply Tapping, inches.....	8⅜	9⅛	11	.....	.....	.....	.....	.....	.....
Size Supply Tapping, inches.....	2	2	2½	2½	2½	3	3	3	3
Size Return Tapping, inches.....	2	2	2½	2½	2½	3	3	3	3
Outside Diameter Firepot, inches.....	14	16	18	20¼	20¼	22½	22½	25½	25½

*Brass water sections can be furnished in sizes 11, 110, 112 and 114.



RATINGS — SQUARE SERIES

Series	Boiler No.	Gallons rating—100° 6 hours	3 hours	1 hour	Number of Families	Grate, in.	Grate area, sq. ft.	Number sup. and ret. tappings, in.	Length of comb. chamb., in.	Length of base, in.
17 Inch	H- 631	1000	500	167	15	17½x16	2.0	2-3	16	22
	H- 741	1300	650	217	20	17½x20	2.5	2-3	20	26
	H- 841	1600	800	267	25	17½x24	3.0	2-3	24	30
	H- 951	1900	950	317	30	17½x28	3.5	2-3	28	34
	H-1051	2200	1100	367	35	17½x32	4.0	2-3	32	38
21 Inch	H-2105	1700	850	280	28	21x22½	3.28	2-3	22½	26
	H-2106	2100	1050	350	35	21x27½	4.01	2-3	27½	31
	H-2107	2500	1250	420	42	21x32½	4.74	2-3	32½	36
	H-2108	2900	1450	490	49	21x37½	5.47	2-3	37½	41
	H-2109	3300	1650	560	56	21x42½	6.20	2-3	42½	46
	H-2110	3700	1850	630	63	21x47½	6.93	2-3	47½	51
27 Inch	H-2706	3900	1950	651	65	27x31¼	5.86	2-4	31¼	37
	H-2707	4400	2200	734	73	27x37¼	6.98	2-4	37¼	43
	H-2708	4900	2450	817	81	27x43¼	8.11	2-4	43¼	49
	H-2709	5400	2700	900	89	27x49¼	9.23	2-4	49¼	55
	H-2710	5900	2950	983	97	27x55¼	10.34	2-4	55¼	61
	H-2711	6400	3200	1066	105	27x61¼	11.48	2-4	61¼	67
36 Inch	H-3606	5000	2500	834	85	36x32½	8.13	2-4	32½	39
	H-3607	6000	3000	1000	100	36x38½	9.63	2-4	38½	45
	H-3608	7000	3500	1167	115	36x44½	11.13	2-4	44½	51
	H-3609	8000	4000	1333	130	36x50½	12.63	2-4	50½	57
	H-3610	9000	4500	1500	145	36x56½	14.13	2-4	56½	63
	H-3611	10000	5000	1666	160	36x62½	15.63	2-4	62½	69
	*H-3612	11000	5500	1833	175	36x68½	17.13	2-4	68½	75
	*H-3613	12000	6000	2000	190	36x74½	18.63	2-4	74½	81
	*H-3614	13000	6500	2166	220	36x80½	20.13	2-4	80½	87
	*H-3615	14000	7000	2333	250	36x86½	21.63	2-4	86½	93

*10 grates and bridgewall furnished with these sizes.



This little fellow is the No. 11 and an honest to goodness husky. Weighs 200 pounds with deep firepot and three (3) triangular revolving grates.

Capacity, gals....60 to 100
Tappings, 1" Flow and Return, Height, in... 23
Depth of Fire Pot, in. 11½
Pipe Collar, in..... 5

Diam. of Top, in..... 20
Diam. of Lids—one, in. 9
Two-half of, in..... 9
Diam. of Grate, in.... 11

BURNHAM—TACO TANKS

SPECIFICATIONS

Capacity Gallons	TANK Size	Connections	Shell No. *	Head No. *	TACO No.	Heating Surface Sq. Ft.	Connections	Gallons Water Heated 100 Rise in 3 Hours Boiler 180°	Boiler 212°
40	14x60"	6-1"	10	7	4-48	6	2"	120	240
66	18x60"	6-1"	10	7	4-48	6	2"	120	240
82	20x60"	6-1½"	10	7	4-60	7½	2"	150	300
100	22x60"	6-1½"	9	7	4-60	7½	2"	150	300
120	24x60"	6-1½"	7	¼"	4-60	7½	2"	150	300
144	24x72"	6-1½"	7	¼"	4-72	9	2"	180	360
180	30x60"	6-2"	7	¼"	7-36	14	3"	280	560
220	30x72"	6-2"	5	¼"	7-36	14	3"	280	560
250	30x84"	6-2"	5	¼"	7-36	14	3"	280	560
315	36x72"	6-2"	¼"	5/16"	7-48	19	3"	380	760
365	36x84"	6-2"	¼"	5/16"	7-48	19	3"	380	760
420	36x96"	6-2"	¼"	5/16"	7-60	23½	3"	470	940
500	42x84"	6-2"	5/16"	⅜"	7-72	28	3"	560	1120

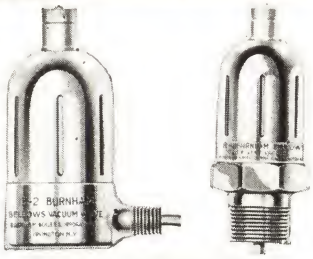
*Does not apply to Copper or Everdur Tanks.

	Test Pressure	Working Pressure
Galvanized (Copper Bearing Steel).....	300 lbs.	127½ lbs.
Copper or Everdur	250 lbs.	106¼ lbs.



Designed to heat water all year 'round, summer or winter, when connected to an Oil, Gas or Stoker Fired, Steam, Vapor or Hot Water Heating System.
Stand furnished at extra cost

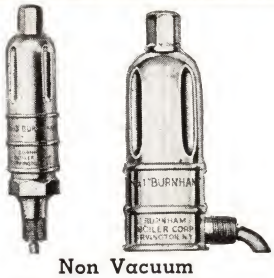
BURNHAM AIR AND VACUUM VALVES — Save Fuel



Vacuum Bellows Type
No. B2 No. B4

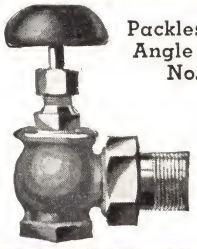
Burnham Adjustable Air and Vacuum Valves

are so simple that anyone can operate them. The homeowner can easily study and balance his heating system. No tools are necessary. There are no caps to remove, no screws to loosen, no gear shifting. Just a turn of the visible, graduated adjustment and the job's done. The heating contractor need not keep returning to the job to re-balance the system. The cap is so designed that it cannot be shut off completely.



Non Vacuum
No. 3 No. 1

BURNHAM RADIATOR VALVES — Packless and Packed Types



Packless Type
Angle Steam
No. 23

Burnham valves have for many years enjoyed an enviable reputation among the trade.

They are all constructed of extra heavy brass, and nickel plated. Rough bodies and polished trimmings.

Burnham Packless Valves will never need repacking and are so constructed that they can not leak around the stem.

Burnham Packless Valves are of the quick opening type, carefully manufactured and tested.



Packed Type
Angle Water
No. 142

BURNHAM FLEXIBLE HEADERS, HEATERS, CONNECTORS



The enlarged view shows clearly how the flexible bellows can be offset in any direction to meet variation in section tappings. Cut at right shows the combination cast iron header with Taco coil inserted for hot water supply. Furnished with 1 rigid union and flexible connectors, ready to be attached to a boiler.



UNIT HEATERS BURNHAM FAN COOLER



Unit Heater

Burnham quiet operation Unit Heaters. Individual spiral fin copper tubes brazed into heavy all copper headers and then tinned to insure a permanent bond of fins and tubes. Compensated tube expansion prevents strain to the element.

Fan Cooler Specifications

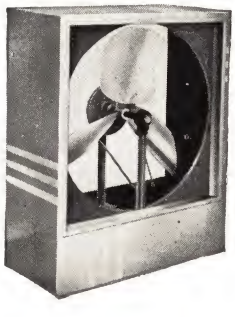
Fan Coolers have been tested and rated in accordance with the American Society of Heating and Ventilating Engineer's Fan Test Code.

Unit No.	E.D.R. Sq. Ft. **	B.T.U. Per Hour Air Enter. at 60° 2 lbs. Steam	C.F.M. at 70°	R.P.M.	Unit No.	E.D.R. Sq. Ft. **	B.T.U. Per Hour Air Enter. at 60° 2 lbs. Steam	C.F.M. at 70°	R.P.M.	Unit No.	E.D.R. Sq. Ft. **	B.T.U. Per Hour Air Enter. at 60° 2 lbs. Steam	C.F.M. at 70°	R.P.M.
10B	100	24,000	535	1500	16A	240	57,500	850	1140	21D	540	130,000	1700	1140
	*80	19,200	440	1000		192	46,000	680	800		433	104,000	1360	800
	*65	15,600	360	600		*156	37,400	560	600		*352	84,400	1100	600
12A	137	33,000	700	1500	16H	275	66,000	1000	1140	24D	700	169,000	2600	1140
	*110	26,400	570	1000		220	52,800	800	800		563	135,200	2100	800
	*90	21,500	460	600		*179	42,900	650	600		*458	109,900	1700	600
12B	146	35,700	680	1140	16B	336	80,900	1380	1140	24C	830	199,000	2700	1140
	119	28,600	550	800		270	64,700	1100	800		663	159,200	2150	800
	*97	23,200	450	600		*219	52,500	900	600		*539	129,300	1750	600
12E	170	40,800	830	1750	17D	367	88,200	1100	1140	24E	900	217,000	3000	1140
	136	32,700	680	1200		294	70,500	880	800		725	174,100	2400	800
	*110	26,500	560	800		*239	57,300	720	600		*589	141,400	1950	600
14B	205	49,000	900	1140	18B	460	110,000	1500	1140	2 B	1030	247,000	4000	1140
	163	39,200	720	800		367	88,000	1200	800		823	197,600	3200	800
	*133	31,800	590	600		*298	71,500	980	600		*668	160,400	2600	600

*Obtainable with three speed motors only. **To find pounds condensate per hour, divide E.D.R. ratings by 4.

Size	30″	39″	45″
Capacity	7,000 CFM	10,000 CFM	14,000 CFM
House size:			
Southern	7,000 cu. ft.	10,000 cu. ft.	14,000 cu. ft.
Northern	11,000 cu. ft.	15,000 cu. ft.	21,000 cu. ft.
Speed	510 RPM	370 RPM	310 RPM
Motor	¼ HP	⅓ HP	½ HP
Power	295 Watts	350 Watts	550 Watts
Weight	120 lbs.	200 lbs.	275 lbs.

The standard Burnham Fan Cooler, used as the basic unit of all models. By adding the proper equipment, it can be converted to any model for ventilating and circulating purposes.



Burnham has a three-quarters of a century background in designing and making heating equipment.

Five separate plants in different parts of the country.

Fifteen warehouses and sales offices located at advantageous points.

Burnham Boiler Corporation

IRVINGTON, N. Y. ZANESVILLE, OHIO

Warehouses and Sales Offices

Baltimore, Md. .....1201 Haubert Street
Boston, Mass. (Cambridge)
298 Albany Street
Chicago, Ill. ....1038 South Kolmar Avenue
Geneva, N. Y. .....Gates Avenue
Elizabeth, N. J. .....701 Spring Street
Irvington, N. Y. .....2 Main Street
CANADA—Toronto
Harbour Commission Building
Lancaster, Pa. .....Dillerville Road
Long Island City.....25-19 Borden Avenue
Philadelphia, Pa. ....31st & Jefferson Streets
Pittsburgh, Pa. .....301 Brushton Avenue
Queens Village, L. I.
222nd Street & L. I. R. R.
Springfield, Mass. .....153 Plainfield Street
Zanesville, Ohio .....Licking View
CHINA—Shanghai .....151 Avenue Foch

Plants

Elizabeth, N. J. Lancaster, Pa. Zanesville, Ohio
Irvington, N. Y. Geneva, N. Y.

Printed in U.S.A.



Burnham Boiler Corporation

IRVINGTON, NEW YORK

Carrier



• AIR CONDITIONING •
REFRIGERATION • HEATING

CARRIER SERVICES

AIR CONDITIONING–REFRIGERATION–UNIT HEATING

Application	Equipment	Page
ROOM	Year 'Round Air Conditioning	3
	Summer Air Conditioning	3
	Winter Air Conditioning	3
	Ventilation, Circulation and Cleaning	3
HOMES New or Old	Year 'Round Air Conditioning	4
	Winter Air Conditioning	4
	Summer Air Conditioning	4
	Auxiliary Equipment	5
COMMERCIAL ESTABLISH-MENTS	Year 'Round Air Conditioning	6, 7, 9
	Winter Air Conditioning	6, 7, 9
	Summer Air Conditioning	6, 7, 9
PRODUCT COOLING	Low Temperature Air Conditioning	13
REFRIGER-ATION	Air Conditioning, Comfort, Product, Process	8, 10, 11, 15
SPACE HEATING	Winter Product	14
ENGINEERING SERVICE	Carrier's Engineering Department is prepared to cooperate with Architects and Consulting Engineers in planning and selecting air conditioning and refrigeration equipment. Because of the completeness of the Carrier line, Carrier engineers are able to recommend equipment to best meet the conditions involved. Layouts and estimates will be prepared on request.	

Carrier

CARRIER CORPORATION,
South Geddes Street
SYRACUSE • NEW YORK

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Printed in U.S.A.

ROOM UNITS
AIR CONDITIONING AND VENTILATING

SUMMER, WINTER OR YEAR 'ROUND

(See Pages 10 and 11 for Refrigeration Units)

¾ to 1½ Tons, 25,000 B.t.u. maximum heating

TYPE 48F—WEATHERMAKER—Floor Mounted

Application—This unit may provide any combination of air conditioning functions. Where the capacity indicated above is inadequate, more than one unit may be used.

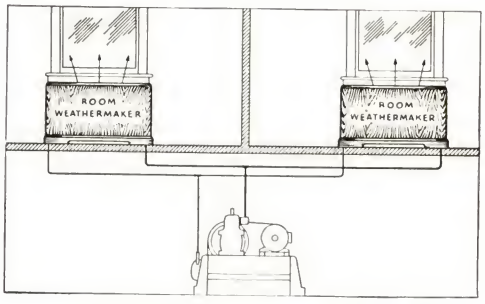
Operation—Two quiet, centrifugal fans, direct connected to a 1/30 Hp. motor, and a carefully designed humidifying spray assure quiet operation. Complete temperature controls are provided for summer and winter operation. A hygrostat for humidity control is supplied when specified.

Installation—This unit is installed in the conditioned space with a Freon compressor unit located at some remote point. Also available for Methyl Chloride. Provision is made for refrigerant, water and steam or hot water connections, and for a drain line. A 4-in. deep opening the width of the unit is available for connection to outside air.

Cabinet Finish and Dimensions—The cabinet is attractively finished in grained walnut. It occupies a floor space 43½ in. by 12½ in., and is 24 in. high.



Type 48F Room Weathermaker



Installation Diagram Two 48F Units

SUMMER, WINTER OR YEAR 'ROUND

(Self Contained Unit)

¾ Ton

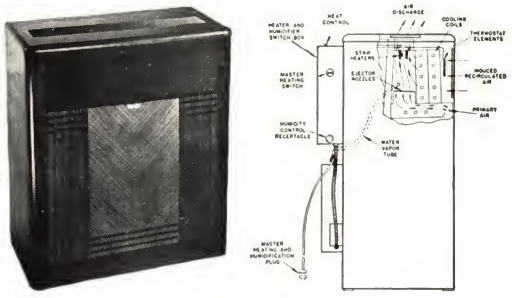
TYPE 50J—Floor Mounted

Application—This self-contained unit provides complete summer air conditioning—cooling, dehumidification, filtering and ventilation. Tempering coils and humidifier tank may be added to provide winter humidifying and air tempering.

Operation—A small Freon refrigeration unit provides the cooling effected; in air-cooled units, the heat from the condenser being discharged to the outside air. Condensation is re-evaporated to assist in sub-cooling the refrigerant. Water-cooled models are also available. Ample filtering surface is provided. Automatic controls may be supplied as required.

Installation—The unit is normally installed in front of a window so that the duct connection for ventilation (and condenser cooling air in air-cooled units) can be made over the window sill. An electric supply is the only connection required for the air-cooled units. Two gallons of water per hour must be supplied for the water-cooled unit.

Cabinet—The standard finish is a richly grained walnut. A prime coat finish can also be supplied. The floor space occupied is 36 in. by 18 in. by 40½ in. high.



Type 50J

VENTILATION, CIRCULATION AND CLEANING

250 to 500 c.f.m.

TYPE 56B—Room Ventilator

Application—This attractive unit is designed for window mounting. It supplies air from outdoors, recirculates room air, or circulates any desired mixture of room and outdoor air. All the air is filtered at all times. The air is delivered into the room through adjustable direction louvres, providing circulation throughout the entire room.

Operation—Efficient spun-glass filters assure the delivery of cleaned air to the room by two silent multi-blade fans. Sound insulation is also provided in the unit to further assure quiet operation. A recirculating damper is provided which is adjustable from the end of the unit and permits taking all outside air or all return air, or any proportion of each.

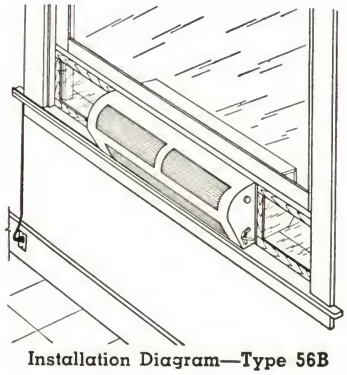
Installation—Each unit has two fastening lugs and two leveling screens for fastening the unit in the proper location in the window. End filler pieces are provided which allow mounting in windows up to 60 inches wide. Metal cap strips and rubber sealing strips are supplied with all units. The only connection required is electrical . . . for the 110 volt, 60 cycle motor. A D.C. motor is supplied when requested.

Cabinet—The cabinet is constructed of 22-gauge furniture steel, finished either in walnut brown or white ivory baked enamel. Cabinet dimensions are given in the table below.

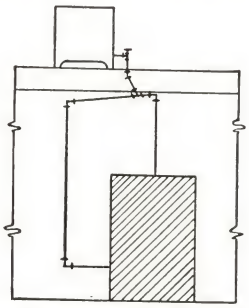
Unit Number	Capacity C.f.m.	Fan		Dimensions, Inches	Shipping Weight, lbs.
		Hp.	Speed		
56B2	250	1/60	1500	24x 9½x11 11/16	35
56B4	500	1/15	1600	31x11 1/16x14 5/32	50



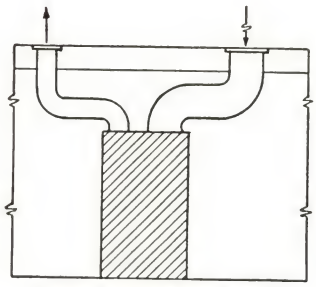
Type 56B



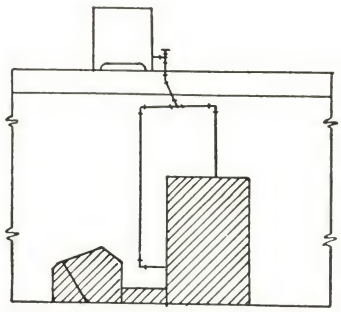
Installation Diagram—Type 56B



AUTOMATIC HEATING FOR RADIATOR SYSTEMS CARRIER BOILER FOR GAS OR OIL



DIRECT FIRED, WARM AIR CONDITIONER FOR OIL OR GAS



AUTOMATIC HEATING FOR RADIATOR SYSTEMS WITH CARRIER BOILER AND CARRIER STOKER



Direct-Fired Air Conditioner—Type 58C

DIRECT-FIRED AIR-CONDITIONER—Type 58C

The Carrier Direct-Fired Air Conditioner cleans, heats, humidifies and circulates air for distribution through ducts to various rooms in the house. In design and in the selection of metals and materials this new Carrier unit represents the most advanced engineering and manufacturing practice. It is extremely simple, very accessible, most compact, built for long life and efficient operation under all conditions. It is housed in an outer steel casing of attractive proportions and pleasing design. Its baked enamel, crackled finish will not chip or flake. Its colors, taupe and aluminum, harmonize well with any furnishings.

The air heating unit is of new and unique design. The air distributors between the heat transfer plates above the combustion chamber are of "tear drop" design. They provide an ingenious method of distributing the air while being warmed, and of regulating its velocity. "Parallel-flow" of air and hot gases warms the air evenly and rapidly. Maximum heat transfer is quickly effected with consequent economies. There is no meeting of the air and hot gases from opposite directions, never a chance of condensation forming.

Careful insulation of the cabinet, cushioned fan mounting and special burner design make this unit unusually quiet in operation. All electric controls insure continuous comfort and economy. The architect can safely specify this unit as the most modern for domestic use, especially when installed with a matching unit to supply summer cooling.

Models are available for gas or oil firing, both with capacities of 120,000 B.t.u. per hour output with outlet air at 154° F.



Air Conditioner—Type 59H

AIR CONDITIONER—Type 59H

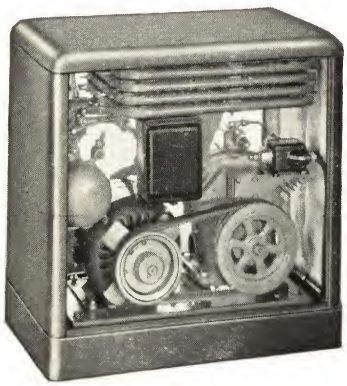
The Type 59H Carrier is a small unit designed for air conditioning small residences or limited number of rooms in large areas. It is extremely flexible in application and can be supplied to perform all functions of air conditioning, i.e., heating, cooling, humidification, dehumidification, filtering, circulating; or any combination of these functions desired.

The unit permits complete air conditioning in selected rooms of the house, and the heating by direct radiation of other sections of the house which do not require conditioning. By using multiple units supplied by one boiler, a "zoning" system may be obtained.

CAPACITIES AND DATA—TYPE 59H UNIT

	Heating		Tempering		Cooling	
Fan Speed RPM	860	1160	860	1160	860	1160
Air CFM @ 70°	450	450	550	550	400	400
Air CFM—Final Temp.	530	530	610	610		
BTU Per Hour	43,300	43,300	32,400	32,400	8,000	8,000
External Static Press. In.	.06	.21	.06	.21	.06	.21
Motor HP	1/30	1/12	1/30	1/12	1/30	1/12

Length 40" Width 40¾" Height 13⅝" Weight 350 lbs.



Matched Cooling Unit—Type 7K

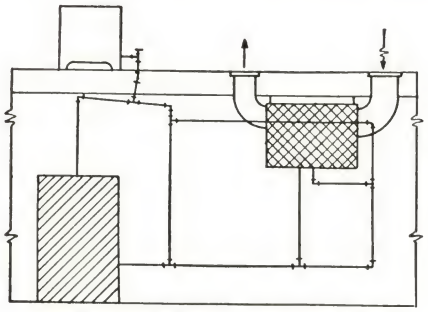
REFRIGERATION FOR HOMES—Type 7K

3 Tons, Type 7K3—5 Tons Type 7K5

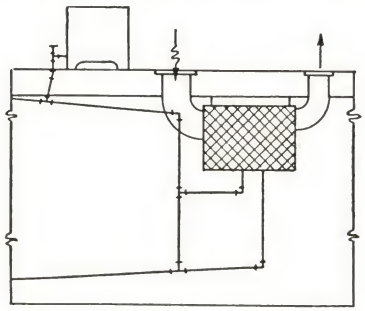
The Carrier Matched Cooling Unit available in two sizes, 3 and 5 tons, when installed with the Carrier Home Air Conditioner, completes the system for year round air conditioning. The addition of the cooling unit can be made quickly and easily at any time. It is built to coordinate perfectly with the winter air conditioning unit. Both give you the ultimate in home comfort the year 'round.

BOILERS—Types 61 B, C, D Steam—Hot Water

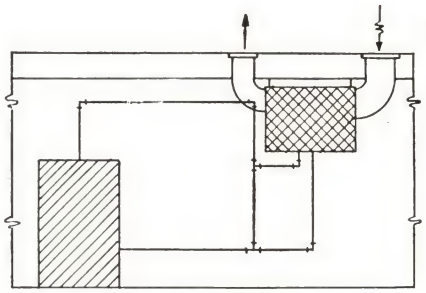
The New Carrier Boiler Type 61 is of the Fire Tube Type and will operate consistently at high efficiency. The boiler is a welded assembly of copper-bearing steel to assure long life. Many small flue tubes provide many linear feet of flue travel and a large area for heat transfer, which increases heating speed and boiler efficiency. The combustion chamber is



SPLIT SYSTEM USING CARRIER BOILER WITH SEPARATELY MOUNTED CARRIER AIR CONDITIONER



SPLIT SYSTEM USING CARRIER AIR CONDITIONER WITH EXISTING HEATING PLANT



CARRIER AIR CONDITIONER SUPPLIED WITH HEAT BY CARRIER AUTOMATIC BOILER

designed to provide sufficient volume to permit complete combustion without impingement. It is refractory-lined to permit high flame temperatures and complete utilization of fuel.

The entire unit is housed in a cabinet with an attractive two-color crinkled finish. The interior of the jacket is lined with insulating material to conserve heat and thus maintain a casing temperature only a few degrees above room temperature. The standard control system uses Minneapolis-Honeywell throughout. Day-night control is available. Hot water for domestic use may be supplied by a "Tanksaver" or Tank Type Coil. The "Tanksaver" is a large capacity instantaneous hot water supply coil requiring no storage tank. This unit and control system is designed to provide utmost convenience at low fuel cost.

Type 61 Boiler has been adapted to oil firing and stoker firing with anthracite or bituminous coal as indicated, and in the capacities listed below. These ratings are based on 2 lb. steam pressure or 180° hot water with forced circulation.

Type 61B—For Oil Firing—9 sizes with capacities from 96,000—432,000 B.t.u. per hour.

Type 61C—For Bituminous Coal Firing—8 sizes with capacities from 117,000 to 360,000 B.t.u. per hour.

Type 61D—For Anthracite Coal Firing—9 sizes with capacities from 102,000 to 432,000 B.t.u. per hour.

OIL BURNERS—Type 62D

The Carrier Type 62D Oil Burner is designed as a conversion burner and for use with the Type 61B Boiler. It is a pedestal-mounted, gun type burner carefully engineered to ensure efficient and reliable operation. The motor fuel unit, transformer and fan are standard parts. The housing and air tube assembly are Carrier engineered and designed to provide maximum efficiency and minimum noise. Two sizes are available, which with appropriate nozzles, have the following capacities:

Type 62D2—1.35 to 3.00 gallons of oil per hour.
Type 62D3—3.00 to 4.00 gallons of oil per hour.

STOKERS—Type 63B

The Carrier Stoker is of the underfeed type and embodies all the newest engineering developments for the scientific burning of coal. The different models will soon pay for themselves in savings of fuel. These stokers have many outstanding features—compactness of design for operating convenience, precision control for accurate adjustment of fuel and air supply, and sturdy construction—assuring years of efficient low-cost service.

The working parts are lubricated from a splash feed oiling system, which requires filling only once a year. Each stoker is complete with controls, which consist of a Room Thermostat, a Hold Fire Control and a Limit Control. The Carrier Automatic Stoker for anthracite coal is approved by the Anthracite Industries, Incorporated.

STOKER RATINGS

Bituminous				Anthracite			
Stoker Size	Coal Feed lbs./hr.	Radiation, Sq. Ft.		Stoker Size	Coal Feed lbs./hr.	Radiation, Sq. Ft.	
		Steam	Hot Water			Steam	Hot Water
63B35	7 to 35	800	1280	6B13	5 to 15	435	697
63B50	10 to 50	1200	1920	6B15	5 to 20	580	950
63B75	15 to 75	1800	2880	6B18	25	720	1300
63B100	20 to 100	2500	4000	6B20	30 to 35	1000	1600
63B150	30 to 150	3800	6100				

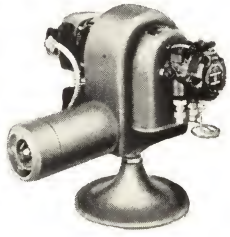
The above ratings are based on average conditions, using 12,000 B.t.u. coal with the stoker running approximately 12 hours per day.

WATER HEATERS—Type 60B

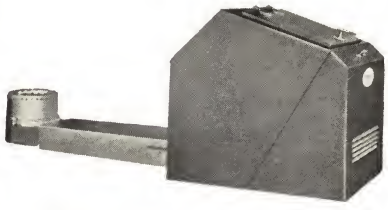
Carrier Water Heaters are built in two models. The 60B4 is a storage type heater with an hourly capacity of 40 gallons heated 100° F. The 60B5 is for use when a separate water storage tank is desired. It has a capacity of 50 gallons per hour heated 100° F. Both units use a wall-flame oil burner with a quick heating chromium steel flame ring and dependable electric ignition. There is only one moving part in this reliable burner. Number 2 Fuel Oil is commonly used. The steel jackets for both units are heavily insulated. A built in Water Temperature Regulator that is set with a touch of the finger automatically maintains the desired temperature in the storage type heater (60B4). An Aquastat of either the immersion or strap-on type is supplied with the 60B5 Heater.



Above—
Boiler
Type 61-B, C, D



Right—
Burner
Type 62D

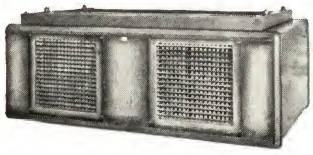


Above—
Stoker
Type 63B



Right—
Water Heater
Type 60B

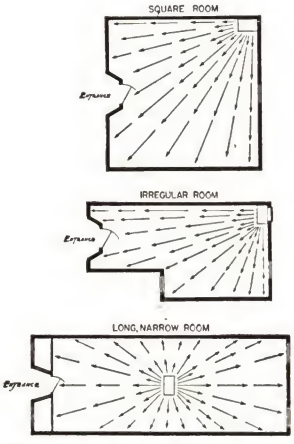
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5



Type 39J



Type 50L



Type 50L—Air Distribution Diagrams



Type 41Q Showing Duct Connection

SUMMER COOLING AND DEHUMIDIFICATION

Chilled Water or Direct Expansion—(See Pages 10 and 11 for Refrigeration Units)

TYPE 39J, 8 Tons—Type 39D, 4 Tons—Type 39G, 2 Tons

Application—The Type 39J Weathermaster is designed for cooling, dehumidifying and circulation. An attractive grain finished casing and quiet operation make it suitable for location within the space to be cooled. Type 39J (illustrated), with its small vertical dimension makes it particularly adaptable for installation in cramped spaces over doorways, etc. Types 39D and 39G are single grille models with lower capacities. When quiet operation is essential, units other than Type 39G should be selected.

Operation—These units are intended primarily for free air delivery but when necessary may be installed with a short run of duct or an outside air connection. Cooling coils are offered for direct expansion Methyl Chloride or Freon and for chilled water.

Installation—The only connections necessary are for refrigerant piping, electric wiring and a drain for condensate moisture. Space requirements are as follows: Type 39J—50 x 29½ x 16 in. Type 39D—25½ x 22 x 20⅜ in. Type 39G—22½ x 23 x 22½ in.

SUMMER COOLING AND DEHUMIDIFYING

(Self Contained Unit)

3 Tons, Type 50L3—5 Tons, Type 50L5

TYPE 50L—Floor Mounted

Application—This self-contained unit, designed to occupy the minimum floor space, provides circulating filtered, cooled and dehumidified room air. Provision can also be made for heating and humidifying and for outside air connection, making this unit a deLuxe air conditioner for year 'round service.

Operation—Slow speed fans, a dynamically balanced compressor, plus thorough sound insulation ensure quiet operation. The self-contained thermostat conveniently located provides manual adjustment of the cooling effect. Independent control of the refrigerating unit and the fan is provided.

Installation—This unit requires only water and electrical connections. Type 50L3 requires 4.5 g.p.m. of condenser cooling water at 75° F., and 50L5 requires 7.5 g.p.m. Provision is made for outside air connection, in which case a proportioning damper is available as optional equipment.

Cabinet—The standard finish is a satin gloss walnut brown. The floor space required is as follows: Type 50L3—32½ by 20½ in.; Type 50L5—42½ by 20½ in. Both units are 7 ft. in height.

5 Tons, Type 41Q2—10 Tons, Type 41Q6

TYPE 41Q—Floor Mounting

Application—The Type 41Q Carrier Air Conditioners are entirely self-contained units which cool and dehumidify the air in summer; may be equipped to heat and humidify the air in winter; and clean and circulate the air throughout the year. The units are intended primarily for installation in concealed locations from which the air may be distributed evenly through ducts and outlet grilles into the space to be conditioned.

Operation—The cooling effect of the 5-ton unit is produced by an assembly of a non-ferrous coil section internally insulated and containing a 4-row direct expansion Freon cooling coil; a condensing unit section and a four-cylinder "V" type compressor, belt driven at 1350 r.p.m. by a 5 H.P. motor. In the 10-ton unit two such assemblies are used. The fans are of the double inlet centrifugal type with a double coating of corrosion-resisting material.

Automatic control of operation is accomplished by the use of automatic expansion valves, Pressurestats for controlling motor operation and water regulating valves for the cooling water.

Non-ferrous heating coils and "throw-away" type filters are supplied when required. Steam heated evaporative humidifiers are available as accessories for duct installation.

Installation—Besides the duct connections and a one inch drain the following connections are required:

Type 41Q2—Current connection for one 5 H.P. 220 volt, 3 phase, 60 cycle motor; and ¾ in. cooling water connections.

Type 41Q6—Current connections for two 5 H.P. 220 volt, 3 phase, 60 cycle motors; and two ¾ in. cooling water connections.

The space required is as follows:

Type 41Q2—48¾ in. wide x 21 in. deep x 72½ in. high.

Type 41Q6—66¾ in. wide x 28 in. deep x 83 in. high.

SUMMER, WINTER OR YEAR 'ROUND

50,000 to 480,000 B.t.u. per hr.—1 to 40 Tons

TYPE 39Q and 39R WEATHERMAKERS

Application—For direct expansion, chilled water, well water. These units are widely used for industrial buildings, small factories, etc. Extreme compactness and complete application flexibility are primary features.

Advantages—Minimum operating attention, acceptable quietness and high efficiency are important advantages. The built-in "Auditorium by-pass" may or may not be employed.

Type 39Q—Floor mounted to be located within or outside the conditioned space—with ducts.

Type 39R—Suspended from the ceiling located within or outside the conditioned space—with ducts.

Specificaton Features—Assembly is sectional—low installation cost.

Fans are of special high-efficiency design and performance. They are double-inlet, centrifugal, electrically welded steel, and die-formed.

For cooling and for heating coils; Aerofin type.

Piping connections are external.

Humidifier, an accessory installed in the duct, may be either steam-heated evaporator or tap-pressure atomizer type, as preferred.

PERFORMANCE AND PHYSICAL DATA—10 MODELS

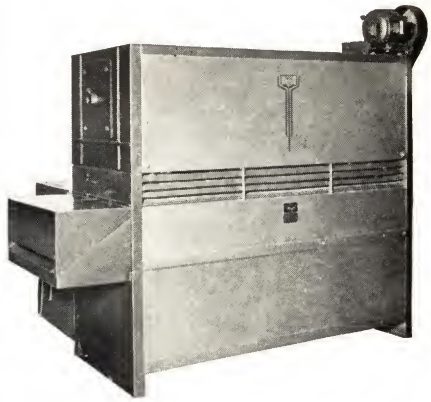
Unit No.	Tonnage Range	Average Heating Capacity Btu/hr	Fans Max. C.f.m.	Motor hp. Range	Air Filters		
					No.	Size, in.	Wt.
39Q1 39R1	1–5	50,000	1000	¼–½	2 2	10x20 16x20	717 707
39Q2 39R2	2–10	100,000	2000	¼–¾	6	16x20	1053 1033
39Q6 39R6	5–20	200,000	4000	½–1½	9	20x20	1558 1538
39Q7 39R7	7–30	300,000	6000	¾–2	12	20x20	2170 2120
39Q9 39R9	10–40	400,000	8000	1–3	15	16x25	2440 2385

SPACE REQUIREMENTS

Unit No.	*Base Dimensions, inches			**Space required, inches		
	L	W	H	L	W	H
39Q1	27¼	21	63½	41	59	75½
39R1	27¼	35½	23¾	41	70	36½
39Q2	46½	21	63½	60	59	75½
39R2	46½	35½	23¾	60	70	36½
39Q6	59½	28	63½	78	69	79½
39R6	59½	42½	30¾	78	84	46½
39Q7	85¼	28	63½	104	69	79½
39R7	85¼	42½	30¾	104	84	46½
39Q9	85¼	36½	70½	104	82	86½
39R9	85¼	42½	39¼	104	88	55½

* Bare unit without motor, belt guard, filter box, and control box.

** Space required for proper installation including motor, belt guard, filter box, control box, and space on side opposite filters (39Q) or under unit (39R) to gain access to fans. Does not include space at end for removal of fan assembly or coils.



Front View 39Q Showing Grilles for Recirculated Air Inlet

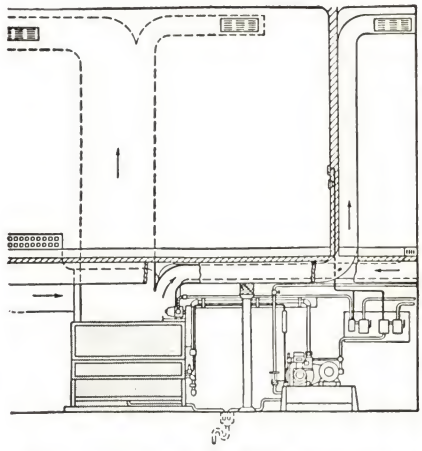
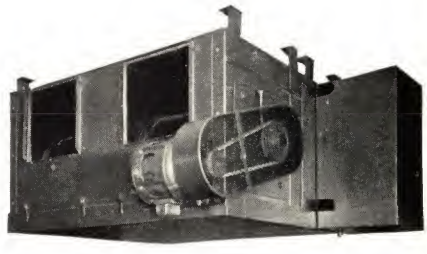


Diagram of a Typical 39Q Weathermaker Installation

Note Carrier Slotted Outlets . . . they are scientific in design and application. Weathermakers may be used singly or any number in multiple on one refrigeration unit or system.

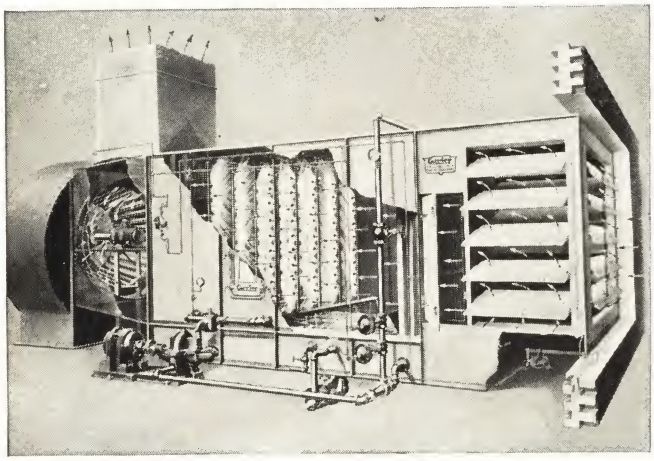


Outlet End of 39R Unit, Fans Visible Through Outlet Opening

26/5

AIR HANDLING APPARATUS (Central Plant) 2,000 to 350,000 c.f.m. per unit

Proper Selection—Complete and accurate study is necessary to determine the economic type, size and location of the equipment. Sometimes there may be two or more central stations, each to serve a part of the conditioned space, with the air distributed by ducts.



Cut Away Section of Central Plant Air Conditioning Equipment

The choice of equipment depends on many factors involved on each particular space to be conditioned. In some cases, spray type dehumidifier may be used. In other cases, cooling and dehumidification of the air is accomplished by passing it through finned coils, containing refrigerant, brine or cold water. Or there may be a combination—spray and surface cooling.

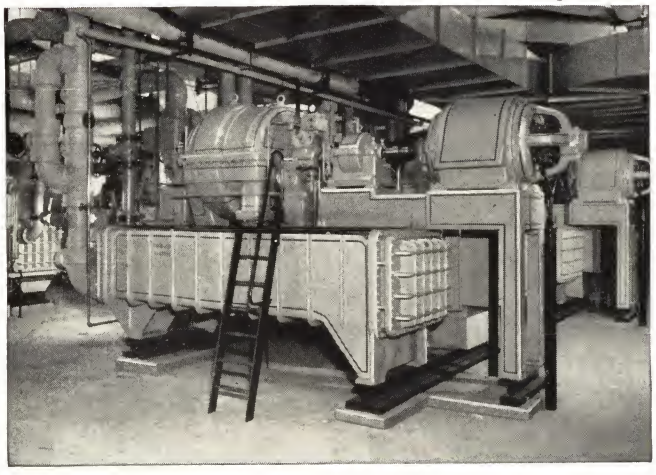
Description—The conditioned air is distributed from the central station apparatus to the conditioned spaces through scientifically designed duct and outlets, heating, humidifying, cooling, dehumidifying, cleaning and air circulation obtained with central plant system. Very close dew-point control maintained.

Refrigerated spray water for the air conditioning apparatus is usually obtained by mechanical refrigeration, although under favorable conditions, if very cold and in sufficient quantity, deep well or city water may be used, to remove excess heat and moisture from the air.

Operation—The outside air and usually a portion of the returned room air enters at right end of the plant and may or may not pass through preheating coils, before it enters the spray (or cooling coils) chamber. Here the air is cleaned and cooled by contact with the cold water spray (or coils) and the excess moisture removed by condensation. The air is then taken through reheating coils, to be brought up to proper conditions, mixed with the by-passed room air, and forced by the fan through the ducts to the conditioned space.

REFRIGERATION APPARATUS—CENTRIFUGAL MACHINE

50 to 1100 Tons



Description—The refrigerant is Carrene No. 2—non-toxic, non-explosive, non-inflammable, highly efficient. Machines are compact self-contained units, comprising evaporator centrifugal multi-stage compressor, and condenser on a single foundation. They furnish chilled water or brine to the process equipment or air conditioning apparatus, for processing, direct cooling of beverages or condensation of gases. Machines are available in various stages.

For process work, temperatures as low as minus 100° F. are attained, but for air conditioning work, spray water is not usually taken below 40° F. Machines may be located nearby or remotely from point of heat absorption. Made in eleven sizes with varying load conditions.

The compressor rotor is statically and dynamically balanced and the impellers are lead-coated to preserve this balance. The complete oiling system with pump is integral with compressor. Oil cooler is located externally.

Advantages—(1) *Permits wide selectivity in type of drive*—Such as synchronous motor, induction motor, slip-ring motor, Diesel or gas-engine, or steam turbine. It may be driven by high pressure steam and supply low pressure steam for heating or other industrial purposes, or it may utilize low pressure exhaust steam, operating condensing, or a combination of the two.

(2) *The steam turbine exhausts clean steam, free from contaminating oil.*

(3) *Machine is easy to start and operate*—It picks up load almost instantly; responds quickly to load changes.

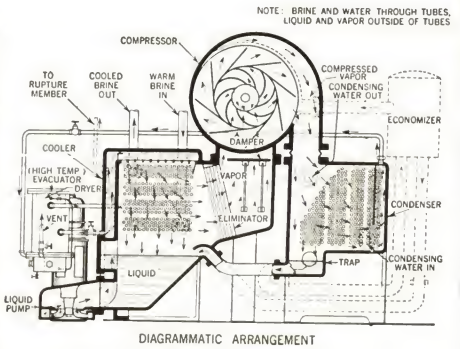
(4) *It is easy to maintain*—The few rotating parts are free from vibration and shock, simple, and light in weight. Easily accessible. Refrigerant does not come in contact with the oil.

(5) *Machine is safe*—Safe refrigerant. Moving parts are enclosed. Condenser and cooler operate under vacuum or slightly above atmospheric pressure.

(6) *Inherently resistant to wear*—Adjusts itself to fractional load without attention.

OPERATING CYCLE

The warm brine to be cooled (salt solution or water) is circulated through the cooling coils, over which is flowed the liquid refrigerant, brought over the coils by the liquid pump. The liquid refrigerant is evaporated from the coils, taking up the heat of the brine, and drawn into the compressor. The compressed gases are forced into the condenser, where the heat is removed by the condenser water coming from city supply, deep well or cooling tower flowing through the coils. The refrigerant becomes liquid again and flows back to the evaporative storage tank, completing the cycle.



DIAGRAMMATIC ARRANGEMENT

SUMMER, WINTER OR YEAR 'ROUND

20,000 to 480,000 B.t.u. per hr.—1 to 40 Tons

TYPE 43Q INDUSTRIAL WEATHERMAKER

Description—This unit is in reality a small central station plant, and may be connected with ducts to distribute air to portions of the conditioned space remote from the refrigeration or heating source.

Type 43Q unit is made up of a motor-driven fan section, a spray and coil section, eliminators, motor-driven pump and special air intake. Heater coils may be used. Unit may be equipped with auditorium by-pass if required. Units are designed for cooling, heating, dehumidification, humidification, ventilation, filtration and circulation.

SPECIFICATIONS

Unit No.	Max. c.f.m.	No. fans	Fan h.p.	Overall Dimensions, inches		
				Width	Length	Height
43Q1	1000	1	½	26	39½	87
43Q2	2000	2	1	26	58½	89
43Q6	4000	2	2	33	76½	104½
43Q7	6000	3	3	33	102½	104½
43Q9	8000	3	5	41½	102½	104½



Type 43Q
Floor Mounted

SURFACE TYPE DEHUMIDIFIER — DIRECT EXPANSION, CHILLED WATER OR BRINE—USED SINGLY OR IN MULTIPLE

2,000 to 32,400 c.f.m.—3 to 1000 Tons

TYPE 29R SURFACE DEHUMIDIFIER

Description—Consists of an encased bank of cooling coils, eliminator and drip pans made as one unit. Bank of coils may consist of one to six, including nine different heights and three different widths. The coils may be sprayed and the characteristic performance of a spray type dehumidifier obtained, securing compactness for duty.

Dampers for "By-pass" air around the coil are standard. Units furnished in 27 sizes, capable of being stacked or grouped to economically yield a wide variety of capacity and dimensional combinations.

Functions—Type 29R Dehumidifier is designed for the following services: (1) Cooling and dehumidifying in summer. (2) Humidifying in winter. (3) Air washing. (4) Close control of conditions.

To complete equipment fan, connection and duct are used with dehumidifier.

Advantages—(a) Sectionalized elements. (b) Cooling coils for chilled water, brine or direct expansion. (c) Closed pumping system with chilled water. (d) Elimination of corrosion inherent with open spray system. (e) The condensate from one stack of coils is immediately drained. (f) Coils are non-ferrous Aerofin. (g) Centrifugal distribution of cooling medium through tubes.

Performance Summary—*Cooling Effect*—Direct expansion; chilled water or brine, up to 160 tons (for largest size single coil).

Spray Water Capacity—Recirculating sprays: approximately 0.8 g.p.m. per sq. ft. of coil face area at 12-ft. head. Direct city water sprays approximately 0.11 g.p.m. per sq. ft. of coil face area at 25-lb. pressure.

Rated Air Velocity—500 f.p.m.

Rated Air Resistance—4-row coil 0.62 in. water; 6-row coil 0.88 in. water.

DIMENSIONS, TYPICAL 29R SURFACE DEHUMIDIFIER
A = Width. B = Depth. C = Height.

Dimension in inches			Dimension in inches			Dimension in inches			Dimension in inches
60 Series			70 Series			100 Series			Common to all
Assem. No.	A	B	Assem. No.	A	B	Assem. No.	A	B	C
29R61	58¾	73¾	29R71	84½	99½	29R101	110½	125½	47⅜
29R62	58¾	73¾	29R72	84½	99½	29R102	110½	125½	55¾
29R63	58¾	73¾	29R73	84½	99½	29R103	110½	125½	84¼
29R64	58¾	73¾	29R74	84½	99½	29R104	110½	125½	92⅝
29R65	58¾	73¾	29R75	84½	99½	29R105	110½	125½	101
29R66	58¾	73¾	29R76	84½	99½	29R106	110½	125½	121⅛
29R67	58¾	73¾	29R77	84½	99½	29R107	110½	125½	129½
29R68	58¾	73¾	29R78	84½	99½	29R108	110½	125½	137⅞
29R69	58¾	73¾	29R79	84½	99½	29R109	110½	125½	146¼



Type 29R
Single Unit—27 Sizes
Floor Mounted

NOTE:

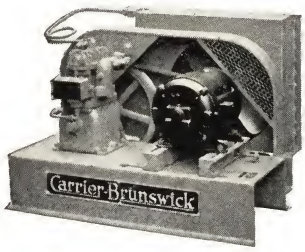
AIR DISTRIBUTING SYSTEMS

All of the above equipment is used with a duct system for distributing the air throughout the space to be air-conditioned.

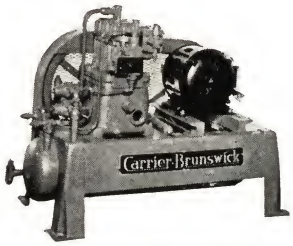
Outlets suitable for the kind of circulated air required, may be selected from many available types.

FREON, METHYL CHLORIDE REFRIGERATION

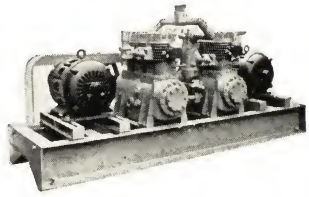
¼ to 50 tons—(See Page 8 for Carrier Centrifugal Machines)



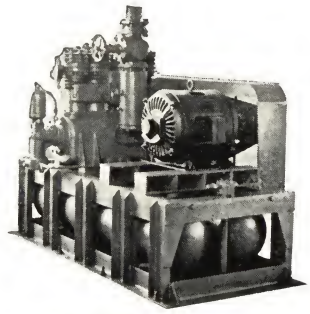
Type 7F2 Air Cooled, 1 to 1½ Tons



Type 7F4 Water Cooled, 3 Tons



Type 7H66, 10 and 15 Tons



Type 7G8 Water Cooled, 40 Tons

Twelve Reasons Why You Should Use Carrier Freon or Methyl Chloride Refrigerating Machines

(1) They are precision-built.
(2) They are made of quality materials.
(3) Quality is built into the manufacturing.
(4) Valves and ports are large.
(5) Valves are cushioned.
(6) There is minimum vibration.
(7) There is effective lubrication.
(8) Reciprocating parts are well balanced.
(9) Belts are over-size.
(10) They minimize superheating.
(11) Valves hold tight at any pressure.
(12) Low starting current—at full capacity.

CAPACITIES AND DATA—FREON AND METHYL CHLORIDE UNITS

Unit Number	Air Cooled—.182 to .71 Tons*							Water Cooled, and With Evaporative Condenser—5.66 to 30.18 Tons†							
	7H1-14x	7H1-13	7H1-12	7F2-34	7F2-10	7F2-15		7F5-50	7H5-75	7F6-100	7H6-150	7F66-100-100	7H66-150-150		
Motor hp	¼	⅓	½	¾	1	1½		5	7½	10	15	Two–10	Two–15	...	...
Std. speed, r.p.m.:															
Freon Units	470	610	800	285	320	470	...	450	600	450	600	450	600	...	...
Methyl Chloride Units	470	610	800	285	320	470	...	500	600	500	600	500	600	...	...
Nominal capacity*:															
Freon—1000 B.t.u./hr.	2.18	2.83	3.79	4.60	5.48	8.51	...	68.0	90.6	136.0	181.0	272.0	362.0	...	...
Tons	.182	.236	.316	.384	.456	.71	...	5.66	7.56	11.32	15.10	22.64	30.18	...	...
Methyl Chloride—															
1000 B.t.u./hr.	2.18	2.83	3.79	4.60	5.48	8.51	...	75.5	90.6	151.0	181.0	302.0	362.0	...	...
Tons	.182	.236	.316	.384	.456	.71	...	6.29	7.55	12.58	15.10	25.15	30.18	...	...
Air Cooled—over all dimens.:															
Length, in.	23½	23½	29	34	34	34	...	...	...	...	...	...	...	...	...
Width, in.	15½	15½	22¾	22 13/16	22 13/16	22 13/16	...	...	...	...	...	...	...	...	...
Height, in.	15⅜	16	23⅛	25 1/16	25 1/16	29½	...	...	...	...	...	...	...	...	...
Water Cooled Condensers, over all dimensions:															
Length, in.	...	...	...	...	...	...	...	60½	59¾	61¼	63¾	105	105	...	...
Width, in.	...	...	...	...	...	...	...	30⅛	30	37⅜	37⅜	38¼	38¼	...	...
Height, in.	...	...	...	...	...	...	...	41¾	44 7/16	41¾	44 7/16	46 11/16	55	...	...
Evaporative Condensers, over all dimensions:															
Length, in.	...	...	...	...	...	...	...	50	50	50	50	95¾	95¾	...	...
Width, in.	...	...	...	...	...	...	...	26¼	26¼	35½	35½	33 7/16	32⅞	...	...
Height, in.	...	...	...	...	...	...	...	30¾	33½	30¾	33½	32¾	41	...	...
Net weight, lbs.:															
Air Cooled	155	240	265	335	355	375	...	...	...	...	...	...	...	...	...
Water Cooled Condensers	...	...	...	...	...	...	...	1175	1265	1840	1895	3500	3500	...	...
Evaporative Condensers	...	...	...	...	...	...	...	1030	1120	1435	1535	2800	3100	...	...

Unit Number	Water Cooled, and With Evaporative Condenser—.413 to 2.96 Tons†							Water Cooled, and With Evaporative Condenser—19.1 to 50 Tons†							
								7G6-200		7G8-300		7G8-400		7G8-500	
	7H1-13	7H1-12	7F2-34	7F2-10	7F3-15	7F3-20	7F4-30	Water Cooled	With Evap. Condenser	Water Cooled	With Evap. Condenser	Water Cooled	With Evap. Condenser	Water Cooled	With Evap. Condenser
Motor hp	⅓	½	¾	1	1½	2	3	20	20	30	30	40	40	50	50
Std. speed, r.p.m.:															
Freon Units	510	740	285	355	285	390	350	800	800	450	450	500	500	570	570
Methyl Chloride Units	550	740	285	400	285	390	390	800	800	450	450	500	500	570	570
Nom. cap.,* Freon Units:															
100 B.t.u./hr.	4.96	7.22	9.47	11.80	17.98	24.60	33.10	229	229	489	489	543	543	...	...
Tons	.413	.601	.79	.974	1.49	2.05	2.76	19.1	19.1	40.7	40.7	45.0	45.0	...	...
Nom. cap., *Methyl Chloride Units:															
1000 B.t.u./hr.	4.87	6.55	8.96	12.60	17.20	23.50	35.40	229	229	489	489	543	543	...	...
Tons	.406	.546	.746	1.05	1.43	1.96	2.96	19.1	19.1	40.7	40.7	45.2	45.2	...	...
Water Cooled Condensers, over all dimensions:															
Length, in.	34¾	34¾	36	36	43¼	43¼	43⅜	63¾	...	102⅛	...	102⅛	...	102⅛	...
Width, in.	17¼	17¼	17⅝	17⅝	22¼	22¼	23⅛	37⅜	...	58½	...	58½	...	58½	...
Height, in.	18¼	18¼	22½	22½	31½	31½	32	44½	...	72⅝	...	72⅝	...	72⅝	...
Net weight, lbs.	240	260	310	330	465	475	585	1895	...	5000	...	5300	...	5400	...
Evaporative Condensers, over all dimensions:															
Length, in.	...	29	34	34	40½	40½	40½	...	50	...	80½	...	80½	...	80½
Width, in.	...	15⅞	17⅝	17⅝	22¼	22¼	23⅛	...	35½	...	58½	...	58½	...	58½
Height, in.	...	18¼	22½	22½	31¼	31¼	32	...	33½	...	58⅝	...	58⅝	...	58⅝
Net weight, lbs.	...	190	240	255	390	455	580	...	1535	...	3600	...	3900	...	4000

*90° Ambient Air, 20° Suction. †Suction 40° F., Condensing 98° F. xAvailable only in Air Cooled type.

Wide range of sizes and standard speeds provide selection advantages without forcing unit to fit duty desired. Units have air cooled, water cooled or evaporative type condensers.

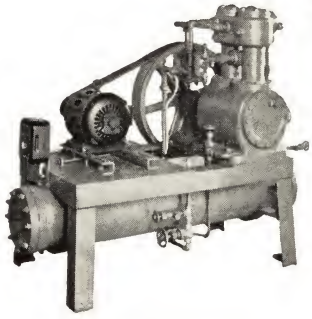
Each unit receives three tests, prior to shipment: (1) High internal pressure test. (2) Extremely high vacuum test. (3) Sensitive gas-torch test.

AMMONIA REFRIGERATION

These units are designed for small and medium size commercial refrigeration application of all types where ammonia is the preferred and accepted refrigerant. These units are available either as a self-contained unit with a belt drive from a motor mounted on the same base, or as a bare compressor which is driven by belt, or for direct connection for low speed motors or through gear reduction for high speed motors. These eccentric drive compressors have C. I. oil-bathed bearings of low unit pressure.

DATA ON TYPE 8B SELF CONTAINED UNIT

Unit No.	Cond. Size, Inches	ASRE, Tons	Comp., R.P.M.	Motor Hp.	Ship. Wt., Lbs.	Over-all Dimensions		
						Length	Width	Height
8B11	8x63	1.06	500	2	1285	5′- 8″	2′-0″	3′-10″
8B12	10x63	2.14	500	5	2100	5′- 8″	2′-0″	3′-5″
8B13	12x63	4.57	475	7½	2720	6′-11″	3′-3″	5′-0″
8B14	15x63	7.00	390	15	3780	6′-11″	3′-8″	5′-1″



Type 8B Ammonia Machine

EVAPORATIVE CONDENSERS

USED WITH REFRIGERATION UNITS IN PLACE OF AIR COOLED OR WATER COOLED CONDENSERS

3 to 8 Tons—Type 9P Methyl Chloride or Freon
10 to 40 Tons—Type 9Q Methyl Chloride, Freon, or Ammonia

Description—Condensing coils sprayed with water and air blown across. Utilizes use of heat removal for evaporation of water. Condensing medium is at wet bulb temperature of air.

When to Consider Them—(1) High Water Costs and Temperatures.
(2) High Power Costs, i.e., $.03 to $.07 per kw. hr.
(3) Low Maximum Wet Bulb Temperature.
(4) Inadequate Water Supply or Disposal Systems.
(5) City Ordinances Restricting Use of Water.

Their Advantages—A few advantages of the Evaporative Condenser over the cooling tower:
Low Compressor Power or, for the same power, greater compressor capacity because—
(a) The Evaporative Condenser provides a lower condensing temperature for the same outdoor wet bulb.
(b) Carrier Evaporative Condenser incorporates a liquid sub-cooling coil which adds materially to the efficiency of the system.

Low Installed Cost of System in Small Plants because of—
(a) Reduction of compressor size.
(b) Less cost for piping and pumps.
(c) Greater freedom in choice of location.
(d) Less expensive foundations and supports due to lower weight.
(e) Smaller volume of water circulated.

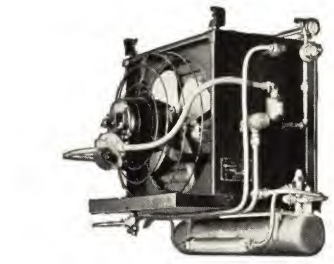
Principle of Operation—Water is sprayed on the finned coils which have a large water cooling surface. Propelled air evaporates a portion of the water. The heat of evaporation is taken from the refrigerant, which causes the refrigerant to condense.

Referring to the diagram at the right, fan (A) discharges air across condenser coil (B) to outdoors through duct (C). A fine jet of water from (D) is directed against target (E). The water is atomized upon impact and the spray is carried across the coil, wetting the surface to provide the water for evaporative cooling. The liquid refrigerant flows by gravity to the receiver (F) and from there to the strainer (G). The water supply enters through solenoid water valve (H), and flows through water pressure reducing valve (K).

EVAPORATIVE CONDENSERS

Type	Physical Dimensions				Approx. Refrig. Cap., tons	Fans			Pumps		
	Basic Dimensions			Oper. Wt., lbs.		No.	Type	Stand. c.f.m.	Hp.	Water cons. g.p.m.	Motor Hp.
	L., ins.	W., ins.	H., ins.								
9P2*	.....	.....	.....	250	3	1	Disc	1100	⅛	0.85	None
9P3*	.....	.....	.....	250	8	1	Disc	1370	⅛	0.4	None
9Q2†	47	21	63	2000	10	2	Cent.	2000	1	0.6	⅙
9Q6†	60	28	77	3000	20	2	Cent.	4000	1½	1.1	⅙
9Q7†	85	28	77	3650	30	3	Cent.	6000	2	1.7	⅙
9Q9†	85	37	77	4350	40	3	Cent.	8000	3	2.1	⅙

* Suspended. † Floor Mounted.



Type 9P Evaporative Condenser Suspension Mounted

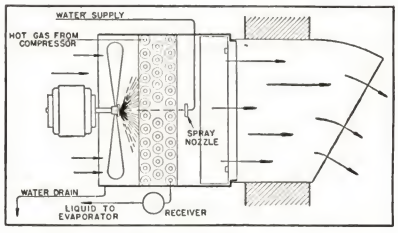
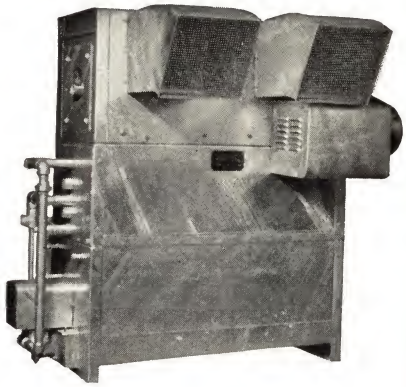


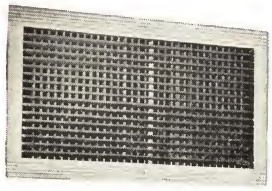
Diagram Showing Operation of Evaporative Condenser ....



Type 9Q Evaporative Condenser Floor Mounted



Front View of 35C1 Outlet with Snap Damper



Type 35C5 Adjustable Outlet

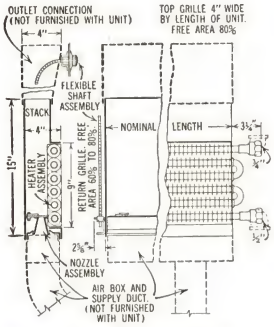


Diagram of 36B Weathermaster



Type 36C Weathermaster



Type 36D Weathermaster

TYPE 35C1 ROOM OUTLETS

Type 35C1—These outlets are designed to utilize the energy of multiple streams of high velocity air from the air conditioning system to induce a rapid secondary movement of room air. By the use of this principle a small quantity of low temperature air discharged at high velocity rapidly diffuses with a large quantity of room air and is distributed over a wide area without drafts and without the use of extensive duct systems.

Outlets are available with slot widths of ⅛ in., ¼ in. and ½ in. die formed from either galvanized steel or Allegheny Metal.

OVERALL GRILLE SIZES

Group Wide	Slots High	⅛" Slots Width in.—Height in.	¼" Slots Width in.—Height in.	½" Slots Width in.—Height in.
5	3	23⅝x4⅝	.....	.....
2	5	10⅞x6⅛	.....	.....
3	5	15⅛x6⅛	27⅛x 9⅛	52x16
4	5	19⅜x6⅛	35⅝x 9⅛	.....
5	5	23⅝x6⅛	44⅛x 9⅛	86x16
5	7	23⅝x7⅝	44⅛x12⅛	.....
6	7	27⅞x7⅝	52⅝x12⅛	.....
7	7	32⅛x7⅝	61⅛x12⅛	.....
8	7	36⅜x7⅝	.....	.....

Duct Sizes for sheet metal collar connection may be obtained by subtracting ¼ in. from both overall dimensions; and for wood ground and extension collar connection by subtracting 1⅞ in.

TYPE 35C5 ROOM OUTLETS

Type 35C5—These outlets are particularly applicable to conditions where large air capacity, long blows and moderate temperature difference between air stream and room are required. They are available in prime finish, stainless steel or hot dip galvanized finish in the sizes listed below. Two sets of louvres are provided to control both horizontal and vertical distribution of the air stream.

OVERALL GRILLE SIZES

Width in.—Height in.	Width in.—Height in.	Width in.—Height in.	Width in.—Height in.
11⅞x8	20⅜x 9⅜	27⅝x12¼	20⅜x 6⅝
15⅜x8	20⅜x12¼	27⅝x15⅜	27⅝x 6⅝
15⅜x9⅜	27⅝x 8	11⅞x 6⅝	27⅝x18¼
20⅜x8	27⅝x 9⅜	15⅜x 6⅝	.....

Duct Extension Collar dimensions for Wood Ground and Metal (Concealed Duct Work) mounting may be obtained by subtracting 1¾ in. from both overall dimensions; for Exposed duct work use overall dimensions given above.

TYPE 36 WEATHERMASTERS

Description—The Carrier Weathermaster utilizes an induced air flow, drawing from the room to assure perfect diffusion of room and primary air.

Application—Weathermasters are especially adapted to offices, apartments, hotels and may be used for many other types of installations.

Type 36B—Model designed primarily for window sill concealment. Primary air from a central station system enters through nozzles, located in lower part of the Weathermaster, at high velocity, inducing a secondary air flow drawn from the room through a grille located at the front of the Weathermaster. A steam coil located in the secondary air inlet grille provides room control. Primary air in summer is cooled and dehumidified, in winter heated and humidified. Smaller quantities of air are handled due to the assured diffusion provided within the Weathermaster. Smaller air quantities permits smaller air distributing ducts.

Capacities—Twenty-eight sizes are available with capacities of the heating coil (based on 2 lb. steam) ranging from 2030 to 30,900 B.t.u. per hour.

Type 36C—Designed with primary air supplied by fan located within the Weathermaster. Secondary air is drawn from room through grille in front. Weathermaster consists of fan, motor, heating coil, and cooling coil for water. External cabinet 18 gal. rolled steel with baked primer and brown lacquer finish.

Capacities—Available in five sizes with capacities adapted to various sized rooms. Range from .67 tons to 1.33 tons of refrigeration.

Type 36D—Similar to Type 36C except that there is no fan in Weathermaster and the primary air is supplied from a central plant air conditioning system.

Capacities—Available in seven sizes, ranging from ½ ton to 1.7 tons of refrigeration.

Type 36E—Is essentially the same as Type 36B except that casing is included as part of outlet.

(For Refrigeration Equipment, See Pages 10 and 11)

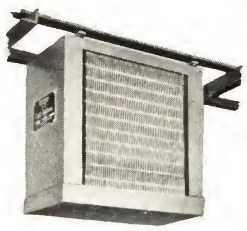
TYPE 1400—for Ceiling Suspension

0.1 to 0.75 Tons—200 to 1100 c.f.m.—Methyl Chloride or Freon Coils

Operation—Disc type fan is operated by a 1/50 to 1/15 Hp. motor. Cooling coil is of copper tubing with aluminum fins. The propeller fan draws the room air over the coil and discharges it horizontally into the conditioned space.

Installation—Easily installed. Weight, 105-175 lbs. Electrical, refrigeration and drain connections required.

Casing—Galvaneal, with green lacquer finish. Made in seven sizes. Overall dimensions: length, 15⅝-22¼ in.; depth, 21-23 in.; height, 15-22¾ in.



Type 1400

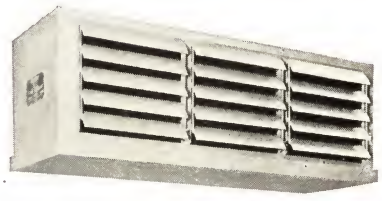
TYPE 1800—for Ceiling Suspension

0.2 to 1.5 Tons—500 to 3800 c.f.m.—Brine or Ammonia Coils

Operation—Disc type fan is operated by a 1/15 to three 1/6 Hp. motors. Available in one, two or three fan units. Adjustable deflectors control direction. Prime surface steel galvanized coil. Ceiling intake removes warm air.

Installation—Easily installed. Weight, 410-1030 lbs. Electrical, refrigeration and drain connections.

Casing—Galvanized steel, seafoam green lacquer finish. Made in three sizes. Overall dimensions: length, 24 3/16-62 11/16 in.; depth, 29¾ in.; height, 21 11/16 in.



Type 1800

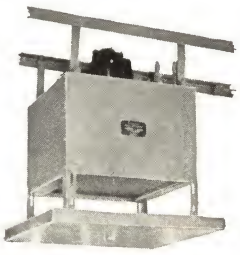
TYPE 15K—for Ceiling Suspension

0.5 to 3.5 Tons—700 to 3000 c.f.m.—Methyl Chloride, Freon, Ammonia or Brine Coils

Operation—The disc type fan is operated by a 1/15 to 1/3 Hp. motor. Methyl Chloride or Freon cooling coil is of copper tubing with aluminum fins. Coils have from three to seven circuits in parallel, depending on refrigerant and requirements. Ammonia or brine coil made of steel hot dipped galvanized, single circuit.

Installation—Easily installed. Weight, 260-455 lbs. Electrical, refrigeration and drain connections required.

Casing—Galvaneal sheet steel air dried light green lacquer finish. Made in two sizes. Overall dimensions: length, 26 3/16-34 5/16 in.; depth, 26 13/16-30 3/16 in.; height, 30⅝-35 3/16 in.



Type 15K

TYPE 15Q—Floor Mounted

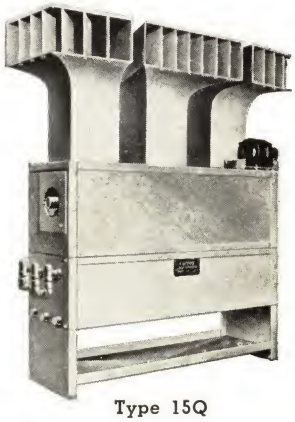
1 to 20 Tons Prime / 1 to 30 Tons Finned — Methyl Chloride, Freon, Ammonia or Brine Coil

1000 to 12,000 c.f.m.

Operation—One, two or three centrifugal type fans operated by ¼ to 5 Hp. motor. Cooling coil is either of copper tubing with aluminum fins, or of galvanized steel throughout. Air is drawn in through base by multiblade fans, discharged through outlet or ducts.

Installation—Units are made in sections, may be easily converted from top to side discharge. Multiple outlets provide directional air diffusion. Correct selection of air quantity and refrigerant temperature. Maintains constant conditions. Weight, 1050-3800 lbs. Electrical, refrigeration and drain connections required.

Casing—Pressed steel welded construction hot dipped galvanized finish. Made in four sizes. Overall dimensions: length, 27¼-85½ in.; depth, 21-28 in.; height, 105½-112½ in.



Type 15Q

TYPE 15T—Floor Mounted

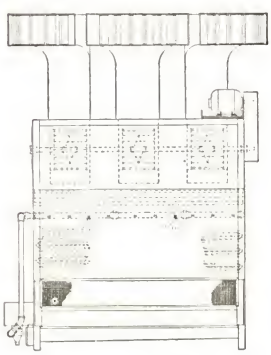
1 to 35 Tons—700 to 11,000 c.f.m.—(Brine Spray) Methyl Chloride, Freon, Ammonia or Brine Coil

Application—Low operating temperatures without loss of time for defrosting. The salt brine spray has germicidal action and prevents frosting. For storage rooms to be held near or below freezing (but above 10° F.) and where latent heat loads are heavy. Inhibits mold growth and disagreeable odors.

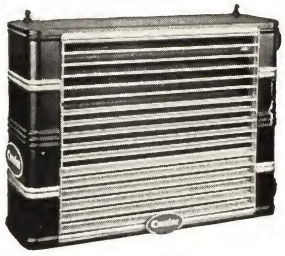
Operation—In brewery fermenting rooms, the 15T units may be used with sweet water spray instead of brine, thus serving as a combined air washer into conditioned space. One, two or three centrifugal type fans are operated by ¼ to 5 Hp. motor. Cooling coil is galvanized steel finned tubing.

Installation—Units are made in sections. Low velocity multiple outlets afford uniform air distribution. Fan section may be converted from top to side discharge in the field (except 15T9). Weight, 1250-4700 lbs. Electrical, refrigeration and drain connections required.

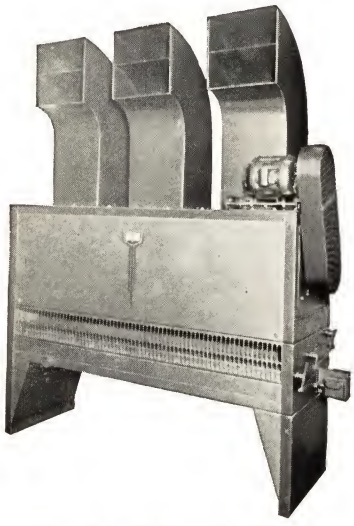
Casing—Pressed steel, welded construction hot dipped galvanized finish. Made in five sizes. Overall dimensions: length, 39-96 in.; depth, 21-36½ in.; height, 70-84 in.



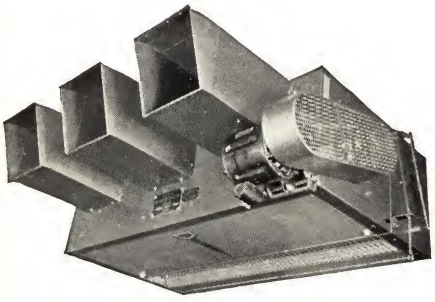
Type 15T



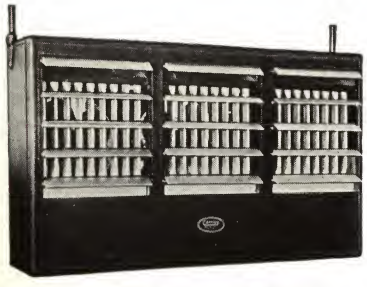
Type 46E



Type 46Q—Floor Mounted



Type 46R—Suspended



Type 46G (Three Unit Model)

DISC FAN TYPE UNIT HEATERS

TYPE 46E—for Ceiling Suspension

24,000 to 475,000 B.t.u.—Available in 25 Sizes

Application—Designed to heat for processing or produce and to warm the air for comfort at greatest fuel economy. They are unsurpassed for the following classes of applications: (1) Small areas with relatively low ceilings where comparatively few units are required. (2) Multi-story buildings in which heat losses are concentrated around the outside walls. (3) Where it is only necessary to keep sprinkler piping from freezing. (4) To eliminate condensate from process work and to prevent drippage from ceilings. (5) Rooms which are subdivided by partitions.

Features—Styled for appearance and utility. Added strength—die formed casing. No unnecessary restriction to air flow available in vertical or horizontal discharge. New non-protruding adjustable louvres, operated in 3 sections for straight, converging or diverging air flow for regulating length of flow. Aerofin coil, return bend construction. Tested to 1,000 lbs. hydrostatic pressure and guaranteed for 200 lbs. working pressure. Fans of latest design. Low noise level. Convenient hanger bolts. Steam supply and return connections on side of unit. Spring-suspended motor bracket absorbs vibration.

Motor of standard horsepower and size located on cool side of heater. Completely enclosed motor contains adequate thrust collar bearing. Thermostatic regulation. Units may be turned from one direction to another. All fan motors are tested before shipment.

Installation—Suspended from ceiling or trusses near shipping doors or other points of large air infiltration. With no air flow obstructions, units will deliver up to 50 to 60 ft. from the unit, depending on fan speed. Fan, propeller type, 12, 16, 19 and 22 in. diameter. Motor, 1/60 to two 1/3 Hp.

For capacities and dimensions, refer to Carrier Bulletin on Unit Heating.

HEAT DIFFUSING UNITS

TYPE 46 P, Q, R—for Floor of Suspension Mounting

130,000 to 900,000 B.t.u.—Available in 20 Sizes—Belt or Direct Connected

Application—In heat diffuser work as in any heating problem, B.t.u. capacity is the starting point and the most important consideration in equipment selection. The units chosen must have sufficient capacity under the design conditions to maintain specified room temperature.

There are, however, other important elements such as location, air distribution, outlets, fan speed, air change, noise and controls, all of which require consideration, and influence the final selection of equipment.

Features—Low horsepower requirements. Unusual quietness. Flexibility of arrangement and location. Selective air distribution. High outlet velocity. Removable fan and shaft assembly. Provision made for free expansion and contraction of coil. 1000 lbs. hydrostatic test. No screwed joints or compression fittings. Wide choice of units. Ease of erection and handling. Guaranteed capacity ratings. Available in belt or direct connection.

Operation—These units take return air through heater coils, or through front of unit by-passing heater coils. Fan forces the heated air out through distribution outlets horizontally for maximum distribution. Type 46Q are floor mounted; the 46P also vertical but suspension mounted; the 46R horizontal suspension mounted. Multi-blade, centrifugal fans, 11¾ to 16 in. diameter, two or three fans per unit. Motor, ¼ to 3 Hp. 600 to 980 r.p.m. fan speed.

GAS-FIRED UNIT HEATERS

TYPE 46G—for Ceiling Suspension

70,550 to 211,650 B.t.u.—A.G.A. Rated Output*—Available in 3 Sizes

Application—Carrier Gas-Fired Unit Heaters are the economic answer to low cost, efficient industrial and commercial heating wherever manufactured, mixed, or natural gas is available; wherever steam is not otherwise required or is already at capacity or overloaded. Economies in (1) first cost, (2) installation cost, (3) installation time, (4) space saved, (5) piping materials and time, (6) plus saving of cost of constructing boiler plant—are introduced by the use of these efficient Heaters.

Features—Attractive finish—bright blue heat-resisting paint and aluminum louvres. Cleanliness—through gas heating. High effective heating efficiencies. Quicker "heat up" and more thorough distribution of heated air. "Silent" operation and safety assured by careful engineering design. A.G.A. and U.L. approval.

Installation—Carrier Gas-Fired Units are completely equipped with all necessary control and safety devices and require only gas supply, flue and electrical connections. Combustion chambers may be of cast iron or steel as specified. Models are available composed of one, two or three complete units in a single casing.

CAPACITIES AND DATA—TYPE 46G

Heater Size		Motor H. P.	Rated B.t.u. per Hr.		Air Delivery C. F. M.	Dimensions W. H. D. In.
Steel Combustion Chamber	C.I. Combustion Chamber		Input	Output*		
46G3	46G13	One—1/20	85,000	70,550*	1300	22x37x28
46G4	46G14	Two—1/20	170,000	141,100*	2600	42x37x28
46G5	46G15	Three—1/20	255,000	211,650*	3900	62x37x28

*A.G.A Testing Laboratories rate all approved heaters at 75%—but efficiency of these units is much higher.

DEHYDRATION

Application—These units achieve direct control of humidity, independently of temperature. They meet a wide range of applications for maintaining low humidities in process work; controlling humidities in industrial plants; providing proper humidities in comfort air conditioning.

Description—Dehumidification of air is accomplished by the dehydrating quality of a solid adsorbent, Silica Gel. This substance will adsorb up to forty percent of its weight in moisture. The moisture is then readily expelled by the application of heat, so that the Silica Gel is again capable of adsorbing a like quantity of moisture. Silica Gel can be used indefinitely without deterioration or loss in volume. The efficiency of moisture removal increases as the inlet air becomes drier. There is virtually no limit to the dryness of air which may be secured; and thus by selecting the proper size of unit, moisture levels from practically anhydrous air to any higher level may be secured.



Silica Gel Dehydrator —Floor Mounted

Operation—The equipment used to dehydrate air by this principle is fully automatic. It consists of two series of Silica Gel trays or beds, together with motor-driven fans to propel the air to be dehydrated. The damper mechanism automatically changes the air stream from one set of beds to the other. A heater is used to expel the moisture, or "re-activate" the Silica Gel. A continuous air flow cycle is thus produced by this self-contained equipment. The standard heaters for activation are designed for use with gas. However, dehydrators for steam activation are available with steam at pressures of 100 lb. gauge or higher.

SPECIFICATIONS

Unit No.	Air Capacity, c.f.m.	Gas Consumption, B.t.u. per hr.	Motor Hp.	Dimensions, Inches		
				Length	Width	Height
53B6	600	70,000	½	57	30	46⅝
53B14	1300	147,000	1½	66	37	59⅝
53B27	2700	262,000	3	93½	50½	79½
53B50	5000	525,000	5	120¼	66½	118 3/16

Moisture Removal: The moisture removal capacity ranges from 26 lb. per hour for the 600 c.f.m. unit to 218 lb. per hour for the 5000 c.f.m. unit, based on an entering air condition of 9 grains per cubic foot. With the units used in multiple, a wide range of dehydrating capacities may be attained.

COMMERCIAL REFRIGERATION

Automatic Freezers—The automatic freezer, for Frosted Malteds, Soft Ice Cream, etc., has a capacity of one gallon and is equipped with automatic controls for keeping contents at proper consistency and temperature for immediate serving fresh from freezer without any attention from the operator. The unit is equipped with a half horsepower compressor and occupies a floor space of 26 x 31 inches.

Display Cases—Carrier Display Cases are made as self-contained units or for remote location of refrigerating unit. All models are available with 6, 8, 10 or 12 feet lengths and are durably finished in Dulux or in porcelain and rust-resisting steel. Improved construction makes these cases remarkably economical to operate.

Reach-in Refrigerator—Besides being of the most modern construction with the insulation sealed between steel walls, the refrigeration is of an entirely new type. The entire interior has the same uniform temperature. A high relative humidity of from 80% to 90% prevents the extraction of moisture from perishable and delicate foods, preserving their full flavor and purchase appeal.

Various models are available with solid or glass doors. The capacity is 35 cubic feet and the shelf area 40 square feet. The interior is finished in stain-proof porcelain enamel and exterior with high baked Dupont Dulux.

For smaller installations Model C25 is available with a storage space of 22 cubic feet and over 33 square feet of shelf area.

Frosted Food Cabinets—Carrier Frosted Food Cabinets are refrigerated with direct expansion coils requiring no brine. Correct design and placing of cooling coils ensure temperature equalization throughout the entire storage space. Four inches of pure cork insulation reduce operating costs. Two sizes are available, one with eight lids, and one with twelve lids, both occupying a minimum of floor space.

Beverage Coolers—The new Carrier Beverage Cooler CBC chills beverages in its own icy bath at 1/6 the cost of ice. The "Automatically Iced" feature maintains a constant supply of ice in the cooling compartment. Attractively finished and efficiently insulated, this cooler is available in two sizes. The CBC3 has a capacity of 240 12-oz. bottles (360 bottles corded) and the CBC2 has a capacity of 180 12-oz. bottles (270 bottles corded). Both coolers occupy a minimum of floor space.

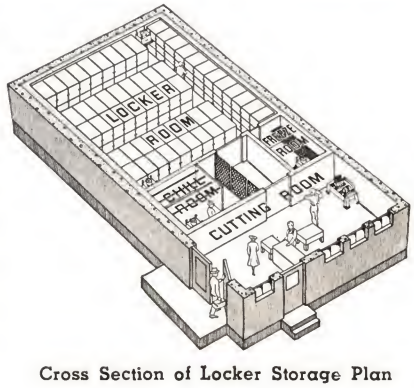
The Dry Type Beverage Cooler is beautifully finished in black crackled lacquer with a stainless steel top. Direct expansion coils provide the refrigerating effect. Two sizes are available with capacities of 288 and 432 bottles. The floor space required is 57 x 26 inches and 74 x 26 inches respectively.

Baker's Refrigerators—Carrier's Baker's Refrigerators are of massive construction with sturdy pan racks and ample storage space. They have shelves to hold every kind of perishable used in the bakery. The three door model has a total interior volume of 56 cubic feet (floor space 59¾ x 36¼ inches). The four door model has a total interior volume of 83 cubic feet (floor space 85½ x 36¼ inches).

Florist Refrigerator—This Refrigerator, with Carrier Air Conditioned Refrigeration, is an efficient and attractive unit for any florist shop. The interior is finished in dull satin black enamel. The exterior can be finished in any color desired.

Flat Type Cold Diffusers—These Cold Diffusers are especially adapted to use in reach-in refrigerators and occupy the least possible space. They are available in four sizes with capacities from 1000 to 3200 Btu. per hour.

Locker Storage—Food Locker Storage is a comparatively new application of refrigeration. Nevertheless, it uses the same equipment and principles generally as other refrigeration applications. With its wide range of refrigerating units, cold diffusers, etc., Carrier is well prepared to supply the most efficient and reliable equipment for locker storage application.

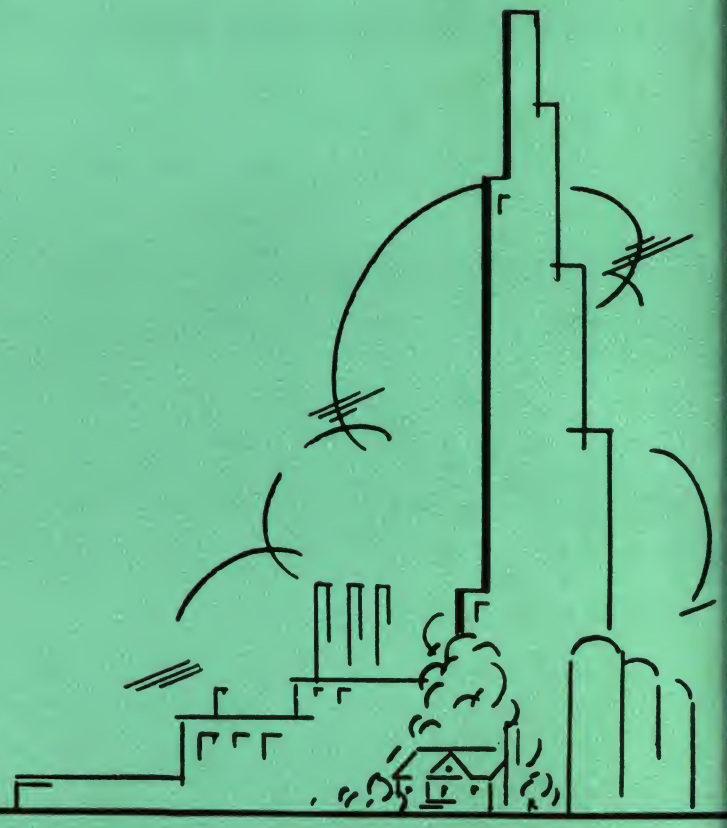


Cross Section of Locker Storage Plan

P R O G R E S S

Since that day in 1911 when Willis H. Carrier pronounced his Psychrometic Formulae, thus giving to the world the scientific basis of air conditioning, he and his associates have been constantly engaged in its research, development and applications. From that guidance and cooperation have resulted thousands of installations of Carrier equipment for the benefit of industrial processes and the health and comfort of human beings.

Pioneering in Centrifugal Refrigeration, dewpoint control, scientific distribution of air, low temperature product conditioning, modern space heating methods, industrial processing systems, standardized unitary systems, Home Weathermaker systems, evaporative condensers and many others, Carrier has not been content to rest on early laurels but continually leads the way with new developments. This brochure is designed to supply information even before calling the nearby Carrier representative who will be glad to cooperate in solving problems in Air Conditioning, Commercial Refrigeration and Heating.



CE114

Carrier

Air Conditioning
Refrigeration
Heating

CLARAGE



AIR HANDLING and AIR CONDITIONING EQUIPMENT

BULLETIN SA1

CLARAGE FAN COMPANY • MAIN OFFICE AND PLANTS, KALAMAZOO, MICH.

for COOLING, HEATING OR COMPLETE AIR CONDITIONING IN STORES, RESTAURANTS, OFFICES, THEATRES, HOSPITALS, ETC.

Multitherm Conditioning Units are built in nine sizes having capacities of 400 to 13600 CFM, and in both horizontal and vertical types.

Units are designed to provide all functions of year-round air conditioning, or they may be furnished for summer or winter conditioning only. They can be operated entirely with recirculated air, or an inlet section (equipped with either manually or automatically operated fresh and recirculated air dampers) can be furnished to utilize proportionate volumes of recirculated and outside air as desired.

Quiet Operation: From the standpoint of silent performance, the units meet exacting requirements. Fan wheels are perfectly balanced. Fan bearings are graphite bronze-sleeve type. Lead noise isolators are used between bearings and bearing supports.

Casing: Cabinet, with exception of pan, is built in separately removable sections of either No. 18 or 16 gauge galvanized steel. Base of unit, serving also as drip pan, is of heavy welded steel construction, equipped with drain connections. Cabinets are furnished without insulation, fully insulated, or with only interior of pan insulated. Exterior of unit is enameled an attractive dark green.

Fans are multiblade type. Fan housings are No. 18 gauge steel. Fan wheels and shaft are cadmium plated and housings are galvanized when unit is furnished for cooling or humidifying service. Fan bearings are lubricated from one central oiler outside casing.

Drive is V-belt type with vari-pitch motor sheave furnished as standard equipment for motors 2 HP or less. Belt tightness adjustment furnished; drive guard optional.

Discharge and Hand: Horizontal units are either top horizontal (standard), bottom horizontal, or up blast discharge, and either right or left hand. Vertical units are either top horizontal or up blast discharge, and clockwise or counter-clockwise rotation.

Filters are dry throw-away, inexpensive type, easily replaceable. Filters can be located in horizontal or vertical position on vertical units.

Cooling Coils are copper tube with aluminum or copper fins of plate or helically wound type. Cold water coils are serpentine type. Direct expansion coils are suitable for Freon or methyl chloride operation. Supply connections can be located on either side.

Heating Coils are copper tube, finned type suitable for steam or hot water operation. Supply connections can be located on either side.

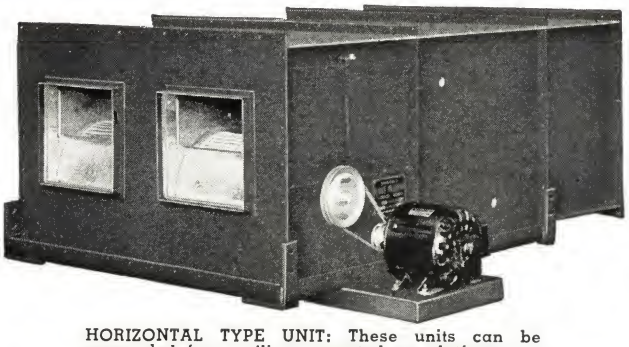
Syncrotherm Dampers (patented) for providing a uniform heating effect can be furnished. They regulate volume of air passing through or by-passing heating coils—manual or automatic operation.

Humidifiers are spray (standard), grid or pan type.

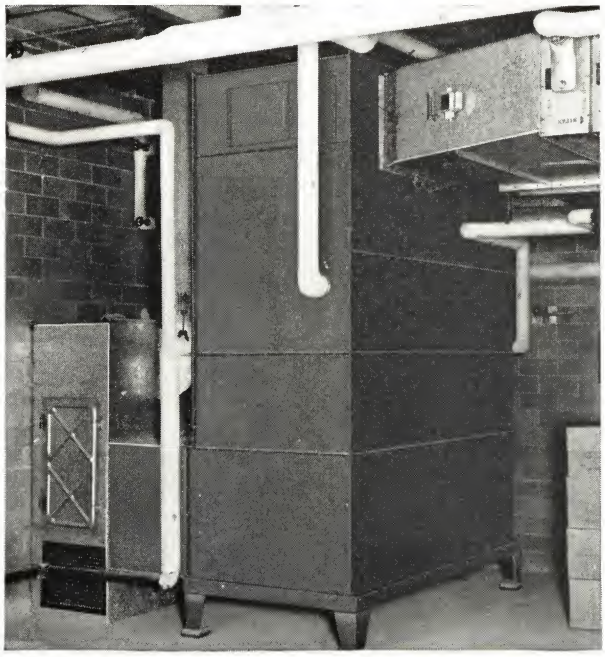
Automatic Control for regulating temperature and humidity can be furnished in either electric or pneumatic type.

Bypass Units: Units can be equipped so as to embody inventions covered by patents of Auditorium Conditioning Corp. Such licensed units may incorporate an automatically operated bypass damper in fan section, Syncrotherm dampers employed in conjunction with cooling coil, or step-control of several cooling coil circuits.

For more detailed information, see Clarage Bulletin 107.



HORIZONTAL TYPE UNIT: These units can be suspended from ceiling, mounted on platforms, or installed on the floor.



VERTICAL TYPE UNIT suitable for floor installation only. Both horizontal and vertical units can be used with or without duct work.

PHYSICAL DATA

Unit No.	CFM	Outlet Area (Total) Sq. Ft.	FANS		COIL FACE AREA Sq. Ft.		FILTERS				Motor HP Range
							100% CFM		Over 100% CFM		
			No.	Size	Steam and Water Coils	Direct Exp. Coils	No.	Size	No.	Size	
1205	400— 850	.53	1	5/8	1.25	1.5	1	20 x 25	1	20 x 25	1/4 — 1/2
1210	800— 1700	1.13	1	7/8	2.5	3.0	2	16 x 20	2	20 x 25	1/4 — 1
1215	1200— 2550	1.50	2	3/4	3.75	4.5	2	20 x 25	4	20 x 25	1/4 — 1 1/2
1820	1600— 3400	2.26	2	7/8	5.0	6.0	2	20 x 25	4	20 x 25	1/4 — 2
1830	2400— 5100	2.57	2	1	7.5	9.0	3	20 x 25	6	20 x 25	1/4 — 3
1840	3200— 6800	4.08	2	1 1/4	10.0	12.0	4	20 x 25	8	20 x 25	1/4 — 3
2450	4000— 8500	4.93	2	1 3/8	12.5	15.0	8	16 x 20	12	20 x 25	1/2 — 5
3060	4800—10200	5.80	2	1 1/2	15.0	18.0	6	20 x 25	12	20 x 25	1/2 — 5
3680	6400—13600	7.97	2	1 3/4	20.0	24.0	8	20 x 25	16	20 x 25	3/4 — 7 1/2

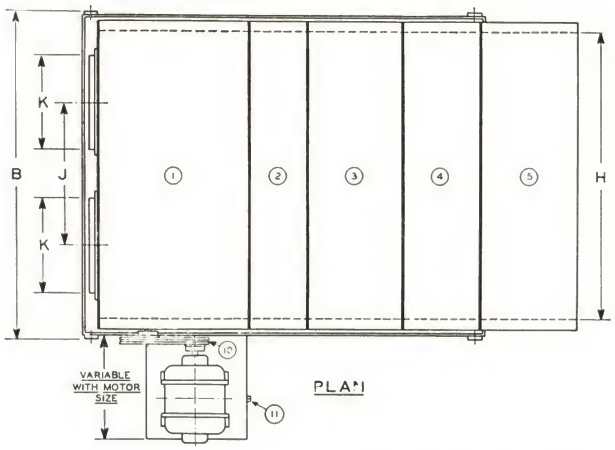
CAPACITY DATA

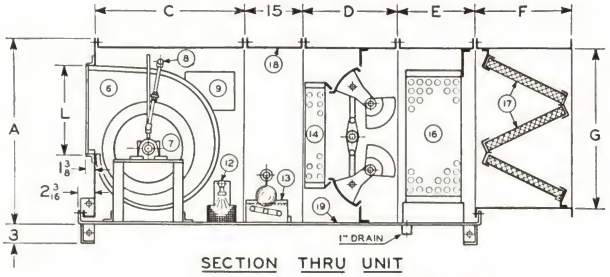
UNIT No.	CFM (Basic* 100%)	DIRECT EXPANSION COOLING (Total Heat in 1000 Btu/hr.) Entering Air at 83°F. D.B. 70°F. W.B. F-12 @ 45°F.			COLD WATER COOLING (Sensible Heat in 1000 Btu/hr.) Entering Air at 83°F. D.B. 70°F. W.B. Cold Water @ 50°F.				HEATING (Btu in 1000 Btu/hr.) Entering Air at 60° F. Steam at 2 lbs.		Hot Water @ 180°F.	
		4 Row	5 Row	6 Row	GPM	4 Row	6 Row	8 Row	1 Row	2 Row	GPM	4 Row
1205	500	20.0	22.6	24.9	10	12.1	14.3	15.3	24.9	40.4	5	30.7
1210	1000	39.9	45.1	49.8	10	24.3	28.5	30.7	49.7	80.7	10	88.3
1215	1500	59.9	67.7	74.8	15	37.1	43.8	47.6	74.5	120.0	10	127.3
1820	2000	79.8	90.3	99.7	20	50.6	60.0	65.4	99.4	161.4	15	175.2
1830	3000	119.7	135.4	149.5	20	71.0	84.8	93.4	149.1	242.1	15	245.5
1840	4000	159.6	180.5	199.4	25	96.0	114.2	125.1	198.8	322.8	15	324.0
2450	5000	199.5	225.6	249.2	30	125.4	149.8	165.0	248.5	403.5	20	417.6
3060	6000	239.4	270.8	299.1	35	149.3	172.3	191.9	298.2	484.2	25	505.2
3680	8000	319.2	361.0	398.8	40	179.9	211.5	234.1	397.6	645.6	30	618.6

*Basic CFM employs a 400 ft. per minute velocity through steam and water coils.

Copyright 1938, Clarage Fan Company

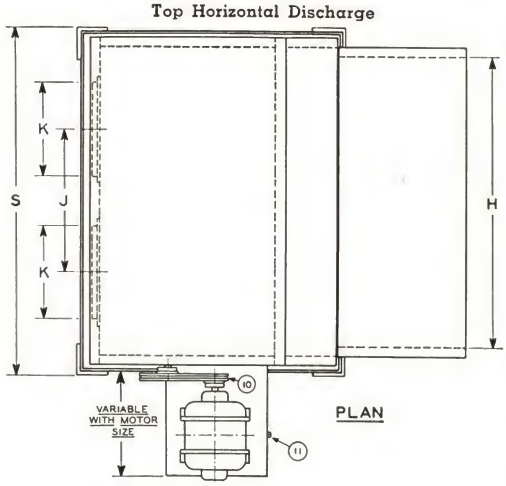
HORIZONTAL TYPE
Top Horizontal Discharge

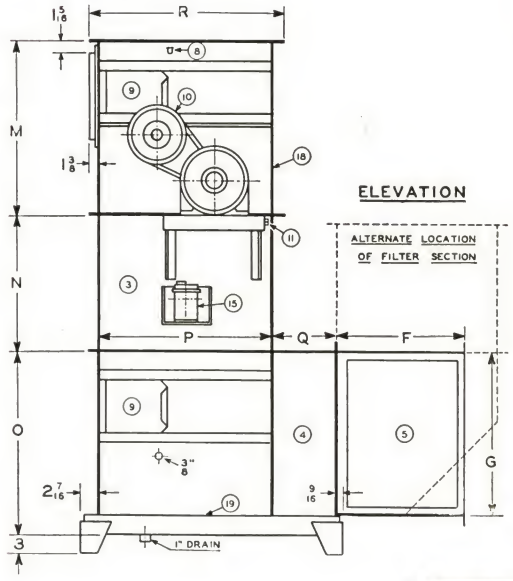




SECTION THRU UNIT

VERTICAL TYPE
Top Horizontal Discharge





LEGEND

1—Fan and Spray Type Humidifier Section.
2—Pan Type Humidifier or Inspection Section.
3—Heating Section with Syncrotherm Dampers.
4—Cooling Section. **5**—Filter Section.
6—Multiblade Fans.
7—Sleeve Bearings with Noise Isolators.
8—Oiler and Oil Piping. **9**—Inspection Door.
10—V-Belt Drive. **11**—V-Belt Drive Tightening Bolt.
12—Spray Humidifier. **13**—Pan Type Humidifier.
14—Heating Coil. **15**—Syncrotherm Damper Operator.
16—Cooling Coil. **17**—Filter Packs (removable).
18—Galvanized Casing (painted).
19—Welded Black Iron Pan (painted).

DIMENSIONS

Unit No.	No. of Outlets	A	B	C	D		E		F		G	H	J	K
					Without Damper	With Damper	6 Rows or Less	Over 6 Rows	100% or Under	Over 100%				Outside
1205	1	23 9/16	30 1/4	18 1/16	9	16	18	27	6	6	20	25	—	9 1/2
1210	1	25 9/16	40 1/4	23 1/16	9	16	18	27	6	24	22	35	—	14 3/8
1215	2	25 9/16	57 1/4	23 1/16	9	16	18	27	6	24	22	52	26	11 1/4
1820	2	28 13/16	50 1/4	23 1/16	9	20	18	27	6	28	25	45	22 1/2	14 3/8
1830	2	28 13/16	70 1/4	27 1/16	9	20	18	27	6	28	25	65	32 1/2	14 3/8
1840	2	34 13/16	90 1/4	33 1/16	9	20	18	27	6	28	30	85	42 1/2	18 1/8
2450	2	39 13/16	85 1/4	33 1/16	13	20	18	27	6	28	35	80	40	20 1/8
3060	2	44 13/16	95 1/4	39 1/16	13	23	18	27	6	30	40	90	45	21 5/8
3680	2	58 13/16	90 1/4	45 1/16	13	26	18	27	6	30	54	85	42 1/2	24 7/8

Unit No.	L	M	N	O	P	Q				R	S	Shaft Extension		
						Water Coils			D.E. Coils			Dia.	Keyway	
	Outside					4 Rows or Less	5 or 6 Rows	7,8,9,10 Rows	6 Rows or Less				Width	Depth
1205	9 1/8	21 1/2	18	23 5/16	22	6	6	12	6	24 1/2	32 3/8	1	1/4	1/8
1210	12 1/2	23	18	25 5/16	24	6	6	12	6	26 1/2	42 3/8	1	1/4	1/8
1215	10 7/8	23	18	25 5/16	24	6	6	12	6	26 1/2	59 3/8	1	1/4	1/8
1820	12 1/2	23	20	28 5/16	27	6	6	12	6	30	52 7/8	1 3/16	1/4	1/8
1830	14 1/8	26	20	28 5/16	27	6	6	12	6	30	72 7/8	1 3/16	1/4	1/8
1840	17 1/2	31 3/4	20	33 5/16	33	0	6	12	6	36	92 7/8	1 7/16	3/8	3/16
2450	19 1/8	33 3/4	21	38 5/16	38	0	6	12	6	41	88 7/8	1 7/16	3/8	3/16
3060	20 3/4	36 3/4	22	43 5/16	43	0	6	12	6	46	98 7/8	1 7/16	3/8	3/16
3680	24 1/4	43	26	57 5/16	57	0	6	12	6	60	93 7/8	1 11/16	3/8	3/16

for CENTRAL STATION AIR CONDITIONING

Clarage Unicoil Units are offered in four different types as illustrated, and are widely used for both public building and industrial conditioning applications requiring surface type cooling equipment. They consist of an encased bank of cooling coils, eliminators and drip pan (with or without spray systems), bypass with dampers, or pre-heating coils, all made as a complete unit.

Unicoil units are built in a series of ten height sizes ranging between 2'-6" (above tank) and 2'-11½" overall height to 9'-9" (above tank) and 12'-10½" overall height, and in a series of widths ranging from 6'-0" to 10'-0" by 6" and 12" increments. Units are furnished in lengths of 4'-0", 4'-6", or 5'-0", depending upon type and number of rows of coils that are to be incorporated. Capacities range from 5000 to 50000 CFM.

Cooling coils are copper tube with aluminum or copper fins either of the plate or helically wound type, and are suitable for direct expansion, cold water, chilled water, or brine operation.



Type A Unicoil Conditioning Unit.

Spray Systems incorporate the highly efficient Clarage spray nozzles made of a special bronze alloy, highly resistant to abrasive action of spray water.

Eliminators provide parallel air flow at point of entry and exit, and are formed with beaded edges and special hooks to remove all entrained moisture from the air.

Face and Bypass Louvre Dampers, which may be furnished as optional equipment (Types AA and BA), are suitable for either manual or automatic operation.

Unicoil Units are regularly furnished constructed of galvanized copper bearing steel in the following gauges:

Casing	No. 20 gauge
Tank—(Standard)	No. 14 gauge
(Optional)	3/16" Welded B.A. Steel
Eliminators	No. 24 gauge

Where required, tanks, casings and eliminators may be supplied of such metals as Armco ingot iron, Monel metal, stainless steel (18-8), aluminum or copper. Welded tanks of 3/16" or ¼" steel plate are frequently used.

For complete capacity data and specifications, see Clarage Data Sheets AW-31 to 36 inclusive.

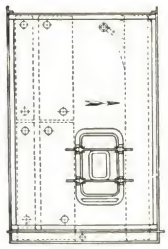
AVAILABLE IN FOUR TYPES

TYPE A

Application: For general cooling and dehumidifying, using surface type cooling equipment.

Standard Equipment: Galvanized copper bearing steel pan, casing and eliminators, cast iron access door, and cooling coils.

Optional Equipment: Preheating coils and humidifying spray system.



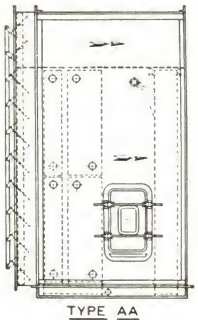
TYPE A

TYPE AA

Application: Same as Type A but with provision for by-passing cooling coils.

Standard Equipment: Galvanized copper bearing steel pan, eliminators and casing with built-in by-pass, cast iron access door, and cooling coils. Unit license under Auditorium Conditioning Corp. patents where capacities are 15,000 CFM or less.

Optional Equipment: Preheating coils, humidifying spray system, and face and by-pass louvre dampers.



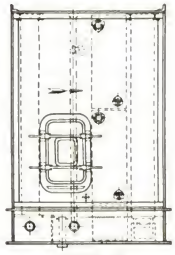
TYPE AA

TYPE B

Application: For general cooling and dehumidifying, using surface type cooling equipment and requiring spraying of coils to wash air and to provide winter humidifying.

Standard Equipment: Galvanized copper bearing steel tank, eliminators and casing with cast iron access door, coil spray system with pressure gauge, ball cock and float valve, suction screen and cover, and cooling coils.

Optional Equipment: Vertical inlet eliminators (6"), or horizontal inlet louvres.



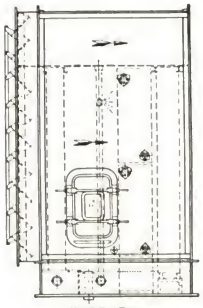
TYPE B

TYPE BA

Application: Same as Type B but with provision for by-passing cooling coils.

Standard Equipment: Galvanized copper bearing steel tank, eliminators and casing with built-in by-pass, cast iron access door, coil spray system with pressure gauge, ball cock and float valve, suction screen and cover, and cooling coils. Unit license under Auditorium Conditioning Corp. patents where capacities are 15,000 CFM or less.

Optional Equipment: Vertical inlet eliminators (6"), horizontal inlet louvres, and face and by-pass louvre dampers.



TYPE BA

CLARAGE FAN

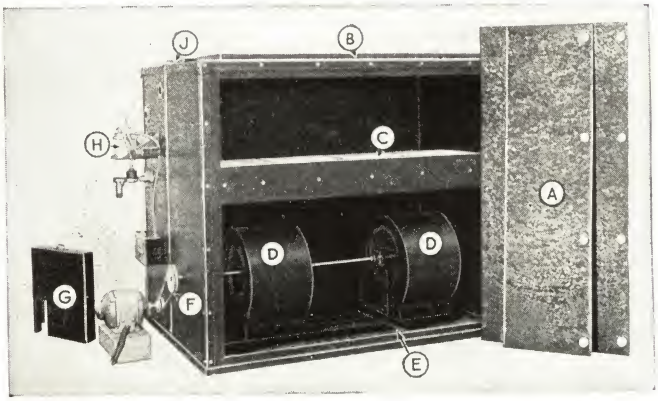
DUOTHERM CONDITIONING UNITS

Duotherm Units are designed primarily for installation in fine homes, smart shops and offices. They furnish complete year-round air conditioning, and are built for floor installation only, usually located in the basement. This equipment is in reality a small complete central station system used with intake and discharge ducts. **Extreme quietness of operation** is an outstanding feature. Fan and motor are practically noiseless—soundproof mountings are used.

Complete unit consists of two main assemblies; front assembly which contains filters and fans; back assembly which contains heating and cooling coils, and winter humidifier.

As shown by the illustration, fresh and return air to be conditioned enters through inlet B under fan suction, passing through the filters where it is thoroughly cleaned and purified. Air is then discharged by the fans into back assembly. Here it is circulated through and around cooling and heating coils, and discharged as properly conditioned air. Supply duct system then conveys conditioned air to space or individual rooms serviced by unit. Units are attractively finished with a high-grade, durable enamel.

For detailed information, see Clarage Bulletin 120.



Open View of Duotherm Unit. A, Removable Access Panels. B, Return Air Inlet. C, Filters. D, Centrifugal Fans. E, Noise-Proof Insulation. F, V-Belt Drive. G, Removable Guard for Drive. (Winter Humidifier and Cooling and Heating Coils are in back section of unit and not shown.)

AVAILABLE IN SIX TYPES for CENTRAL STATION AIR CONDITIONING

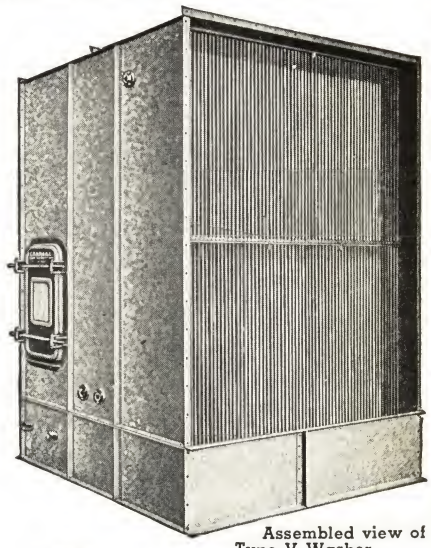
Clarage air washers are offered in six different types as illustrated, and are widely used for both public building and industrial air conditioning. They are built in a series of thirteen height sizes ranging between 2'-8" (above tank) and 4'-3½" overall height to 19'-4" (above tank) and 21'-6" overall height, and in a series of widths ranging from 1'-6" to 22'-0" by 6" and 12" increments.

Capacities are based upon a 500 ft. per minute velocity through inlet area, and range from 2000 to 193,300 CFM.

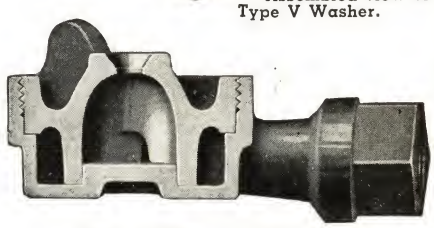
Frictional resistance varies between ¼ and ⅜" water gauge, dependent upon the type and length.

Spray Systems incorporate the highly efficient Clarage centrifugal type spray nozzles made of special bronze alloy, highly resistant to abrasive action of spray water.

Eliminators provide a gradual increase in deflection of the air from front to rear of plate and parallel flow at point of entry and exit. Plates are formed with beaded edges and special hooks to remove all entrained moisture from the air, and are supported below water level on cast iron members.



Assembled view of Type V Washer.



Cross section of spray nozzle, showing spray chamber and volute openings.

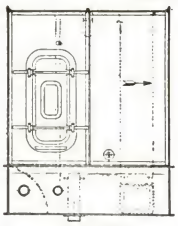
Washers are regularly furnished constructed of galvanized copper bearing steel in following gauges:

	All types except H	Type H
Casing	No. 18	No. 20
Tank—Bottom	No. 14	No. 16
Sides and Ends	No. 12	No. 14
Eliminators	No. 22	No. 24

Where required tanks and casings may be supplied of such metals as Armco ingot iron, Monel metal, stainless steel (18-8), aluminum and copper, while eliminators can be furnished in same metals or of lead if desired. Welded tanks of 3/16" or ¼" steel plate are frequently used. Where tanks and housings are to be of concrete, parts can be supplied in accordance with exact requirements.

For complete capacity data and specifications, see Clarage Bulletin 109 and Data Sheets AW-1 to 22 inclusive.

TYPE H

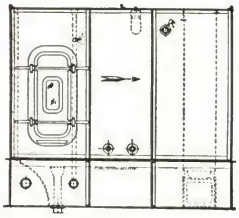


Length, 4'-11"

Application: For general washing, purifying, and humidifying service requiring equipment of the least expensive type.

Standard Equipment: Galvanized copper bearing steel tank, casing and eliminators, cast iron access door, horizontal inlet louvres, ball cock and float valve, main spray system with pressure gauge, marine light, and suction screen and cover.

TYPE V

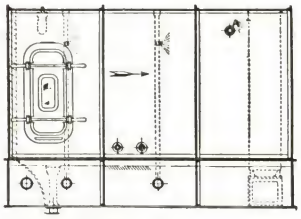


Length, 6'-11"

Application: For general washing, purifying, and humidifying service requiring equipment of the most efficient type.

Standard Equipment: Galvanized copper bearing steel tank, casing and eliminators, cast iron access door, horizontal inlet louvres, ball cock and float valve, main and flooding spray systems with pressure gauges, marine light, and suction screen and cover.

TYPE CWW

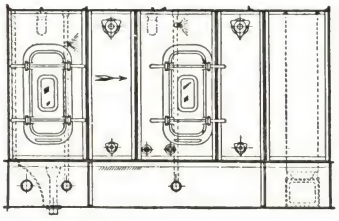


Length, 8'-10"

Application: For heavy duty humidifying, cooling and dehumidifying where cold or refrigerated water is employed, or for condenser water cooling.

Standard Equipment: Galvanized copper bearing steel tank, casing and eliminators, cast iron access door, horizontal inlet louvres, ball cock and float valve, two main and one flooding spray systems with pressure gauges, marine light, and suction screen and cover.

TYPE CF

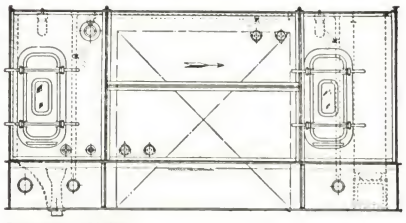


Length, 10'-0"

Application: For cooling and dehumidifying where fin type direct expansion coils employing Freon or other refrigerant are to be installed in spray chamber.

Standard Equipment: Galvanized copper bearing steel tank, eliminators and casing with coil stuffing boxes, two cast iron access doors, horizontal inlet louvres, ball cock and float valve, two main spray systems with pressure gauges, two marine lights, and suction screen and cover.

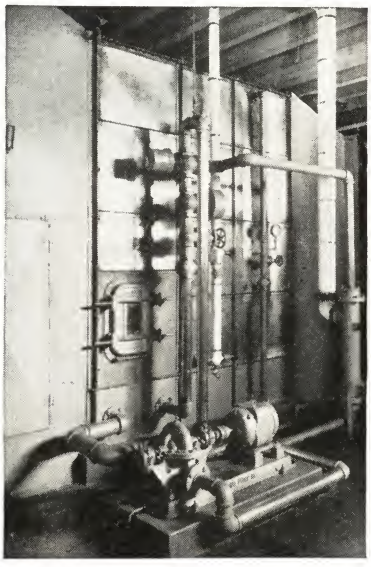
TYPE CDC



Length, 12'-0"

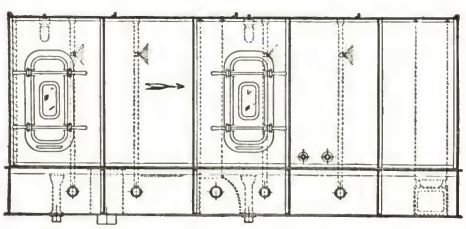
Application: For cooling and dehumidifying where prime surface cooling coils employing CO_2, brine or other refrigerant are to be installed in spray chamber.

Standard Equipment: Galvanized copper bearing steel tank, eliminators and casing with removable coil panels and stuffing boxes, two cast iron access doors, horizontal inlet louvres, ball cock and float valve, one overhead and two main spray systems with pressure gauges, two marine lights, and suction screen and cover.



One of 10 Clarage washers installed in large public building.

TYPE CWW, TWO STAGE



Length, 14'-0"

Application: For either cooling and dehumidifying where cold city or well water is to be used, industrial dust removal or material reclamation, or water cooling.

Standard Equipment: Galvanized copper bearing steel tank, casing and main and intermediate eliminators, two cast iron access doors, ball cock and float valve, four main spray systems with pressure gauges, two marine lights, and suction screen and cover.

CLARAGE FAN

TYPE HV—SLOW SPEED

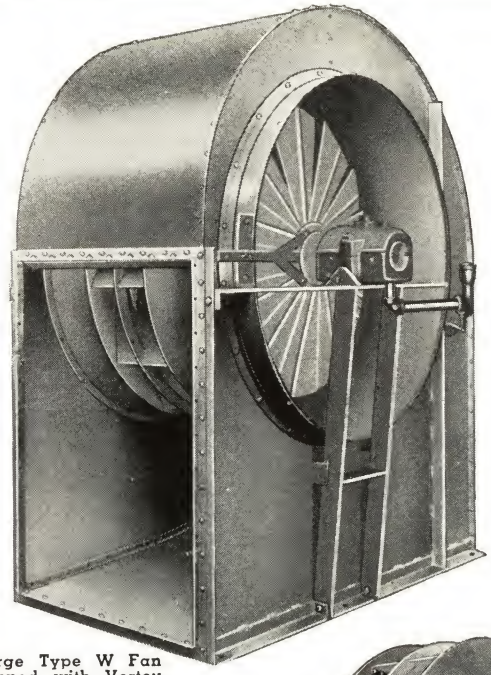
These fans are built in 28 sizes with capacities of 200 to 100,000 CFM, and in drive arrangements to meet any ventilating or air conditioning requirement. Because of slow speeds, perfectly balanced wheels and babbitted type bearings, HV Fans are **silent in operation.** Sizes No. 3 and smaller have cast iron side plate construction explained below. Larger fans are built completely of heavy gauge steel rigidly braced by angles (general appearance as shown at right).

Fan Wheel is multiblade type consisting of a large number of shallow steel blades riveted to steel rims. Blades are curved and tipped forward in direction of rotation. The wheel spider consists of steel T-arms cast in a heavy cast iron hub. **All wheels are both statically and dynamically balanced.**

Bearings are babbitted-sleeve type, self-aligning in all planes. Felt washers, one located at each end of outer bearing case, seal the oil in, and keep dirt out. Ball bearings can be furnished where required.

Double Width Fans (equipped with two wheels) are available in 21 sizes.

For more detailed information, see Clarage Bulletin 110.



Large Type W Fan equipped with Vortex Control.

TYPE W—HIGH SPEED

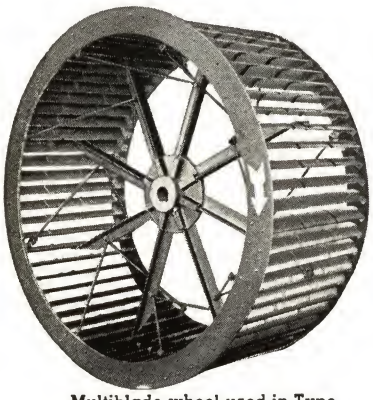
High operating speeds, full self-limiting horsepower characteristic, and high efficiency over wide performance range are features of Type W Fans. As a result, often smaller motors can be used, and power costs are lower. Since the fans do not overload, no excess motor capacity is needed. Furthermore, despite high speeds, the fans offer **quiet performance,** making them suitable for all classes of ventilating and conditioning work. There are 27 sizes with capacities of 1000 to 100,000 CFM. Sizes No. 3 and smaller have cast iron side plate construction. Larger fans are built as shown at left.

Fan Wheel is of the backwardly inclined blade type with the steel blades welded or riveted to steel rims. On larger wheels, for maximum rigidity, intermediate rims are used. Wheel hub is cast iron, riveted to the back plate. **All wheels are statically and dynamically balanced.**

Bearings are babbitted-sleeve type as used on HV Fans. Ball bearings can be furnished where required.

Double Width Fans (each with two wheels) are built in 21 sizes.

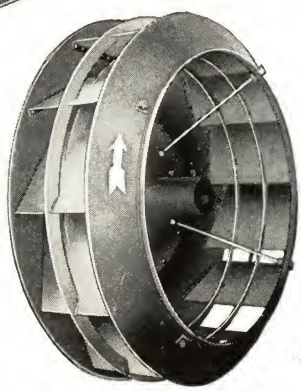
For more detailed information, see Clarage Bulletin 112.



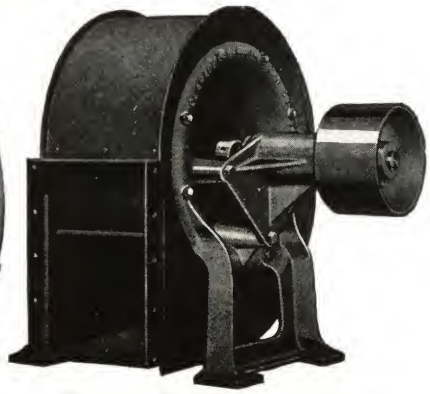
Multiblade wheel used in Type HV Fans.

REVERSIBLE

Both Type HV and W Fans, sizes No. 3 and smaller, are built with cast iron side plates as shown at extreme right. The side plates (one on either side) are secured to the fan housing by means of eight tap bolts spaced equidistant. Thus any one of these smaller fans are reversible for any of eight different directions of air discharge. Merely remove tap bolts, turn housing to new desired position and replace tap bolts. Fan wheel and bearings are not disturbed.

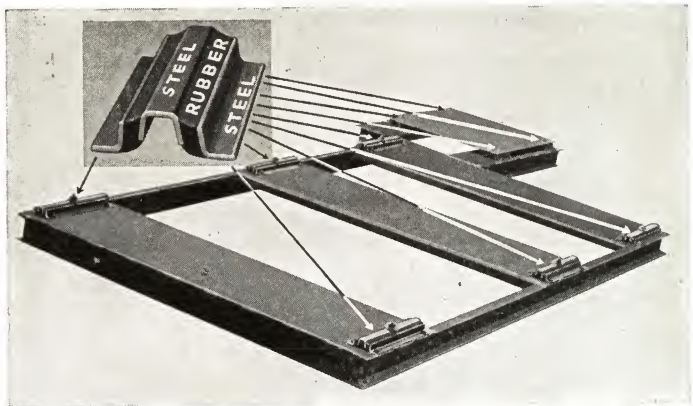


Backwardly inclined blade wheel used in Type W Fans.



Cast iron side plate construction used in small HV and W Fans.

CLARAGE FAN



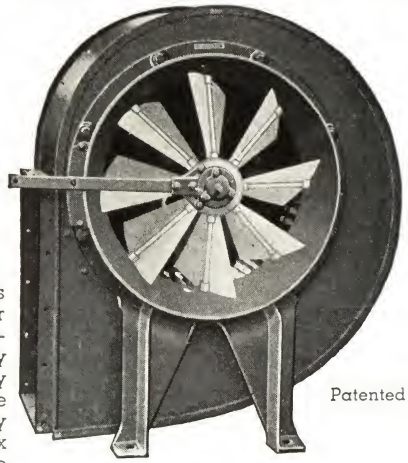
NOISE ISOLATING BASES

The Clarage Noise Isolating Base is an effective and inexpensive method of eliminating transfer of noise and vibration. Where this base is used, fan and its driving motor are totally isolated from the building. The result is a very quiet installation.

The structural steel base is built as shown, to extend completely under fan and motor. Both fan and motor are bolted to the isolators in such a manner that there are no metal to metal contacts. Rubber insulation is a high tensile, long life compound securely bonded to the metal angles with an adhesion of over 250 pounds per sq. in. Rubber is in "shear" which is better practice than compression, as it permits the rubber to retain its elasticity for long periods.

Noise Isolating Bases are made to order and can be furnished for any Clarage Fan.

CLARAGE VORTEX CONTROL Regulates Fan Capacity at Constant Speed Operation



Patented

Wherever it is essential in an air conditioning system to periodically or continually change the volume of air delivered by the fan, Vortex Control should be used because of money-saving possibilities. It has the low first cost of damper control, and efficient performance of variable speed control.

This device is built into the fan inlet as shown, and operates as part of the fan. It does not add extra resistance, but actually reduces volume of air handled by reducing relative speed of the fan wheel with relation to the air entering the fan. By moving the blades of the control, a fan operating at constant speed is given the characteristic of a fan operating at variable speed. Device is simple and trouble-free. It may be regulated manually or automatically. All Type HV and W Fans can be equipped. **For detailed information, see Clarage Bulletin 101.**

ABBREVIATED PERFORMANCE—TYPE HV FANS, SINGLE WIDTH, SINGLE INLET

Fan Size No.		1	1¼	1½	1¾	2	2¼	2½	2¾	3	3¼	3½	4	4½	5
Wheel Dia.		13″	16¼″	19½″	22¾″	26″	29¼″	32½″	35¾″	39″	42½″	45½″	52″	58½″	65″
¼″ S.P.	CFM	1035	1613	2322	3156	4128	5220	6444	7782	9288	10890	12660	16524	20880	25800
1200 O.V.	RPM	509	407	327	281	245	217	197	178	164	146	136	120	106	96
.090 V.P.	HP	.12	.18	.22	.29	.38	.48	.59	.75	.85	1.04	1.22	1.59	2.00	2.47
½″ S.P.	CFM	1122	1748	2516	3419	4472	5655	6981	8430	10062	11798	13715	17910	22620	27950
1300 O.V.	RPM	637	510	412	353	308	273	247	224	206	188	174	152	135	122
.106 V.P.	HP	.19	.29	.36	.49	.64	.81	1.00	1.20	1.44	1.64	1.90	2.48	3.13	3.87
¾″ S.P.	CFM	1208	1882	2709	3682	4816	6090	7518	9078	10836	12705	14770	19278	24360	30100
1400 O.V.	RPM	748	598	490	420	367	325	294	264	245	222	206	180	160	144
.123 V.P.	HP	.28	.44	.54	.73	.95	1.20	1.48	1.76	2.13	2.45	2.85	3.72	4.70	5.80
1″ S.P.	CFM	1294	2016	2903	3945	5160	6525	8055	9727	11610	13613	15825	20655	26100	32250
1500 O.V.	RPM	851	680	557	478	417	369	335	302	279	252	233	204	181	163
.140 V.P.	HP	.39	.61	.72	.98	1.28	1.61	1.99	2.38	2.87	3.28	3.80	4.97	6.26	7.75
1¼″ S.P.	CFM	1380	2150	3096	4208	5504	6960	8592	10375	12384	14520	16880	22032	27840	34400
1600 O.V.	RPM	944	754	618	530	463	410	371	336	309	280	261	228	203	182
.160 V.P.	HP	.52	.80	.93	1.26	1.66	2.09	2.58	3.13	3.72	4.33	5.02	6.55	8.27	10.2
1½″ S.P.	CFM	1552	2420	3482	4734	6192	7830	9666	11672	13932	16335	18990	24786	31320	38700
1800 O.V.	RPM	1039	830	683	585	512	453	410	369	341	308	286	250	222	200
.160 V.P.	HP	.70	1.09	1.30	1.77	2.31	2.92	3.61	4.25	5.20	5.82	6.77	8.82	11.1	13.8

NOTE: For performance of double width, double inlet HV Fans (available in sizes No. 1½ and larger) multiply CFM x 2, RPM x 1.015, BHP x 2.1 and OV x 1.11.

ABBREVIATED PERFORMANCE—TYPE W FANS, SINGLE WIDTH, SINGLE INLET

Fan Size No.		1¼	1⅜	1½	1¾	2	2¼	2½	2¾	3	3¼	3½	3⅞	4¼	4¾
Wheel Dia.		16¼″	17⅞″	19½″	22¾″	26″	29¼″	32½″	35¾″	39″	42¼″	45½″	50⅜″	55¼″	61¾″
¼″ S.P.	CFM	1344	1627	1935	2630	3440	4350	5370	6485	7740	9075	10550	12900	15519	19390
1000 O.V.	RPM	809	735	620	532	464	412	372	338	310	286	266	240	218	196
.062 V.P.	HP	.11	.13	.14	.19	.25	.32	.39	.48	.57	.66	.77	.94	1.13	1.41
½″ S.P.	CFM	1613	1952	2322	3156	4128	5220	6444	7782	9288	10890	12660	15480	18623	23268
1200 O.V.	RPM	1035	940	792	680	594	528	476	432	396	366	340	308	280	250
.090 V.P.	HP	.24	.29	.29	.40	.52	.66	.81	.98	1.17	1.37	1.59	1.94	2.34	2.92
¾″ S.P.	CFM	1747	2115	2516	3419	4472	5655	6981	8430	10062	11798	13715	16770	20175	25207
1300 O.V.	RPM	1188	1079	908	778	680	604	544	494	454	418	389	351	320	286
.106 V.P.	HP	.37	.45	.43	.59	.77	.98	1.20	1.46	1.73	2.04	2.36	2.89	3.48	4.35
1″ S.P.	CFM	1882	2278	2709	3682	4816	6090	7518	9079	10836	12705	14770	18060	21727	27146
1400 O.V.	RPM	1325	1203	1012	868	760	676	608	552	506	468	434	392	358	320
.123 V.P.	HP	.51	.62	.60	.83	1.08	1.36	1.68	2.04	2.41	2.84	3.30	4.02	4.85	6.05
1¼″ S.P.	CFM	2016	2441	2903	3945	5160	6525	8055	9727	11610	13613	15825	19350	23279	29085
1500 O.V.	RPM	1449	1317	1108	948	830	736	664	604	554	511	474	428	390	349
.140 V.P.	HP	.68	.82	.80	1.09	1.42	1.79	2.21	2.68	3.19	3.75	4.35	5.32	6.40	8.00
1½″ S.P.	CFM	2150	2603	3096	4208	5504	6960	8592	10376	12384	14520	16880	20640	24830	31024
1600 O.V.	RPM	1567	1423	1204	1032	902	800	722	656	602	555	516	465	424	380
.160 V.P.	HP	.86	1.04	1.01	1.37	1.80	2.25	2.81	3.41	4.03	4.76	5.48	6.75	8.13	10.15

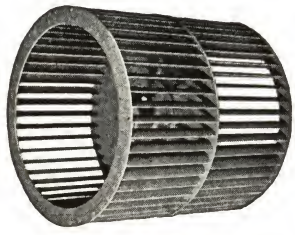
NOTE: For performance of double width, double inlet type W Fans (available in sizes No. 1⅜ and larger) multiply CFM x 2, RPM x 1.02, BHP x 2.08 and OV x 1.11.

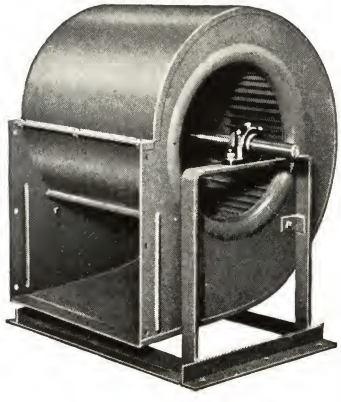
FURNACE AND CONDITIONING UNIT FANS

These small Clarage Fans are of the centrifugal type, for use in connection with warm air furnaces as booster fans or as a part of residential air conditioning systems. They offer high efficiency at low speed, trouble-free performance, and are **extremely quiet in operation**—built in ten sizes with capacities of 200 to 5000 CFM. They can be furnished for short center V-belt drive or for direct connection to motors.

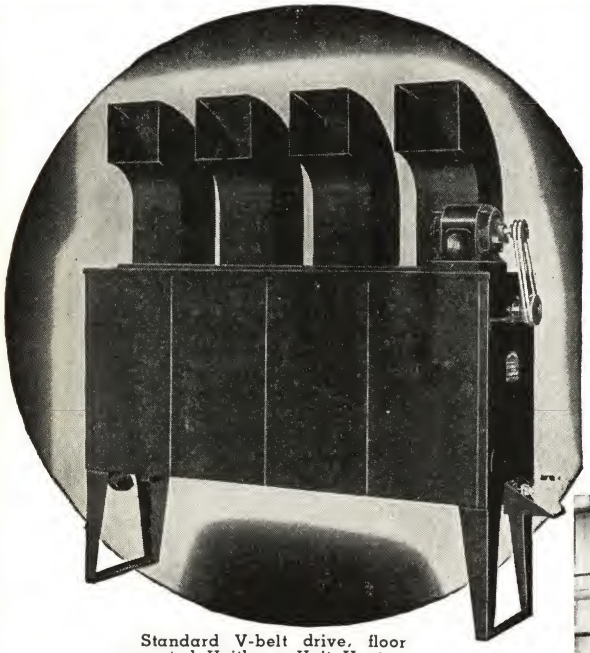
Units can be furnished as complete fans, with or without inlet boxes. Duplex units consisting of two fans with a common shaft are available. Also manufacturers of air conditioning units can be supplied with wheels, housings or such other fan parts as they may require in the manufacture of their units.

For capacities and detailed information, see Clarage Bulletin 33.





Double Multiblade wheel and complete double fan assembly.



Standard V-belt drive, floor mounted Unitherm Unit Heater.

FOR HEATING FACTORIES, WAREHOUSES, GARAGES, AUDITORIUMS, ARMORIES, GYMNASIUMS, ETC.

Unitherm Unit Heaters are built for floor or suspended installation as indicated below, and in 28 sizes as shown on the next page. Equipped with positive centrifugal fans, they deliver heated air at high velocity and this heat is uniformly diffused over wide areas.

When furnished with Syncrotherm Control (see bottom of next page), capacity of unit is automatically adjusted to requirements of the space. This, combined with the fact that the fans give continuous circulation, reduces to minimum the difference between floor and ceiling temperatures in the space heated. There is no air stratification —no upper areas too hot—no cold floors. Comfortable conditions are assured at minimum fuel cost. Steam or hot water can be used as heating medium.

Fans: One multiblade fan is furnished for each unit heater outlet, and is individually housed. All fans are both statically and dynamically balanced—**quiet in operation.** They are mounted on a common shaft, oversize in diameter to insure trouble-free operation. Two ball bearings, mounted outside of casing for easy access, support rotating assembly.

Drive: Units are furnished for either V-belt drive or direct connection. V-belt drive units are standard and offer a certain degree of flexibility as to fan speed. Motor is a standard ball-bearing type.

Heating Coil is good for working pressures up to 200 pounds. Tubes and fins are light-weight and non-corrosive. This coil incorporates the modern bent-tube-safety construction which prevents any possibility of breakage due to expansion. It is tested to 1000 pounds hydraulic pressure.

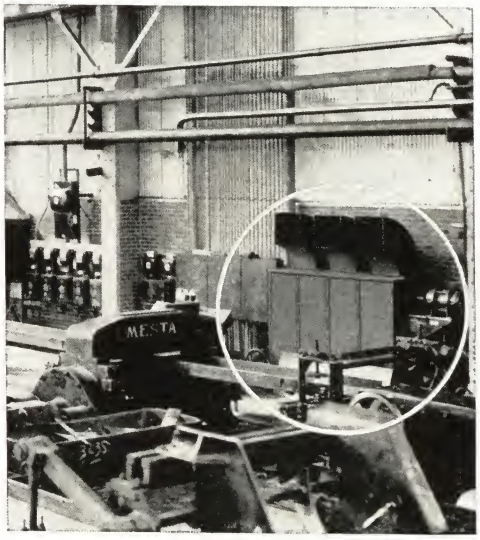
Outlets are square. They not only enable Unitherm Units to heat wide areas effectively, but are easily adjustable for four different directions of discharge.

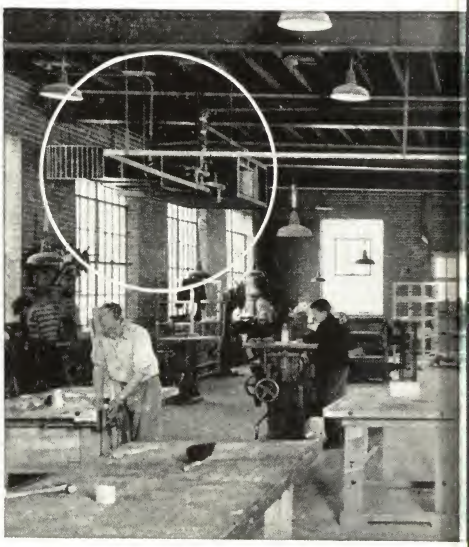
Heater Casing is fabricated by using 3/16" steel plate ends and a heavy angle iron frame to which front and back sheets are attached.

Finish: Exterior of units are enameled an attractive dark green.

All Parts Accessible: By merely loosening and withdrawing machine screws, entire front or back section of heater casing can be removed. Thus fan assembly and heating coil are removable through front or back of unit. This feature permits units to be installed in close quarters, since no space need be left at one end for withdrawing coil.

For further information, see Clarage Bulletin 103.

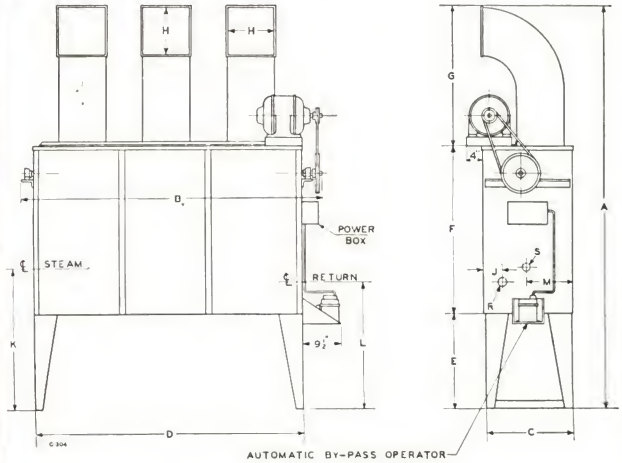


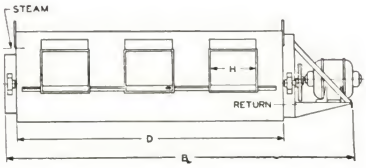


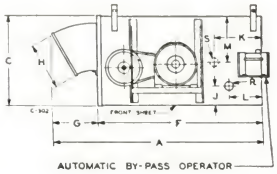
Above: Direct connected, floor mounted Unitherm Unit Heater operating in steel mill.

At right: Horizontal suspended Unitherm Unit Heater installed in manual training department of city school.

Unitherm Units provide a heating system extremely flexible, and one which responds immediately to demands for more or less heat—where you want it, and when you want it.







FLOOR MOUNTED UNITS

SIZE	A	B* MAX.	Bv	C	D	E	F	G	H	STEAM	RETURN
A-18	100¼	55	36 3/16	22⅛	28	24	42⅛	34⅛	12¼	2	2
B-18	100¼	75	56 3/16	22⅛	48	24	42⅛	34⅛	12¼	2	2
C-18	100¼	95	76 3/16	22⅛	68	24	42⅛	34⅛	12¼	2	2
D-18	100¼	115	96 3/16	22⅛	88	24	42⅛	34⅛	12¼	2	2
B-24	106¼	86	63 13/16	25⅝	53	24	48⅛	34⅛	14¼	2	2
C-24	106¼	106	83 13/16	25⅝	73	24	48⅛	34⅛	14¼	3	2
D-24	106¼	126	103 13/16	25⅝	93	24	48⅛	34⅛	14¼	3	2
C-30	106¼	120½	98 13/16	32⅛	88	15	57⅛	34⅛	18⅜	3	2
C-36	114¼	120½	98 13/16	37⅝	88	20	60⅛	34⅛	20¼	2	2

*Dimension "B" gives overall width of Direct Connected Units.

HORIZONTAL SUSPENDED UNITS

SIZE	A	B* MAX.	Bv	C	D	F	G	H	STEAM	RETURN
A-18	54⅞	55	52	23⅛	28⅜	42⅛	12¾	12¼	2	2
B-18	54⅞	75	72	23⅛	48⅜	42⅛	12¾	12¼	2	2
C-18	54⅞	95	92	23⅛	68⅜	42⅛	12¾	12¼	2	2
D-18	54⅞	115	112	23⅛	88⅜	42⅛	12¾	12¼	2	2
B-24	62⅝	86	83	26⅝	53⅜	48⅛	14½	14¼	2	2
C-24	62⅝	106	103	26⅝	73⅜	48⅛	14½	14¼	3	2
D-24	62⅝	126	123	26⅝	93⅜	48⅛	14½	14¼	3	2
C-30	75⅞	120½	117½	33⅛	88⅜	57⅛	18¾	18⅜	3	2
C-36	80⅞	120½	117½	38⅝	88⅜	60⅛	20¾	20¼	2	2

*Dimension "B" gives overall width of Direct Connected Units.

CAPACITY RATINGS—UNITHERM UNIT HEATERS

Unit Size	V-BELT DRIVE					DIRECT CONNECTED				
	Motor HP	Fan RPM	CFM @ F.T.	BTU 2-lb. Steam 60° E.A.	F.T. °F.	Motor HP	Fan RPM	CFM @F.T.	BTU 2-lb. Steam 60° E.A.	F.T. °F.
A-18-1	1/4	740	1265	71,375	116	1/4	870	1500	79,500	113
A-18-2	1/4	740	1265	80,000	124	1/4	870	1500	89,000	120
A-18-2½	1/4	740	1190	89,720	138	1/4	870	1400	100,250	134
B-18-1	1/3	740	2530	142,750	116	1/2	870	3000	159,000	113
B-18-2	1/3	740	2530	160,000	124	1/2	870	3000	178,000	120
B-18-2½	1/3	740	2380	179,500	138	1/2	870	2800	200,500	134
C-18-1	1/2	740	3795	214,126	116	3/4	870	4500	238,500	113
C-18-2	1/2	740	3795	240,000	124	3/4	870	4500	267,000	120
C-18-2½	1/2	740	3570	269,000	138	3/4	870	4200	300,750	134
D-18-1	3/4	740	5060	285,550	116	1	870	6000	318,000	113
D-18-2	3/4	740	5060	320,000	124	1	870	6000	356,000	120
D-18-2½	3/4	740	4760	359,000	138	1	870	5600	401,000	134
B-24-1	1/2	660	3680	207,000	116	1	870	4850	250,000	111
B-24-2	1/2	660	3680	221,250	121	1	870	4850	267,000	115
B-24-2½	1/2	660	3430	247,500	135	1	870	4520	297,500	127
C-24-1	3/4	660	5520	311,000	116	1½	870	7275	375,000	111
C-24-2	3/4	660	5520	331,875	121	1½	870	7275	400,000	115
C-24-2½	3/4	660	5145	371,250	135	1½	870	6775	446,000	127
D-24-1	1	660	7360	415,000	116	2	870	9700	500,000	111
D-24-2	1	660	7360	442,500	121	2	870	9700	534,000	115
D-24-2½	1	660	6860	495,000	135	2	870	9040	595,000	127
C-30-1	1½	537	9990	505,000	110	1½	870	9300	484,000	112
C-30-2	1½	537	9990	555,000	116	1½	870	9300	530,000	118
C-30-2½	1½	537	9340	580,000	123	1½	870	9000	565,500	124
C-30-2¾	1½	537	9340	620,000	128	1½	870	9000	604,000	129
C-36-1	3	583	14630	725,000	109	Not available for Direct Connection				
C-36-2	3	583	14630	818,000	116					
C-36-2½	3	583	13850	926,000	128					

RATINGS—CLARCO HEATERS

Unit Size	Motor HP	Fan RPM	CFM (70° Vol.)	BTU 2-lb. Steam 60° E.A.	F.T. °F.
18	1/100	1550	195	18,000	145
30	1 40	1550	468	30,500	120
36	1/40	1590	547	36,200	121
44	1/20	1155	781	43,200	111
49	1/20	1155	754	49,000	120
58	1/20	1140	754	58,000	131
66	1/10	1150	1062	65,800	117
75	1/10	1130	1279	75,000	114
84	1/10	1130	1438	84,300	114
95	1/10	1140	1203	95,500	133
105	1/10	1140	1327	105,000	133
115	1/8	1125	1537	115,000	129
130	1/8	1125	1738	130,000	129
155	1/6	1120	2075	155,250	129
170	1/6	1120	2275	170,100	129
190	1/4	1125	2695	190,000	125
215	1/4	1125	3055	215,500	125
245	1/2	1110	3640	245,000	122
280	1/2	1110	4160	280,000	122
370*	1/4	1125	5410	370,100	123
480*	1/2	1110	6600	480,000	127

*Equipped with two motors.

NOTES (applying to both tables): "E. A." is abbreviation for entering air. "F. T." is abbreviation for final temperature. To determine equivalent direct radiation of any unit in either table, divide BTU capacity as given by 240.

CLARCO UNIT HEATERS

for Smaller Heating Jobs



Clarco Unit Heaters are of the propeller fan type built in 21 sizes for steam heating (see table above). Units specially designed for hot water applications are also available.

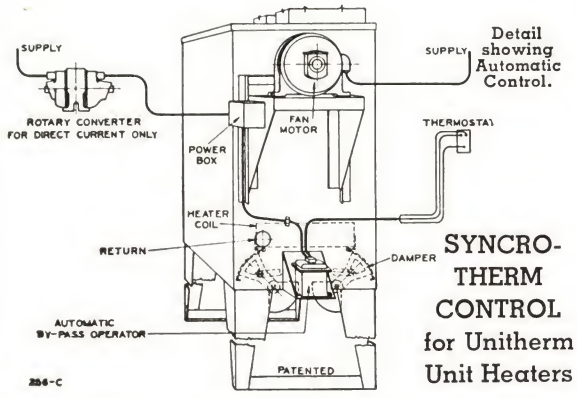
Services: In industrial buildings, Clarco Units are recommended for heating small areas with relatively low ceilings, multi-story buildings where heat losses are concentrated around outside walls, and for eliminating condensation in process work; for heating garages, etc. They can also be successfully used where **quiet operation** is required, such as in stores, auditoriums, offices, etc.

Fans are of aluminum alloy, accurately balanced, and with blades pitched to obtain maximum volume delivery with minimum noise and power.

Motors are totally enclosed and rubber mounted (available in either constant or multi-speed types).

Heating Coil has copper fins metallically bonded to red brass tubes which are brazed into copper headers, eliminating electrolysis troubles. Standard construction for steam units incorporates an expansion bend in each tube, eliminating strains due to unequal expansion. Coils are guaranteed for pressures up to 150 pounds (except for size 18).

For complete information, see Clarage Bulletin 104.

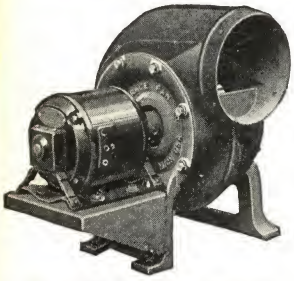


SYNCRO-THERM CONTROL for Unitherm Unit Heaters

This device consists of two sector-type bypass dampers located on either side of coil as shown above. The position of dampers, which determines amount of air bypassed around heating coil and consequently the heat output of unit, is controlled by a damper motor mounted on the Unitherm Unit, and actuated by a thermostat in the heated space. Fans operate continuously during heating period, and heat output of unit is adjusted automatically to requirements.

Syncrotherm Control is especially desirable where units take in outside air for ventilating purposes, since a constant volume of outside air can be supplied at all times with final temperature of unit so controlled as to prevent overheating in mild weather. Syncrotherm bypass dampers can be manually operated, but to obtain maximum benefits automatic control should be used.

for VENTILATING TOILETS, BANK VAULTS, TELEPHONE BOOTHS, SMALL OFFICES, STATEROOMS, ETC.—REMOVING FUMES FROM KITCHENS AND CHEMICAL LABORATORIES

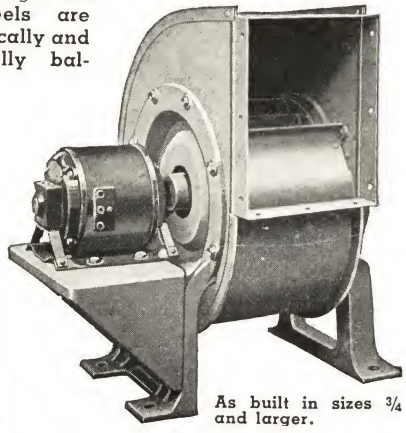


As built in sizes No. 1/2 and 5/8.

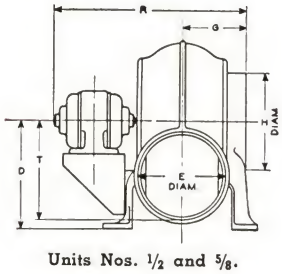
This line of standard Ready Units is the most complete on the market. It permits the choice of fan for any application without sacrificing high efficiency or quietness of operation. Most units can be furnished from stock, and they are complete and ready to run.

The motor is usually mounted on a steel support as shown, and the fan wheel mounted on the motor shaft extension. Either alternating or direct current motors can be furnished. They are of a type which insures maximum quietness, and do not cause radio interference. All motors meet N.E.L.A. requirements, and are guaranteed to operate the fans at 0" resistance (SP) without overloading.

Clarage Ready Units are ideal for small ventilating jobs of all kinds, also for cooling and drying installations, or for forced draft in connection with small heating plants. In fact, they can be used wherever small volumes of air or other gases are to be handled at low pressures. As shown, sizes 1/2 and 5/8 are built with cast iron fan housings; larger sizes with steel housings. All sizes are reversible for direction of air discharge. **All fan wheels are both statically and dynamically balanced.**



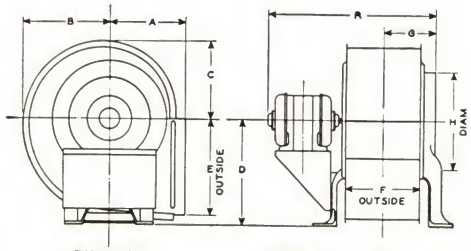
As built in sizes 3/4 and larger.



Units Nos. 1/2 and 5/8.

Unit No.	H.P. Motor	Speed		CAPACITY IN CU. FT. PER MINUTE RESISTANCE (SP) W. G. 1/8"	1/4"	3/8"	1/2"	5/8"	3/4"	7/8"	1"
	1/20	850	cfm	242	41						
1/2 *			ov	1200	209						
L.S.	1/8	1150	cfm	360	315	255					
			ov	1800	1600	1300					
**	1/6	1725	cfm	575	550	518	490	460	420	380	
			ov	2900	2800	2630	2500	2300	2100	1950	
	1/20	850	cfm	515	450						
5/8			ov	1690	1480						
*	1/8	1150	cfm	735	680	625	560	490			
L.S.			ov	2400	2200	2050	1825	1600			
**	1/2	1740	cfm	1153	1130	1059	1040	1005	970	925	885
			ov	3550	3480	3400	3380	3340	3180	3000	2850
	1/4	860	cfm	975	875	765	640				
3/4			ov	2000	1800	1575	1318				
*	1/2	1150	cfm	1400	1300	1225	1135	1055	965	885	785
L.S.			ov	2882	2675	2520	2337	2170	1990	1815	1616
**	1 1/2	1740	cfm	2180	2100	2060	1990	1940	1890	1835	1780
			ov	4490	4325	4242	4100	4000	3892	3778	3660
	1/20	850	cfm	550	365	110					
7/8			ov	830	552	167					
*	1/8	1150	cfm	825	710	575	400				
H.S.			ov	1125	1072	870	605				
**	1/3	1725	cfm	1335	1270	1190	1110	1020	940	840	730
			ov	2010	1920	1800	1690	1590	1420	1270	1105
	1/10	850	cfm	875	685	455	120				
1			ov	1015	793	528	139				
*	1/6	1150	cfm	1275	1115	1000	835	650	435		
H.S.			ov	1475	1327	1158	967	753	504		
**	3/4	1740	cfm	2010	1940	1860	1780	1690	1600	1500	1390
			ov	2315	2223	2153	2031	1958	1850	1740	1612
	1/8	860	cfm	1310	1110	865	575	210			
1 1/8			ov	1193	1005	788	524	191			
*	1/3	1150	cfm	1860	1720	1580	1400	1200	1000	780	530
H.S.			ov	1694	1570	1440	1276	1094	912	710	483
**	1	1740	cfm	2930	2850	2760	2665	2580	2475	2365	2245
			ov	2670	2600	2517	2430	2350	2255	2160	2050
	1/2	565	cfm	2420	2170	1930	1655				
			ov	2200	1980	1760	1510				
1 1/8	3/4	690	cfm	2980	2800	2580	2380	2170	1920	1450	
*			ov	2720	2550	2350	2170	1980	1750	1320	
L.S. **	1 1/2	860	cfm	3830	3710	3540	3390	3100	3060	2900	2730
			ov	3490	3390	3220	3090	2820	2790	2650	2490
**	5	1160	cfm	5230	5130	5000	4910	4790	4670	4550	4420
			ov	4770	4680	4560	4480	4360	4250	4150	4020
	1/4	860	cfm	1595	1470	1300	1110	900			
1 1/4			ov	1186	1095	967	825	670			
*	1/3	1150	cfm	2175	2130	2050	1940	1820	1690	1545	1400
M.S.			ov	1615	1585	1525	1445	1355	1255	1150	1040
**	1 1/2	1740	cfm	3305	3290	3280	3240	3195	3130	3055	2980
			ov	2460	2445	2440	2410	2377	2330	2270	2217
	1/8	690	cfm	1675	1470	1220	900				
1 3/8			ov	1030	905	750	555				
*	1/4	860	cfm	2145	2000	1840	1660	1460	1240		
M.S.			ov	1320	1230	1130	1020	896	762		
*	3/4	1150	cfm	2910	2870	2766	2700	2580	2380	2230	2080
			ov	1790	1765	1720	1655	1580	1490	1395	1305
	1/4	565	cfm	1880	1660	1280					
			ov	972	860	662					
1 1/2	1/3	690	cfm	2340	2220	2030	1740				
			ov	1210	1145	1050	900				
M.S. *	1/2	860	cfm	2950	2875	2760	2625	2455	2250	1950	
			ov	1525	1485	1425	1355	1270	1162	1010	
**	1	1150	cfm	4050	3965	3900	3850	3780	3660	3560	3430
			ov	2095	2050	2015	1990	1950	1890	1840	1770
	1/4	565	cfm	3030	2840	2520	2090				
			ov	1150	1080	1960	795				
1 3/4	1/2	690	cfm	3740	3630	3460	3220	2930	2530		
M.S.			ov	1425	1380	1315	1225	1115	980		
*	1	860	cfm	4725	4625	4520	4400	4260	4075	3850	3590
			ov	1795	1760	1720	1670	1620	1550	1465	1365
	3/4	330	cfm	4000	3445	2900					
			ov	1520	1310	1100					
	1 1/2	430	cfm	5460	5110	4760	4450	4050	3580		
1 3/4 *			ov	2080	1940	1810	1690	1530	1350		
L.S.	2	470	cfm	5970	5700	5450	5130	4810	4440	4030	3415
*			ov	2270	2170	2070	1950	1830	1690	1530	1300
	3	565	cfm	7410	7060	6480	6610	6350	6100	5830	5520
			ov	2820	2685	2600	2515	2420	2320	2220	2100
**	5	690	cfm	8980	8810	8630	8450	8250	8060	7900	7660
			ov	3410	3350	3280	3210	3140	3065	3000	2920
	1/3	470	cfm	3740	3460	3000					
			ov	1088	1005	875					
2	1/2	565	cfm	4560	4400	4120	3740	3270	1800		
			ov	1325	1280	1200	1088	950	525		
M.S. *	3/4	690	cfm	5650	5480	5370	5160	4900	4600	4220	3720
			ov	1640	1593	1560	1500	1435	1337	1227	1080
**	1 1/2	860	cfm	7125	7000	6840	6775	6640	6480	6300	6050
			ov	2070	2035	1990	1970	1930	1880	1830	1760

Units not starred are very quiet in operation and have quiet operative sleeve bearing motors.
Units marked * are moderately quiet and have quiet operating sleeve bearing motors.
Units marked ** are not quiet and should only be used for industrial application. Equipped with standard ball bearing motors.



All Units — Units 3/4 and larger.

DIMENSIONS (applying to drawings at left)

Size	A	B	C	D	E	F	G	H	R
1/2 L.S.	6 1/8	6	5 3/8	7 1/4	6	—	4 1/4	6 1/2	17 7/16
5/8 L.S.	7 1/4	7 7/16	6 5/8	8 3/4	7 1/2	—	4 7/8	8 1/8	21 7/16
3/4 L.S.	8 1/8	8 7/8	7 7/8	10 1/2	9 3/4	7 1/2	5 1/4	9 3/4	23 1/2
7/8 H.S.	9 1/8	10 1/4	9 1/16	12 1/4	11 3/8	8 3/4	6 1/4	11 3/8	23 3/8
1 H.S.	10 5/16	11 11/16	10 5/16	14	13	10	7	13	27 1/4
1 1/8 H.S.	11 5/16	12 15/16	11 7/16	15 3/4	14 5/8	11 1/4	7 5/8	14 7/8	28 3/4
1 1/8 L.S.	11 5/16	12 15/16	11 7/16	15 3/4	14 5/8	11 1/4	7 5/8	14 7/8	36 3/4
1 1/4 M.S.	12 3/16	14 7/16	12 11/16	17 1/2	16 1/8	12 3/8	8 11/16	16 1/2	36 5/8
1 3/8 M.S.	13 1/4	15 3/4	13 7/8	19	17 5/8	13 5/8	9 9/16	18	33 5/16
1 1/2 M.S.	14 1/4	17 1/8	15 1/16	20 1/2	19 1/4	14 7/8	9 15/16	20 1/4	31 7/16
1 3/4 M.S.	16 1/4	19 7/8	17 7/16	23 1/2	22 1/2	17 1/4	11 3/8	23 3/4	32 9/16
1 3/4 L.S.	16 1/4	19 7/8	17 7/16	23 1/2	22 1/2	17 1/4	11 3/8	23 3/4	36 3/8
2 M.S.	18 1/4	22 5/8	19 13/16	26 3/4	25 5/8	19 3/4	12 9/16	27	47 5/16

Quarter Century of Experience . . .

Clarage Air Handling and Conditioning Equipment is produced by an organization that has been a leader in the fan industry for over a quarter century. Thousands of installations have been made. Clarage Fans, Air Washers and Conditioning Units are operating in the largest and finest hotels, theatres, schools, hospitals, office buildings and industrial plants — having first gained the acceptance of America's leading architects and engineers.

The Clarage Fan Company is an active member of both the National Association of Fan Manufacturers and Industrial Unit Heater Association. All development tests made on Clarage Fans and Conditioning Equipment are made in conformance with the Standard Test Code adopted by the National Association of Fan Manufacturers and American Society of Heating & Ventilating Engineers.

This Company has taken every possible precaution to insure accuracy of ratings. Therefore, when you specify Clarage, you can be certain that the equipment will perform as you expected, eliminating the possibility of trouble due to overloaded motors or a failure to produce the desired results.

In addition to the **Static and Dynamic Balance Tests** given all Clarage fan wheels, every Clarage unit, when completely assembled, is given a thorough operating test prior to shipment. In fact nothing is overlooked to make Clarage Equipment, when it goes out on the job, as nearly perfect as sound engineering, first-class materials and expert workmanship can make it.

Bypass Units: As evidenced by the emblem below, the Clarage Company is licensed by the Auditorium Conditioning Corp. to manufacture and sell, or to give written permission to others to install, conditioning units or equipment embodying the inventions covered by any or all of the patents of the Auditorium Conditioning Corp. Write for detailed information.

COMPLETE LINE OF EQUIPMENT . . .

Aside from products described in this condensed Bulletin, Clarage builds many other types of equipment in which you may be interested. Any of the Bulletins shown on this page will be sent gladly upon request.

Authorized AUDITORIUM CONDITIONING SYSTEMS Licensee

CLARAGE FAN

CLARAGE

a Nation-Wide Service



. . . Air Handling and Air Conditioning Equipment . . .



In each of the cities listed on the map above, there is a Clarage sales-engineering office. And our representatives are trained men, competent of cooperating with architects and engineers on any type of air handling or air conditioning problem. Dial our telephone number in your city, or write the factory for any information desired.

In Canada: Canada Fans Ltd., 4107 Richelieu St., Montreal, Quebec
Export Office: 50 Church St., New York City

THE COLEMAN LAMP AND STOVE COMPANY

Coleman Gas Floor Furnaces for Natural or Artificial Gas

PHILADELPHIA, PA. CHICAGO, ILL. WICHITA, KAN. LOS ANGELES, CALIF.

COLEMAN NATURAL GAS FLOOR FURNACES

General Information

Coleman Gas Furnaces are made in the factories of THE COLEMAN LAMP AND STOVE COMPANY at Wichita, Kansas, U. S. A.—the center of the biggest natural gas producing area in the United States. The Coleman Company is one of the largest manufacturers of gas pressure devices in the world, with more than 30 years' experience in designing, developing and manufacturing appliances using as fuel the products of oil and gas producing areas.

The Coleman Company has an enviable reputation for fair dealing and its products are accepted as a standard of quality the world over.

Coleman Floor Furnaces, like other Coleman Products, are scientifically designed, are made by carefully trained and skilled craftsmen who work in modern factories equipped with the latest types of machinery. All of which insures durable construction, dependable operation, and satisfactory heating service.

Initial and Operating Cost Less

Coleman Floor Furnace equipment may be installed at from one-third to one-half less initial cost than a central heating plant, and for one-story buildings will render equally satisfactory service.

Coleman Floor Furnaces are more economical as to operating fuel cost than central heating plants.

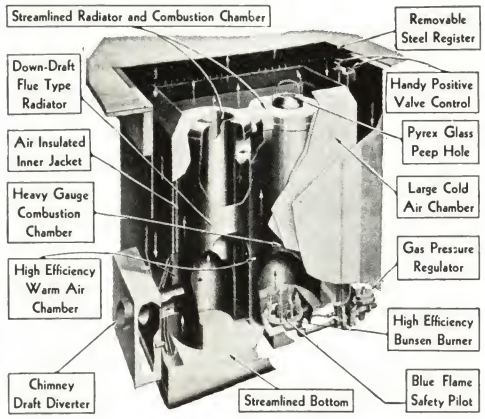
Recommended Uses

Coleman Gas Furnaces are ideal for heating homes, churches, schools, stores and offices. They are designed for continuous as well as intermittent heating; they will not sweat walls, even in humid climates; and will give entire satisfaction where severe winters are the rule rather than the exception.

Latest Features

Removable Steel Register—78% open—permits free flow of air. Light, strong, durable. Handsomely finished in maroon brown.

Air Insulated Inner Jackets—Prevents overheating of cold air passage—insures a free, continuous flow of air into furnace; always-cool outer casing.



Easy to Clean—Steel register and inner jacket are easily removable so the entire furnace can be conveniently and quickly cleaned.

Handy Positive Valve Controls—Located just beneath removable register.

Automatic Thermostatic Heat Control—Furnished extra as ordered.

Automatic Pilot Control—Standard equipment on all models.

Patented Bunsen Type Burner—Equipped with Blue-Flame Pilot—Burns all the gas—no wasted fuel. Quiet operation.

Gas Pressure Regulator—Standard equipment on all models. Insures even gas flow.

Chimney Draft Diverter—Prevents loss of heat by chimney suction. Prevents down-drafts from blowing out burner blaze or pilot light.

Flue Type Radiator—Increases heating surface area, thus increasing heating efficiency. Accelerates outflow of warm air—helps keep it in active circulation.

Streamline Design of Air Chambers—Speeds up air flow and increases heating efficiency.

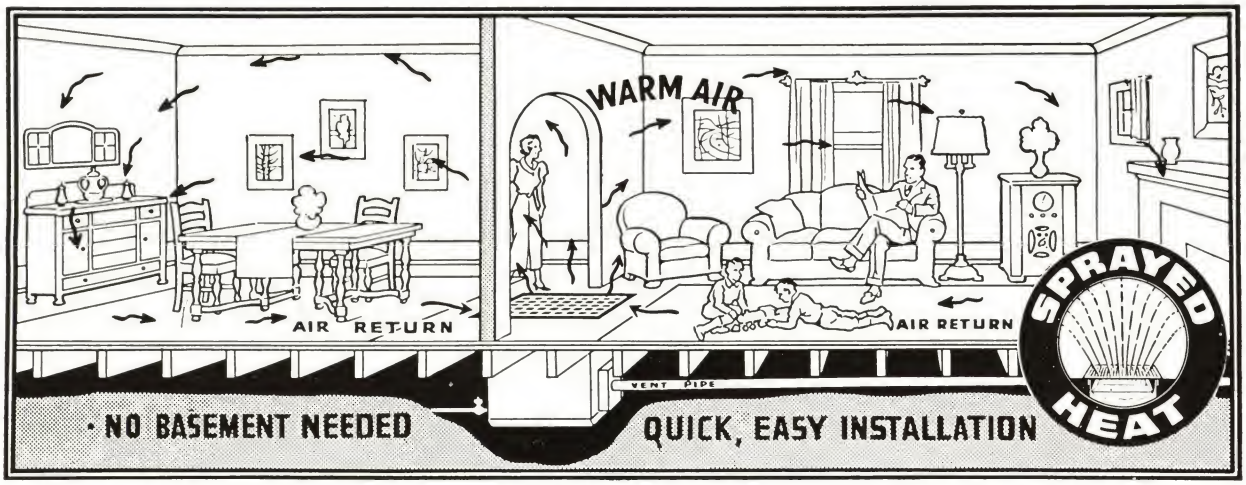
Pyrex Glass Peep Hole—Does not discolor or burn out and fits gastight.

SPECIFICATIONS

	Model No. 9C	Model No. 10C	Model No. 11C	Model No. 12C
Input rating, B.t.u.	20,000	35,000	50,000	70,000
Gas connection at furnace, in.	⅜	⅜	½	½
Gas pipe line size, in.	¾	¾	1	1¼
Vent pipe opening, in.	3	4	4	6
Width and length, in.	14x22	16x30	20x30	24x36
Over-all size of register, in.	16x24	18x32	22x32	26x38
Height, in.	28	35	38	43
Shipping weight, lb.	87	140	178	282

CONSTRUCTION

Combustion chamber and connections (sides)	22 gauge	18 gauge	16 gauge	14 gauge
Combustion chamber (top)	20 gauge	16 gauge	14 gauge	14 gauge
Down-draft, flue-type radiator. (continuously welded and tested gastight)	22 gauge	20 gauge	18 gauge	16 gauge
Insulated inner jacket (double walls)	26 gauge	26 gauge	26 gauge	24 double
Outside casing (lead coated)	24 gauge	24 gauge	24 gauge	22 and 20



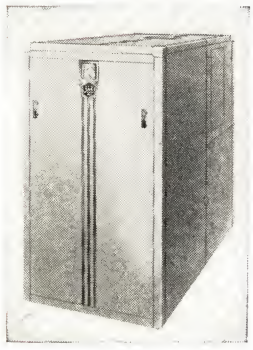
The Coleman Floor Furnace thoroughly warms the air, sprays it to every corner of the room; draws the cold air off the floor, keeps floors warm. No basement needed.

ELECTROL INCORPORATED

ESTABLISHED SINCE 1918
934 Main Avenue, CLIFTON, N. J.
NEW YORK OFFICE: 441 Lexington Avenue

BOILER-BURNER UNITS

Electrol-American Series No. EA-6



Has cast-iron boiler and is fired with Electrol Model TCV Burner. Built-in domestic water heater. Enclosed in handsome, insulated jacket finished in light beige. Extremely compact.

Features — Special heat absorbing surfaces. Large combustion chamber with ample space for efficient combustion. All parts completely enclosed.

Unit	Capacity, equivalent direct radiation, sq. ft.		Lbs. oil per hour	Capacity indirect water heater, gals. in 3 hours	Over-all dimensions, in.		
	Steam	Water			L	W	H
EA6-4	530	850	8.5	*40	47 3/16	29 3/4	54 5/8
EA6-5	650	1040	10.3	40	50 11/16	29 3/4	54 5/8
EA6-6	770	1230	12.1	40	54 3/16	29 3/4	54 5/8
EA6-7	890	1420	13.5	40	57 11/16	29 3/4	54 5/8
EA6-8	1010	1610	14.9	40	61 3/16	29 3/4	54 5/8
EA6-9	1130	1810	16.3	40	64 11/16	29 3/4	54 5/8

*100 gals. at extra cost.

ELECTROL CONVERSION BURNERS

Electrol Conversion Oil Burners, made in four sizes, take up to 10,000 square feet of total steam radiation. Since each model is designed for maximum efficiency at any rate within its capacity range, a few models cover a wide range of installation requirements.

Models TCV and TUV, pressure atomizing burners, employ the exclusive "ball flame", distinguishing them from others so classified. The "ball flame" provides a flame-walled hollow sphere of high temperature within which complete combustion takes place. Is readily adjustable with equal efficiency to all sizes and shapes of boilers.

Electrol Master Control, patented combustion control, is built integral with burner, factory adjusted. Is located outside firebox and actuated by clean air. Cannot become fouled so that response is uniformly precise under all conditions.

Electrol Drip-Eliminator is located in feed line directly behind nozzle. Delays fuel delivery until sufficient oil pressure, air flow and spark are established. Prevents after-drip of fuel at shutdown. Functions independently of electric circuit.



Model TCV

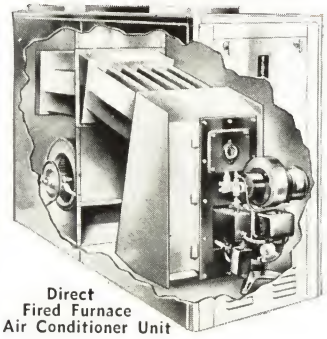
Models TM and TMJ are fully automatic Electrols designed for applications of industrial or commercial nature. Rugged construction for heavy duty. Improved parts are designed to fit existing models; eliminating obsolescence.

Model	Capacity, equivalent direct radiation, sq. ft.		Gals. oil per hr.	
	Steam	Hot water	Min.	Max.
TCV	200-1100	350-1800	1.3	3.5
TUV	600-2800	1000-4500	2.	8.5
TMJ	2000-5000	3200-8000	5.	13.
TM	2500-10000	4000-16000	8.5	24.

ELECTROL AIR CONDITIONING EQUIPMENT

Electrol Direct Fired Furnace Air Conditioner Units

A modern automatic oil fired furnace providing complete winter air conditioning with means for adding summer conditioning if desired. The Electrol Model DF Conditioner is made in four standard sizes and capacities are guaranteed as is an over-all efficiency of over 80% when operated at rated capacities.



Direct Fired Furnace Air Conditioner Unit

CAPACITIES—ELECTROL WARM AIR FURNACES SERIES D.F.

Model	B.t.u. per hour at bonnet	Oil rate, lbs. per hour	Heating surface, total sq. ft.	Air capacity	
				C.f.m. at 70°	Motor hp.
DF015	100,000	7.45	54	1000	1/6
DF1	135,000	8.65	86	1450	1/4
DF2	160,000	9.70	86	1650	1/3
DF3	185,000	11.90	86	1850	1/2
DF4	235,000	14.40	112	2150	3/4

Electrol Split System Air Conditioning Units

The Electrol "Split-System" Air Conditioning Units consist of a blower unit, air filters, humidification assembly, heating coil with space provided for addition of summer cooling coil, if desired. An Electrol "Split-System" Unit transforms a radiator-heated home into a modern air-conditioned home. Both floor-mounted and ceiling-suspended types are available.

CAPACITIES—ELECTROL SPLIT-SYSTEM AIR CONDITIONING UNITS SERIES SS

Model	Heating capacity B.t.u. per hour		Air capacity		Cooling capacity B.t.u. per hour	
	Hot water	Steam	C.f.m.	Motor hp.	Cold water (50°)	Direct expansion (40°)
SS1	93,000	92,000	1120	1/4	30,000	36,000
SS2	170,000	172,000	2000	1/3	49,000	66,000
SS3	233,000	247,000	2700	1/2	77,000	98,000
SS4	304,000	318,000	3600	3/4	93,000	124,000
SS10	46,000	46,000	500	1/6	14,000	21,000
SS13	66,000	66,000	750	1/6	26,000	31,000
SS15	90,000	90,000	1000	1/4	35,000	42,000

*Numbers 10, 13 and 15 are suspended type.

Electrol Gravity Warm Air Conditioner Units

An Electrol Blower Unit attached to an existing furnace, will filter the air, humidify it, and circulate it throughout a home. If the furnace is properly sized and installed, no changes should be necessary in the ducts. Humidifier, if used, is installed in jacket of furnace.

CAPACITIES—ELECTROL GRAVITY WARM AIR CONVERSION UNITS SERIES F.C.

Model	C.f.m.	Motor hp.	Furnace data—maximum permissible size		
			Furnace size, in.	Gravity pipe area rating, sq. in.	B.t.u. per hour
FC1	1000	1/6	24	550	75,000
FC2	1400	1/4	28	820	112,000
FC3	2000	1/3	30	1150	157,000
FC4	2500	1/3	34	1400	190,000

AIR CONDITIONERS . . . . .

CONDITIONAIRS . . . . . .

BOILERS . . . . . .

OIL BURNERS . . . . . .

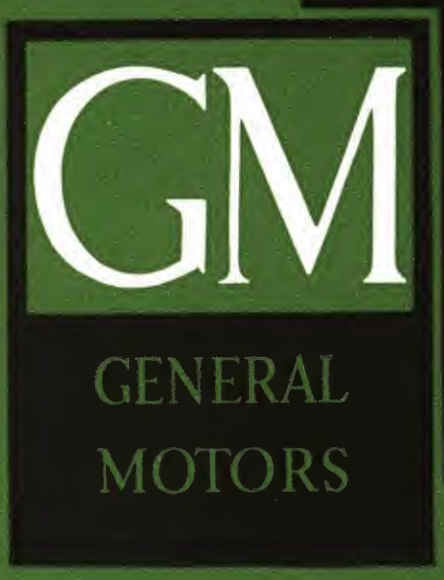
WATER HEATERS . . . . . .

COAL STOKERS . . . . . .

EVAPORATIVE CONDENSERS

CONDENSING UNITS . . . . .

EVAPORATOR COILS . . . . .



DELCO-FRIGIDAIRE

Automatic Heating·Cooling· and Air Conditioning Equipment

DELCO-FRIGIDAIRE CONDITIONING DIVISION
GENERAL MOTORS SALES CORPORATION, DAYTON, OHIO

26
9

DELCO-FRIGIDAIRE automatic heating, cooling and air conditioning products are backed by the research and engineering facilities of General Motors.

As a pioneer in the study and application of liquid fuels; as one of the leading manufacturers of modern refrigeration equipment; and as one of the outstanding research organizations in the world, General Motors is eminently qualified to design and manufacture air conditioning and automatic heating equipment.

As a result, Delco-Frigidaire products have passed the most grueling of all tests—successful operation in thousands of installations of every type, under all possible conditions.

As with other General Motors products, Delco-Frigidaire equipment is built with one end in view—to give more reliable, more economical and longer service to the user.

With these thoughts in mind, Delco-Frigidaire has prepared this brochure to illustrate in cursory fashion, the completeness of its line of automatic heating, cooling and air conditioning products, and to point out some of the outstanding contributions made to the industry by General Motors. Long strides indeed have been taken since Frigidaire brought out the first room cooler in 1929.

ROOM UNITS
SELF-CONTAINED TYPE

FRIGIDAIRE self-contained air conditioners, Models RSA and SC81 are designed for single room installations. Only power and a window connection are necessary for Model RSA; power, water and drain for Model SC81. Thermostatic control furnished as standard equipment on both models.



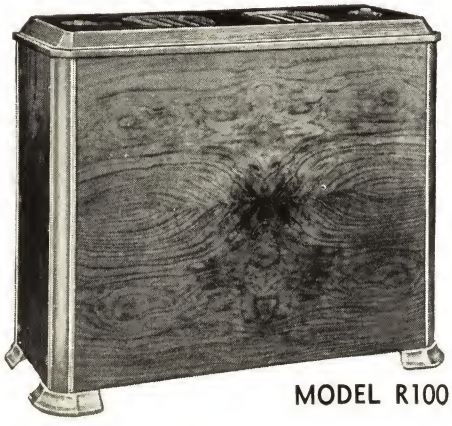
MODEL RSA

SPECIFICATIONS AND DIMENSIONS

Model	Nom. Capacity Tons	Cond. Medium	Overall Dimensions Inches			Filter	Net Weight Pounds
			Width	Depth	Height		
RSA	⅔	Air	34¾	18¾*	40¼	Std.	500
SC-81	⅔	Water	30⅛	23¾	42⅞	Extra	410

*Without window duct.

REMOTE TYPE



MODEL R100

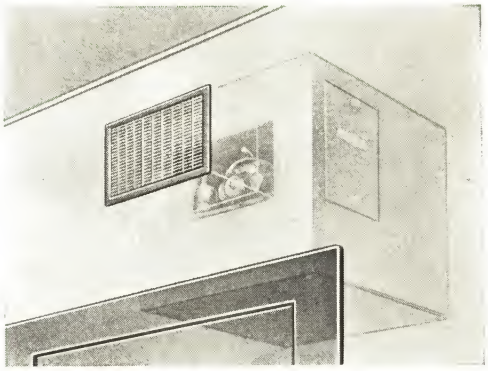
FRIGIDAIRE floor type air conditioners available in six models for single or multiple connection to remote condensing units. Cooling: Freon or chilled water; heating: hot water or steam. Filter attachments available as extra equipment.

SPECIFICATIONS AND DIMENSIONS

Model	Nom. Capacity Tons	Approx. B.t.u./Hr. Htg. Capacity		Overall Dimensions Inches			Net Weight Pounds
		Hot Water	Steam†	Width	Depth	Height	
R-50	½	....	....	26½	17⅛	26¾	120
RH-50	½	6300**	9600	26½	17⅛	26¾	130
RW-50	½	16000*	....	26½	17⅛	26¾	120
R-100	1	....	....	36½	17⅛	30	168
RH-100	1	12000**	18000	36½	17⅛	30	205
RW-100	1	36000*	....	36½	17⅛	30	147

*Capacity based on 70° F. entering air and 1 g.p.m. of 80° F. water.
†Capacity based on 70° F. entering air and steam at 1 pound.
**Capacity based on 70° F. entering air and 3½ g.p.m. of 180° F. water.

CONCEALED SUSPENDED UNITS



TYPICAL C50 INSTALLATION

FRIGIDAIRE concealed suspended type air conditioners are particularly adapted to installations singly or in multiple in hotel guest rooms, apartments, hospital rooms, homes and private offices where a concealed installation is desired. Units are usually suspended from closet ceiling or set on shelf and deliver air through a short duct and grille to the room. "C" series for Freon; "CW" series for chilled water; Heating medium, hot water. "H" and "V" following model number indicates Horizontal and Vertical models.

SPECIFICATIONS AND DIMENSIONS

Model	Nominal Tonnage	Overall Dimensions—Inches			Approx. B.t.u./Hr. *Htg. Capacity	Net Weight Pounds
		Width	Height	Depth		
C-50H	½	17½	16¾	19	.....	70
C-50V	½	23⅛	22⅞	14¼	.....	81
CW-50H	½	17½	16¾	19	14,500	60
CW-50V	½	23⅛	22⅞	14¼	13,700	74
C-100H	1	22¾	18¼	20¼	.....	90
C-100V	1	33⅛	25⅞	14¼	.....	124
CW-100H	1	22¾	18¼	20¼	30,600	83
CW-100V	1	33⅛	25⅞	14¼	28,500	122

*Heating capacity on 70° F. entering air and 1 g.p.m. of 180° F. water.

SELF-CONTAINED STORE UNITS

MODEL SC-302A Frigidaire Air Conditioner is completely self-contained, incorporating the condensing unit, fans, coils, filters and controls within a compact attractive cabinet. It has a nominal rating of three tons capacity.

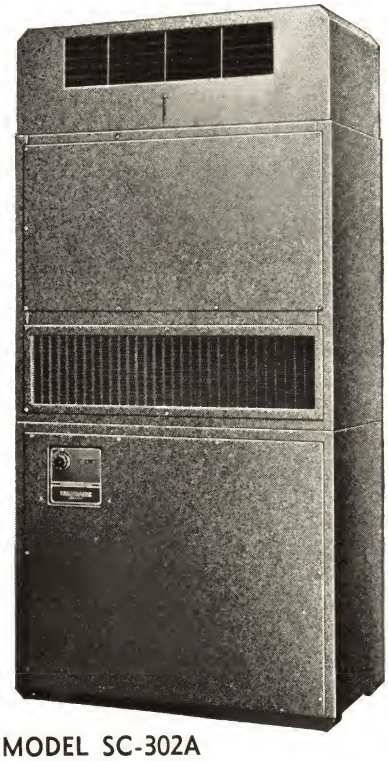
The unit provides cooling, dehumidification, filtering and air circulation. A heating coil may be added to furnish positive circulation of warm, filtered air. Thermostatic control of cooling temperatures is standard equipment.

With its compact design and attractive appearance, it may be installed directly within the conditioned area. Where other arrangements are preferable, the unit is so designed that the air intake grille may be located either in the front or the back of the cabinet, and the air delivery grilles and outlet hood may also be shifted to deliver the conditioned air in either direction. Where desired, the conditioner may be installed in an adjoining space, or in the basement and the cooled and dehumidified air distributed through a simple duct system. As with other Frigidaire unit equipment, it may be removed and reinstalled in a new location with maximum salvage valve.

SPECIFICATIONS AND DIMENSIONS

Model	Condensing Unit*	Fan C.f.m.	No.	Filter Size—Ins.	Overall Dimensions—Inches			Net Wt. (Lbs.)
					Length	Width	Ht.	
SC-302A	3 H.p.	1200	2	20x10x1	22	44¾	88¼	1200

*After March 1st, 1939, 5 and 10 h.p. self-contained store units will be available.



MODEL SC-302A

SUSPENDED UNITS



MODEL SF-500

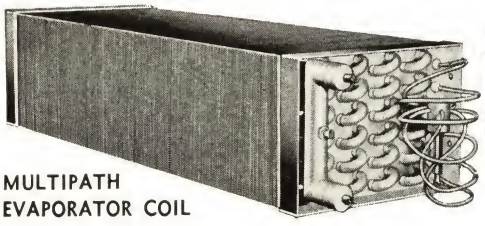
FRIGIDAIRE suspended air conditioners are used singly or in multiple in installations where floor space is at a premium, or where better distribution of conditioned air may be secured by delivery at or near the ceiling. They are designed for use with a remote condensing unit, which may be installed in the basement, or a nearby closet or storeroom.

Cooling, dehumidification, filtering and air circulation are provided. The larger sizes are available with a heating coil. Provision may be made for ventilation at the time the conditioner is installed. These units may be removed and re-installed in a new location with maximum salvage value. This feature makes them ideal for use in stores and offices occupied on a rental basis.

SPECIFICATIONS AND DIMENSIONS

Model	Nom. Cap. Tons	Air Del'y C.f.m.	Fans			Filters		Dimensions (Ins.)			Weight (Lbs.)	
			No.	Type	Motor H.p.	No.	Size (Ins.)	Width	Length	Ht.	Wt.	Shipping
SF-150	1½	525	1	Propeller	1/20	1	20x16x2	23	25⅛	18½	140	190
SF-300	3	1250	2	Centrifugal	1/5	2	25x16x2	51⅝	42⅜	16½	420	582
SF-500	5	1500 to 2000	2	Centrifugal	½ or ¾	2	25x16x2	58⅛	48¾	18⅜	535	700

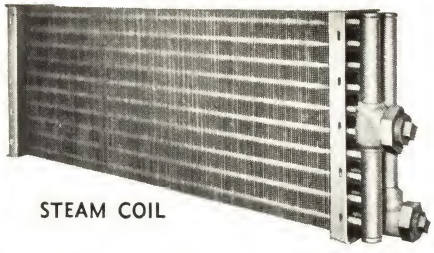
COILS—MULTI-PATH EVAPORATORS—WATER—STEAM



MULTIPATH EVAPORATOR COIL



WATER COIL



STEAM COIL

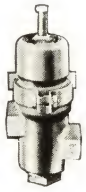
Table shows individual Frigidaire Freon, Water or Steam coils for built-up coil banks. For additional information, consult the local Delco-Frigidaire representative, or write directly to Delco-Frigidaire.

SPECIFICATIONS AND DIMENSIONS

Type Coil	Coil Length (Over Mounting Brackets) Inches	Rows Deep	Face Area (Square Feet)	
			46½ in. Coils	89 in. Coils
Freon	46½; 89	3, 4, 6, 8, 10	3.2; 4.7; 6.2	6.4; 9.4
Water	46½; 89	3, 6, 8, 10, 12	3.2; 4.7; 6.2	6.4; 9.4
Steam	46½; 89	1, 2	3.2; 4.7; 6.2	6.4; 9.4

CONTROL VALVES

MODEL CRV



The Frigidaire CRV Control Valve is designed to regulate refrigerant suction pressures under varying conditions of demand to prevent overloading of the condensing unit motor. Used when combined capacities of evaporator coils or remote units exceed the capacity of condensing unit and make unnecessary complex electrical control systems usually employed for that purpose.

MODEL ERV



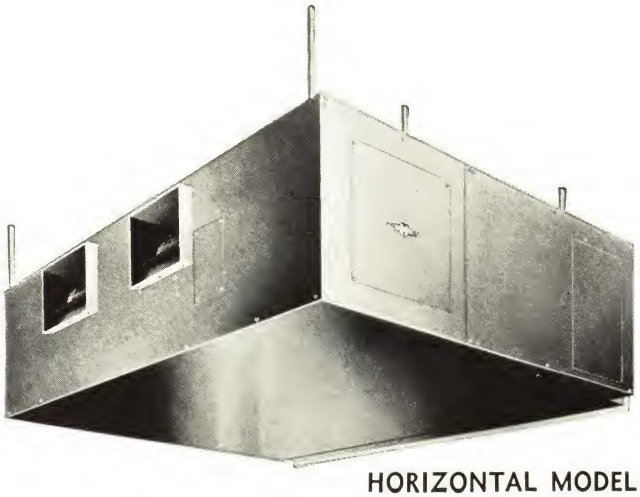
The Frigidaire ERV Control Valve is designed to maintain an adequate refrigerant suction pressure to prevent evaporator coil temperatures from dropping to the point where moisture on the surface of the coil would freeze. In multiple unit installations, as more and more of the cooling load is cut off, control becomes operative to maintain proper coil temperatures on units still in operation.

MODEL TEV



Frigidaire TEV (thermostatic expansion valves) control valves are designed especialy for use with Freon (F-12) refrigerant. They are fabricated from the highest quality nickel bronze, brass and stainless steel parts and are provided with correctly proportioned openings and automatic control elements for the accurate regulation of refrigerant flow.

CENTRAL SYSTEM AIR CONDITIONERS

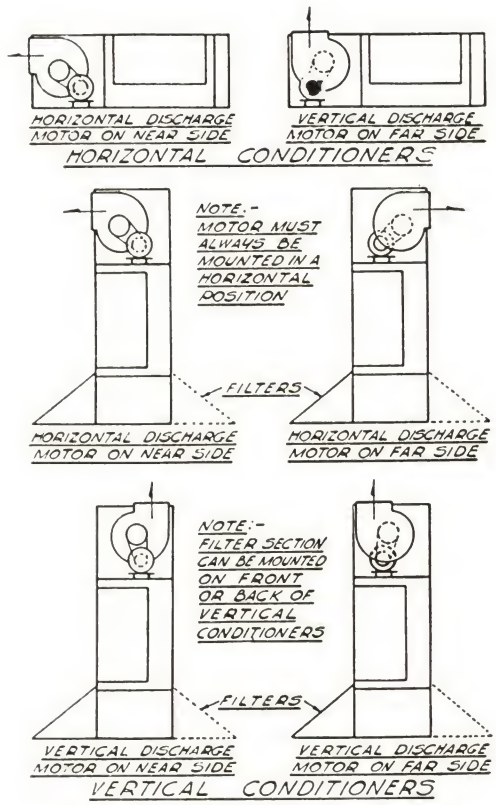


HORIZONTAL MODEL

FRIGIDAIRE Central Duct Type Air Conditioners make available the advantages of a properly engineered unit, built under strict factory control, to meet the requirement of central duct air conditioning systems. These units are designed for wide flexibility of application to meet the specific conditions encountered on any particular installation. They may be installed as a horizontal suspended unit, or, with the addition of a base assembly and filter rack, as a vertical floor type conditioner. The figure at the right illustrates the adaptability of these central duct type air conditioners to meet individual installation problems.

These Frigidaire Air Conditioners may be used to provide summer cooling and dehumidification, with circulation, filtering and ventilation, or complete year 'round service, including heating and humidification. In design, proper balance has been maintained between air delivery, coil capacity and filter area to assure maximum operating results.

In addition to the direct expansion evaporator coil for Freon, Frigidaire Central Duct Type Conditioners are also available with a water coil, for use on circulating chilled water air conditioning systems.
With a wide range of capacities available, these units may be used singly to provide conditioning for the entire installation, or in multiple where there are a number of individual areas to be served, each presenting varying loads.

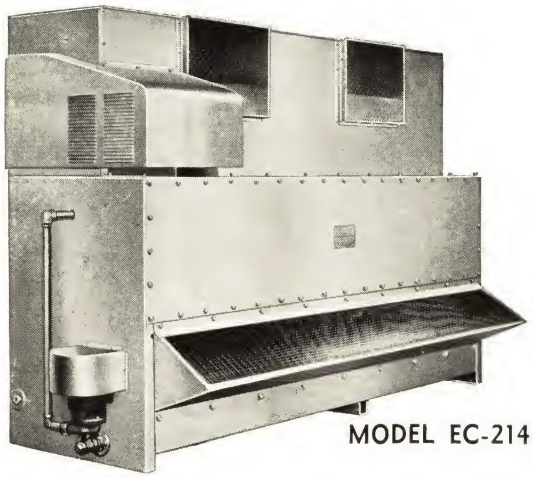


VARIOUS POSITIONS FOR FAN DISCHARGE AND FILTERS

SPECIFICATIONS AND DIMENSIONS

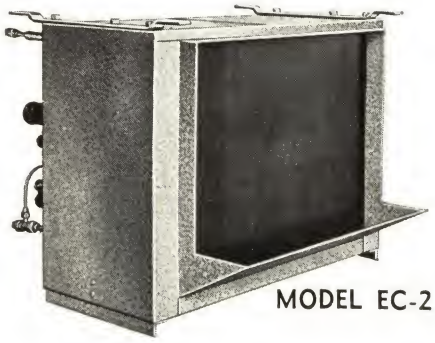
Model	Nom. Cap. Tons	Fans		Nom. Motor H.p.	Filters		Coils (Freon) Face Area Sq. Ft.	Overall Dimensions Inches			Net Wt. Lbs. With 6-row Coil (Approx.)
		No. Fans	Nom. Air Delivery C.f.m.		No.	Size, In.		Depth	Width	Ht.	
HORIZONTAL UNITS											
DF-62	6	1	1500-2000	¾	3	16x25	4.7	67⅞	58¾	27⅛	824
DF-122	12	2	3000-4000	1½	6	16x25	9.4	67⅞	101⅛	27⅛	1231
DF-182	18	2	5000-7000	3	10	16x20	15.8	75⅜	101⅛	34⅝	1593
DF-242	24	2	7500-10000	5	10	20x20	19.2	76	101⅛	42¼	1936
VERTICAL UNITS											
DF-62V	6	1	1500-2000	¾	3	16x25	4.7	48 5/16	59⅝	79 3/16	929
DF-122V	12	2	3000-4000	1½	6	16x25	9.4	48 5/16	102	79 3/16	1441
DF-242V	18	2	5000-7000	3	10	16x20	15.8	61⅛	102	91⅝	1843
DF-182V	24	2	7500-10000	5	10	20x20	19.2	77 1/16	102	96¼	2211

EVAPORATIVE CONDENSERS



MODEL EC-214

FRIGIDAIRE Evaporative Condensers are designed for use with Frigidaire Air Conditioning Condensing Units. The use of these units reduces necessary water consumption to a small fraction of that required by regular water cooled types of installations and makes it possible to provide economical and efficient air conditioning installations in localities where water is scarce, of poor quality, available only at high rates, or where usage is restricted.



MODEL EC-2

Frigidaire Evaporative Condensers are available in six sizes and three models. They are adaptable to a wide variety of installation requirements and because of the high efficiency in operation, provide the maximum in cooling capacity.*

Frigidaire Evaporative Condensers are a combination of a forced draft cooling tower and refrigerant condenser. Condensing is obtained by means of a combination of air flow and evaporation of water sprayed over the condensing surfaces. The capacity is dependent on the wet bulb temperature of the entering air as well as the refrigerant temperature in the condensing coil.

In the operation of all models except the EC2 and EC16, the pump draws water from the water pan and discharges it above the condensing coils through spray nozzles. These nozzles distribute the water uniformly over the condensing coils. A large excess of water is used to keep the coil surface clean and maintain the proper rate of heat transfer. Make-up water is automatically supplied to replace the water which has been evaporated, to provide an overflow for the removal of dirt, to prevent excessive deposition of lime on the coil surfaces and to reduce the acidity of the recirculated water.

In specifying evaporative condensers, note that the rated quantity of air should be handled, no air should be recirculated through the unit, consideration should be given to the direction and force of prevailing winds, and if the unit is installed outside the structure, protection must be provided for operating mechanism and to prevent freeze-ups during winter months.

Frigidaire Evaporative Condensers are furnished in six nominal capacity sizes of 3, 6, 10, 20, 30 and 40 tons. All units are arranged for floor mounting except the EC-2 which is arranged for suspension mounting.

*They are ideal for use in stores and buildings occupied on a rental basis as they may be removed and re-installed in a new location with maximum salvage value.

SPECIFICATIONS AND DIMENSIONS

Model	Average Water Consumption G.p.h.	Fan Motor**		Pump Motor** H.p.	Dimensions Overall Inches			Operating Wgt. Pounds (Approx.)
		H.p.	C.f.m.		L.	W.	H.	
EC-2	25	1/6	1,600	..	31	32 1/2	25 1/4	215
EC-16	16	1/2	2,400	..	51 3/4	42 1/4	57 3/8	1050
EC-111	20	3/4	2,500	1/4	60 7/8	42 1/2†	76 3/8	1528
EC-212	40	1 1/2	5,000	1/4	96 7/8	44 †	76 3/8	2690
EC-213	60	1 1/2	7,500	1/3	131 1/8	47 †	82 3/8	4240
EC-214	80	2	10,000	1/2	131 1/8	55 3/8†	84 1/2	5385

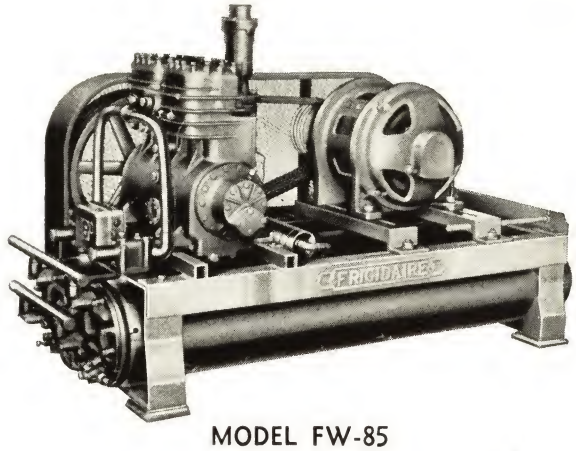
**Ratings based on 110 or 220 volt, 60 cycle, AC, single phase or 220-440 volt, 3 phase.
†Dimensions based on air discharge and intake on same side of unit. If discharge is on opposite side, fan motor over-hang increases this dimension 10 inches on the EC-111, 212 and 213, and 7 inches on the EC-214 unit.

FRIGIDAIRE CONDENSING UNITS

FRIGIDAIRE Air Conditioning Condensing Units are designed specifically for air conditioning service. They are built to take full advantage of the favorable operating characteristics of Freon, the air conditioning refrigerant, developed and made available to the industry through the collaboration of Frigidaire engineers.

These units combine General Motors' research experience with Frigidaire's own background as a pioneer and world's leading producer of mechanical refrigeration equipment. They give balanced performance of the air conditioning system as a whole when used with Frigidaire remote units, multipath evaporator coils, or Frigidaire central duct air conditioners.

As a result they produce more cooling per dollar of water cost and per kilowatt of power consumed. Frigidaire Air Conditioning Condensing Units are available from 1/3 to 50 H.P. in size, for use with evaporative condensers, water towers or city water, and in air cooled models.



MODEL FW-85

SPECIFICATIONS AND DIMENSIONS

Model	Motor H.p.	No. Cyl.	Dimensions Overall Inches			Net Weight Lbs.
			Length	Depth	Height	
WATER COOLED MODELS						
FW-70	5 or 7½	2	65	22¼	40⅝	991
FW-80	7½ or 10	4	65	31	40⅝	1350
FW-85	10 or 15	4	66	31	40⅝	1695
FW-91	15 or 20	6	76	35⅝	48½	2831
FW-102	20 or 25	8	84¾	35	47	3087
FW30-9D	30	4	102½	58½	75⅝	5000
FW40-9D	40	4	102½	58½	75⅝	5300
FW50-9D	50	4	102½	58½	75⅝	5600
EVAPORATIVE CONDENSER MODELS						
FE-70	5 or 7½	2	53½	22¼	33½	550
FE-80	7½ or 10	4	57½	31	33½	986
FE-85	10 or 15	4	57½	31	33½	1098
FE-91	15 or 20	6	71	35⅝	36½	1833
FE-101	20 or 25	8	71	35⅝	36½	2072
FE30-9D	30	4	80½	58½	58⅝	3600
FE40-9D	40	4	80½	58½	58⅝	3900
FE50-9D	50	4	80½	58½	58⅝	4200

FEATURES OF FRIGIDAIRE AUTOMOTIVE TYPE COMPRESSORS

SPECIAL design to provide close fit between piston and top of cylinder at highest point of stroke.

Frigidaire design dome type cylinder head for free passage of gases leaving the cylinder.

Special design exhaust valve which eliminates straining of the valve material itself.

Balanced flywheels.

V-grooves for flywheel belts positively aligned and of accurate depth.

Frigidaire positive closure shaft seal cushioned in oilproof Neoprene.

Drop forged connecting rods, rifle drilled for oil passage.

Special reverse fine mesh screen filters all oil circulated through the pressure lubrication system by the oil pump.

Bearings of extra large surface.

Pistons and cylinder walls honed and polished to an accuracy of one-half of one thousandth of an inch.

Special design oil pump furnishes full pressure lubrication to bearings.

An oil scraper ring is provided on each piston to control the amount of oil on the cylinder walls.

Trunked piston design allows gas to enter at side of cylinder without first passing through crankcase.

Compressor castings are made of a special close grained, long wearing, non-porous alloy.

Two compression rings are used on each piston to prevent leakage of gas being compressed.

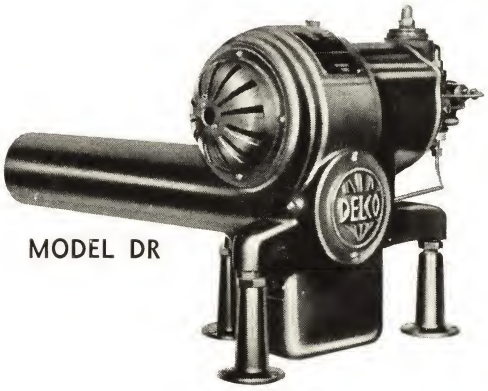
Cylinder block castings are finished to assist in rapid dissipation of heat from the compressed refrigerant.

Piston pins tightly fitted to pistons and locked in place, preventing motion at any place except bearing.

26
9

CONVERSION EQUIPMENT

DELCO OIL BURNER



MODEL DR

THE Delco Oil Burner employs the highly efficient pressure atomizing method of breaking the liquid fuel into fine particules for complete combustion. The Delco "Thin-Mix" fuel control governs oil flow, maintaining a uniform pressure at all times and preventing oil dribble at the end of a period of operation.

In the Delco Oil Burner with the Rotopower unit, all rotating parts are built as an integral unit on the motor shaft. The housing is a one-piece casting, providing rigid support for the operating mechanism. Delco Oil Burners are available in 5 sizes in standard voltage characteristics with combustion rates from 1-30 gallons per hour or a capacity range from 440 to 12,000 square feet of steam, E.D.R.

SPECIFICATIONS AND DIMENSIONS

Model	Capacity B.t.u./Hr.	Output of Boiler or Furnace		Gal/Hr.		Motor			Pump		Strainer Area Sq. In.	Net Wt.
		E.d.r. Steam	E.d.r. H. W.	Min.	Max.	H.p.	Watts	R.p.m.	Lift Ft.	Cap. G.p.h.		
DR-1	105,600	440	700	1.0	1.35	1/8**	135	1,740	8	13	17	100
DR*	216,000	900	1,440	1.35	2.75	1/8**	135	1,740	8	13	17	100
D-12	559,200	2,330	3,725	2.5	7.0	1/6†	160	1,735	8	13	36	115
D-34	1,296,000	5,400	8,600	7.0	16.5	1/3*†	415	1,750	13	90	49.5	298
D-44	2,880,000	12,000	19,200	15.0	30.0	3/4*†	760	1,750	13	90	49.5	383

**Available in 110 volt, 60 cycle, A.C. only
†Ratings based on 110 volt 60 cycle A.C. Also available in odd cycle or 110 volt D.C.
*†Ratings based on 110 volt or 220 volt 60 cycle A.C. D-34 available in 110 or 220 volt D.C. D-44 220 volt only. Also available in 25 cycle.
*Model DX, comparable to Model DR in capacity, is available for 110 volt, 25, 40 or 50 cycle A.C. and for 110 volt D.C.

THE DELCO STOKER


MODEL SD-30

THE Delco Stoker is designed to provide automatic firing for coal-fired domestic heating plants. The line consists of three models in two sizes, which burn bituminous coal and are so sized as to completely cover every domestic and small commercial heating application.

Delco Stokers are of the underfeed, screw type with intermittent coal feed. Many exclusive features are incorporated to minimize the time and effort of attention and to provide uninterrupted heating service. Sectional tuyeres; coal control for changing the firing rate; automatic air control, rubber-lined corrosion-resistant hopper, hopper gas eliminator and sound insulated mechanism in the deluxe models; are but a few. Complete automatic controls are standard equipment on all models.

SPECIFICATIONS AND DIMENSIONS

Model	Type	Lbs. Per Hr.	No. Speeds	Lbs. Hopper Cap.	Max. Ratings			Dimensions Overall Inches			Air Control	Net Wt.
					Sq. Ft. Steam	Sq. Ft. Ht. Water	Sq. In. Warm Air	Width	Length	Height		
S-30	Std.	10-20-30	3	300	900	1,440	1,490	25	79 11/16	32 5/8	Semiautomatic	426
SD-30	DeLuxe	10-20-30	3	300	900	1,440	1,490	25	79 11/16	32 5/8	Automatic	431
SD-50	DeLuxe	17-34-51	3	400	1,500	2,400	2,500	25	84 13/16	37 5/8	Automatic	470

DELCO AUTOMATIC BOILERS



MODEL DB-3

THE Delco Automatic Boiler coordinates the Delco Oil Burner or Delco Gas Burner with a boiler of special design and construction for application on hot water, steam or vapor-vacuum heating systems. Most oil-fired models incorporate the famous Delco Oil Burner with the Rotopower Unit, in which the Delco Motor, air blower and oil pump are built and mounted as an integral unit on a single shaft. The boiler is honey-combed with water backed fins. When sections are fitted together, these fins form a series of passes through which the hot gases must travel on their way to the flue outlet. In this way a maximum of water backed surface is exposed to the heated gases, assuring maximum heat absorption and consequent operating economy.

Year 'round domestic hot water service is provided as standard equipment on DL models, and is available as extra equipment on other Delco Automatic Boilers. Operation of this feature is entirely automatic.

The gas-fired Delco Automatic Boiler, Model GH-4, is similar in design, construction and appearance to the oil burning units, except that a special Delco Gas Burner, which projects a long sweeping luminous flame horizontally from refractory ports into the combustion chamber, is used; together with gas operating and safety controls. It is available in models for natural, manufactured, or mixed gas.

SPECIFICATIONS AND DIMENSIONS

OIL FIRED

Model	Capacity Total Tax S	Capacity Total Tax HW	Capacity Net* S	Capacity Net* HW	B.t.u. Output per Hr.	Heating Surface Sq. Ft.	Fire Box Volume Cu. Ft.	Motor Hp.	Motor Watts	Motor R.p.m.	Overall Dimensions Inches Length	Width	Height	Net Weight S	Net Weight HW	Domestic Hot Water Coil
DB-3	462	739	350	560	110,880	32.3	2.9	1/8	135	1740	37¾	27	50⅜	1025	1025	Extra
DB-4	667	1,067	505	808	160,080	46.5	4.3	1/8	135	1740	43¾	27	50⅜	1265	1265	Extra
DH-4	1,050	1,675	800	1,290	252,000	80.0	6.5	1/6	155	1740	56 5/16	33¼	54⅛	2200	2180	Extra
DL-5	1,400	2,200	1,080	1,700	336,000	104.75	8.7	1/6	155	1740	57½	33½	55¼	2682	2792	Std.
DL-6	1,725	2,750	1,335	2,140	414,000	129.5	10.75	1/6	155	1740	65½	33½	55¼	3292	3402	Std.

GAS FIRED

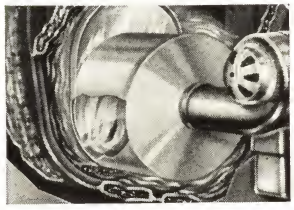
Model	Capacity Total S	Capacity Total HW	Capacity Net* S	Capacity Net* HW	AGA B.t.u. Input per Hr.	B.t.u. Output per Hr. 80% Eff.	Heating Surface Sq. Ft.	Firebox Volume Cu. Ft.	Overall Dimensions Inches Length	Width	Height	Net Weight, Steam and Hot Water	Domestic Hot Water Coil
GH-4	1080	1675	800	1290	315,000	252,000	80.00	6.5	49	33¼	54	1975	Extra

*Standing radiation without domestic hot water load.

QUIK-ACTION HEAT TRANSMITTER

OIL-FIRED Models DB-3 and DB-4 incorporate the exclusive Quik-Action Heat Transmitter, streamlined fins which provide more effective heating surface for heat absorption, a completely water-backed combustion chamber, and the Delco Rotopower Unit.

This new, exclusive engineering development by General Motors and Delco engineers, the Quik-Action Heat Transmitter, provides quick radiant heating of all walls of the completely water-backed combustion chamber, meanwhile permitting a high temperature, and therefore a highly efficient combustion zone within the transmitter itself. Its use makes the previous slow heating fire clay refractory lining of the combustion chamber unnecessary. The appearance and location in the boiler of this outstanding development is illustrated at the right.



Location of Heat Transmitter with Respect to Burner

DELCO CONDITIONAIRS



MODEL DA-0

THE Delco Conditionair is a compact, completely automatic unit which provides true, winter air conditioning by circulating cleaned, humidified and properly heated air. Entering air is passed through viscous filters, where bacteria, dirt and dust are removed. Purified air is then delivered by the blowers to the heat compartment. Here the air absorbs the proper amount of moisture and then travels over the surface of the compact heat transfer unit. Air flow resistance is reduced by exclusive tear drop design. A large heating surface of copper bearing welded boiler plate steel, dotted with heat projectors, transfers heat to the flowing air. All operating parts are enclosed within an attractive steel cabinet. Complete automatic controls for all Delco Conditionairs are standard equipment. Model DA-0 is equipped with the new "Quik-Action" Heat Transmitter, which renders slow heating refractory fire box lining unnecessary.

In Delco Gas Conditionairs, there is a sufficient range in sizes to permit selection of the proper size unit for applications ranging from a small six-room house (85,000 B.t.u. heat loss or less) to a large mansion (255,000 B.t.u. heat loss or less) Delco Conditionairs, oil fired, range in size from 85,000 B.t.u. heat loss to 280,000 B.t.u. heat loss.

OIL FIRED

SPECIFICATIONS AND DIMENSIONS

Model	Hourly B.t.u. Output		Blower								Flue Outlet Size, In.	Cabinet Dimensions Inches			Net Weight, Lbs.
	Plenum Output	Register Output*	No. Units	Fan R.p.m.	Max. C.f.m. Del'y	Filters		Motors				Width	Length	Height	
						No.	Size, In.	H.p.	R.p.m.	Watts					
DA-0	100,000	85,000	1	400 700	1600	1	2x20x25	¼SP	1725	210	8	30	54½	46⅞	801
DA-1	135,000	115,000	1	400 700	1600	2	2 x 16 x 25	¼SP	1725	210	8	51⅛	48	50	960
DA-2	200,000	170,000	2	400 700	2400	4		¼SP	1725	250	8	53	64½	50	1435
DA-3	325,000	280,000	2	335 590	4000	9		¾CD	1725	780	10	70	86	55	2000

GAS FIRED

AGA Approved Model	Hourly B.t.u. Ratings**			Blower								Flue Outlet Size, In.	Cabinet Dimensions Inches			Net Weight, Lbs.
	Hourly Input	Plenum Output	Net Register Output*	No. Units	Fan R.p.m.	Max. C.f.m. Del'y	Filters		Motor				Width	Length	Height	
							No.	Size, In.	H.p.	R.p.m.	Watts					
GA-0	133,000	100,000	85,000	1	400 700	1600	2	2 x 16 x 25	¼SP	1725	210	8	30	54½	46⅞	848
GA-1	180,000	135,000	115,000	1	400 700	1600	2		¼SP	1725	210	8	51⅛	48	50	1023
GA-2	267,000	200,000	170,000	2	400 700	2400	4		¼SP	1725	250	8	53	64½	50	1357
GA-3	400,000	300,000	255,000	2	335 590	4000	9		¾CD	1725	780	10	70	86	55	2301

*Approximate transmission loss 15%, depending on duct design.
**Burners available for natural, mixed or artificial gas.

WATER HEATERS

THE Delco gas or oil fired water heater provides an abundance of hot water for household or commercial use all year 'round, automatically and at minimum cost. The storage tank is constructed of heavy gauge copper-loy steel, galvanized by the "hot-dip" method both inside and out after fabrication to insure long life. Operation is fully automatic. Both models are equipped with a positive acting immersion-type thermostatic control, adjustable to the desired range to maintain water in the tank at the proper temperature.

SPECIFICATIONS AND DIMENSIONS

Model	Fuel	Tank Capacity, Gals.	Insulation	Dimensions, Inches				Recovery Capacity (Gal. per Hr.) 60° Temp. Rise	Net Weight, Lbs.
				Height	Diam. Top	Max. Width	Max. Depth		
GW-0	Natural, Mixed or Artificial Gas	40	1¼" Rock Wool	64¼	18⅝	23	19¼	42	275
DW-0	Water White Kerosene	40	1¼" Rock Wool	64¼	18⅝	23½	19¼	22	310

FOR SUMMER CONDITIONING

ALL Delco Conditionair units may be used for year 'round air conditioning through the addition of an evaporator coil assembly to be connected to a Frigidaire condensing unit. Where year around air conditioning is contemplated either immediately or at some time in the future, the duct system should be designed for proper distribution of the air in summer as well as winter. This may be accomplished at small additional expense if done at the time of the original installation, but may be quite expensive if changes must be made at a later date.

Where summer circulation only is desired, a summer switch connected to blower motor for operation of fan can be installed (optional extra equipment on DA-0, DA-1, GA-0, GA-1; standard on all other models).



MODEL DA-2 WITH COOLING ATTACHMENT

YEAR 'ROUND RESIDENTIAL AIR CONDITIONING UNITS



MODEL HC-20

DELCO Residential air conditioning units are furnished in two sizes and styles and are particularly designed for use with Delco Automatic Boilers. They are of the horizontal, suspended type, and operate in conjunction with a duct system to the spaces to be conditioned.

The units may be combined with a steam or hot water system for winter air condtiioning of all or a portion of a residence, or may be used for complete year 'round air conditioning by the addition of Frigidaire cooling coils and condensing unit, or water cooling coils may be used.

SPECIFICATIONS AND DIMENSIONS

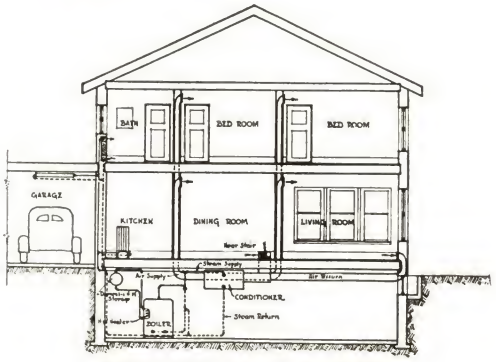
Model	Total Heating Capacity B.t.u.'s per Hour		Nominal Tonnage (Cooling)	C.f.m.	Motor Hp.	Dimensions Inches			Shipping Weight, Lbs.
	Steam	Ht. Water 180° F.				Length	Width	Height	
HC-20	47,000-93,500	43,500-92,000	2	500-1,100	STD 1/4 OPT 1/3	63 1/8	28	22 3/4	470
HC-40	79,000-130,000	85,000-120,000	4	1,000-2,000	STD 1/2 OPT 3/4	60 3/4*	61 3/8*	18 3/8	750

*Includes exterior motor. Actual size of unit: 48 3/4 in. long, 5 1/8 in. wide.

TYPES OF APPLICATIONS

Delco Residential air conditioners are designed for four major types of application:

1. "Split System" heating and humidifying units in connection with an external source of steam or hot water together with separate radiators also connected to the boiler (See fig.).
2. As "Indirect" heating and humidifying units for use with external source of heat where no radiation is used.
3. As year 'round air conditioning units, requiring external heating and cooling sources.
4. HC-20 may also be used as a humidifier, by substituting a tempering coil.



TYPE "1" APPLICATION

Your local distributor of Delco-Frigidaire products has available for your assistance sound engineering information on the application of automatic heating and air conditioning equipment.

Feel free to call on him at any time he can be of assistance to you. With the wide variety of equipment available to him, his recommendations need never be influenced by the fact that he does not have the type of equipment best suited to the job.

The Delco-Frigidaire distributor can be located by reference to the classified section of your telephone directory. If you prefer, write directly to—

DELCO-FRIGIDAIRE CONDITIONING DIVISION
General Motors Sales Corporation
DAYTON, OHIO

GM
GENERAL MOTORS

DELCO-FRIGIDAIRE

Automatic Heating·Cooling· and Air Conditioning Equipment

FITZGIBBONS

STEEL BOILERS

BOILER-AIR CONDITIONER

FITZGIBBONAIRE

OIL-EIGHTY AUTOMATIC

COAL-EIGHTY AUTOMATIC

RZU JR BOILER

RZU BOILER

POWER BOILERS



1939 EDITION

Fitzgibbons Boiler Company, Inc.

General Office and Show Rooms: Architects Bldg., 101 Park Avenue, New York, N. Y.

Works: Oswego, N. Y.

LIST OF BRANCHES AND REPRESENTATIVES ON BACK COVER

FOR HEATING AND AIR CONDITIONING

The

"SPLIT SYSTEM"

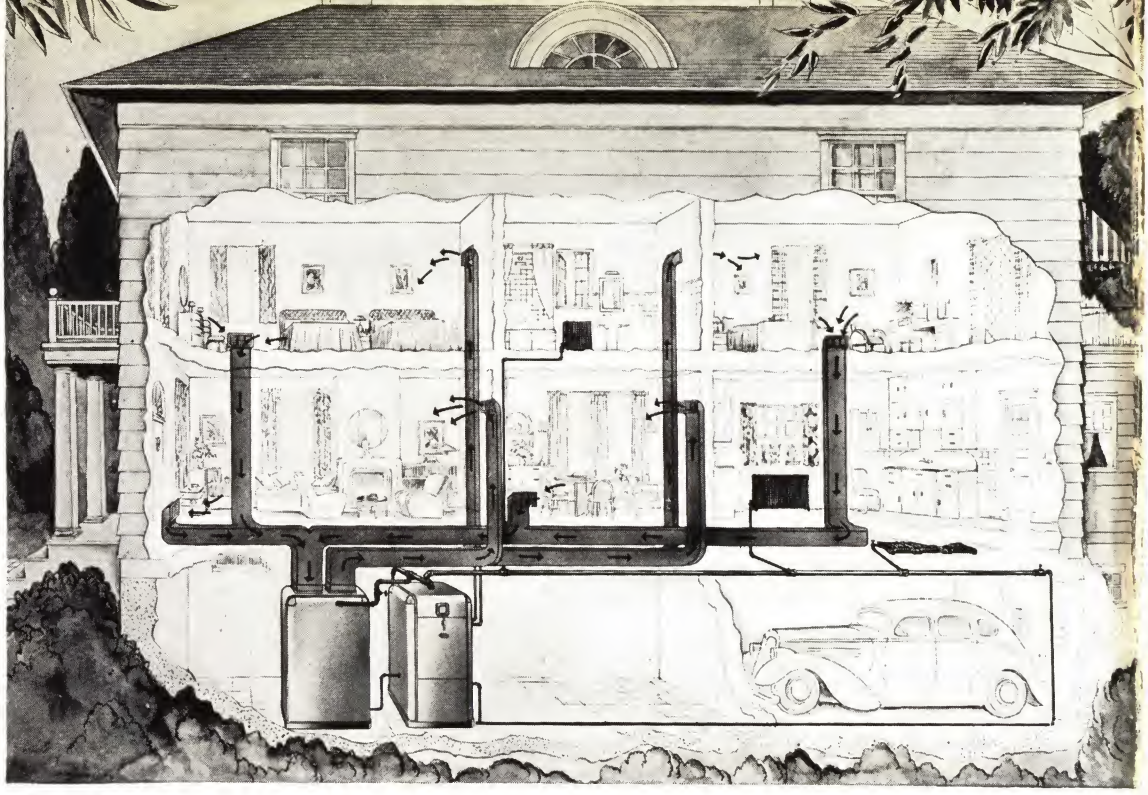
AIR CONDITIONER

THE MODERN WAY

TO HEAT YOUR HOME

AND FURNISH YEAR

'ROUND HOT WATER



A DIAGRAMATIC ILLUSTRATION OF TYPICAL SPLIT SYSTEM

Note Ducts to Principal Rooms and Radiators to Minor Rooms

TYPES OF FITZGIBBONS APPARATUS FOR SPLIT SYSTEMS OF AIR CONDITIONING SERVICE

For NEW or OLD BUILDINGS

FLOOR TYPE OF AIR CONDITIONING UNIT SEPARATE FROM BOILER

The Fitzgibbonsaire is an air conditioner floor unit which works in tandem with the Fitzgibbons Steel Boiler for oil, gas or stoker firing. This unit is often used to add air conditioning to a home already constructed, or in a new home where it is desirable to locate the air conditioning in one part of the basement, and the heating boiler in another. The operation of this unit is similar to that of the Boiler Air Conditioner herein described. Domestic hot water supply may be furnished with this type of installation as well, since the boiler may be equipped with the Fitzgibbons Tanksaver.

CEILING TYPE OF AIR CONDITIONING UNIT FOR SELECTED ROOMS

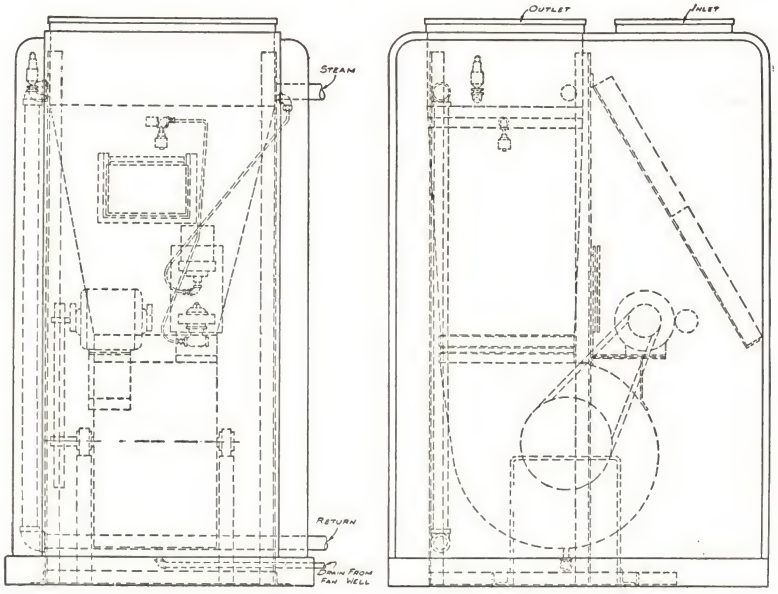
The Fitzgibbonsaire Junior is a ceiling type conditioner which extends the scope of air conditioning to homes that are already equipped with Fitzgibbons boilers, the subdivision of the house into air conditioned spaces and radiator heated spaces, and the zoning of heating with a home where it is desirable to place a number of units, all receiving their source of heat from the same boiler. Its chief advantages are that it is light in weight; quickly and easily installed; is suspended from the ceiling and takes up no floor space, and may be used in homes now equipped with hot water or steam heating systems. Furthermore, it can be adapted to Summer cooling by the simple installation of an additional coil.

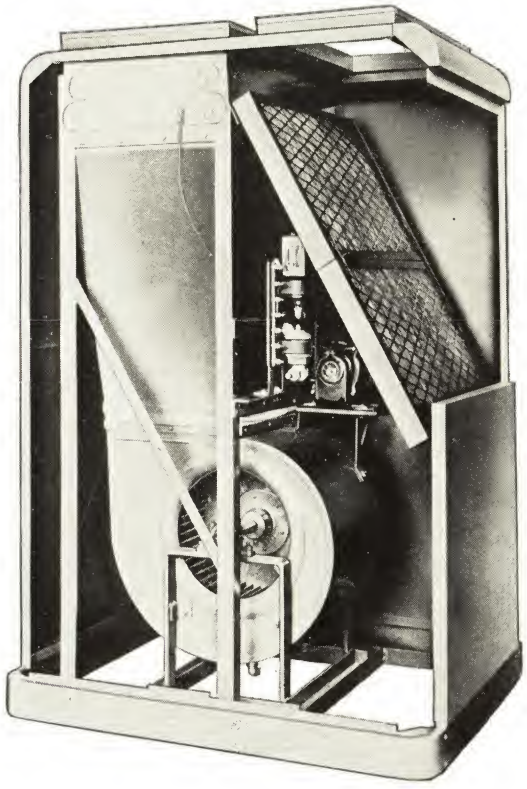
COMPLETE BOILER AND AIR CONDITIONING UNIT

The Boiler Air Conditioner combines within one stream-lined jacket all the functions of conditioned air, boiler radiator heat and domestic hot water supply. The jacket, in most cases, conceals the firing unit also, in the space provided, as shown in the broken away view on the following page. Therefore, the oil burner, gas burner or stoker may be enclosed within the jacket out of view and out of the way of possible injury through inexperienced tinkering. The Boiler Air Conditioner is equipped with the Fitzgibbons Tanksaver, the submerged copper coil which furnishes a plentiful supply of domestic hot water in Summer and Winter without the necessity for a storage tank.

THE FITZGIBBONSAIRE— For "Split-Systems"—A Floor Unit for Use with Automatically Fired Boilers

Designed especially for the popular "split-system" method of air conditioning—the combination of air conditioning in selected rooms and boiler-radiator heat elsewhere in the house—the Fitzgibbonsaire is a floor unit air conditioner for installation with Fitzgibbons Boilers for oil, gas or stoker firing. It is compact, silent, sturdily constructed and attractively finished. Its design permits its location in any desirable place in the basement plan, regardless of boiler location. It is built in a range of sizes adaptable to practically any residential requirement.





FITZGIBBONSAIRE FOR STEAM

Fitzgibbonsaire		91	146	213	292	364	116	185	270	369	462
Exchanger Capacity	B.T.U.	91300	145800	212803	291600	364500	115700	184600	269600	369300	461700
E. D. R. Steam	Sq. Ft.	380	607	886	1215	1518	482	769	1123	1538	1923
FanCapacity–¼"Static.	C.F.M.	1128	1800	2628	3600	4500	1128	1800	2628	3600	4500
Air Temp. Based on 65° F. Inlet	Degrees	140	140	140	140	140	160	160	160	160	160
Fan Speed	R.P.M.	662	558	656	558	526	738	620	720	620	576
Fan Size	#	1	1⅛	2–1	2–1⅛	2–1¼	1	1⅛	2–1	2–1⅛	2–1¼
Motor Size	H.P.	⅛	½	¾	1	1	⅛	½	¾	1	1
Steam Conn.	In.	1–1½	1–1½	2–1½	2–1½	2–1½	1–1½	1–2	2–2	2–2½	2–2½
Return Conn.	In.	1	1	1¼	1¼	1¼	1	1	1½	1½	1½
Height Steam Conn.	In.	51⅞	54⅞	54⅞	57⅞	65⅜	51⅞	54⅞	54⅞	57⅞	65⅜
Air Intake Size	In.	12x23½	12x29½	12x47½	12x53½	15x65½	12x23½	12x29½	12x47½	12x53½	15x65½
Air Discharge Size	In.	16⅝x 23½	19⅝x 29½	16⅝x 47½	19⅝x 53½	19⅝x 65½	16⅝x 23½	19⅝x 29½	16⅝x 47½	19⅝x 53½	19⅝x 65½
Height Overall	In.	58½	61½	61½	64½	72	58½	61½	61½	64½	72
Width Overall	In.	32½	38½	56½	62½	74½	32½	38½	56½	62½	74½
Length Overall	In.	39½	42½	39½	42½	45½	39½	42½	39½	42½	45½
Approx.Shipping Weight	Lbs.	500	600	800	950	1100	550	650	875	1050	1200

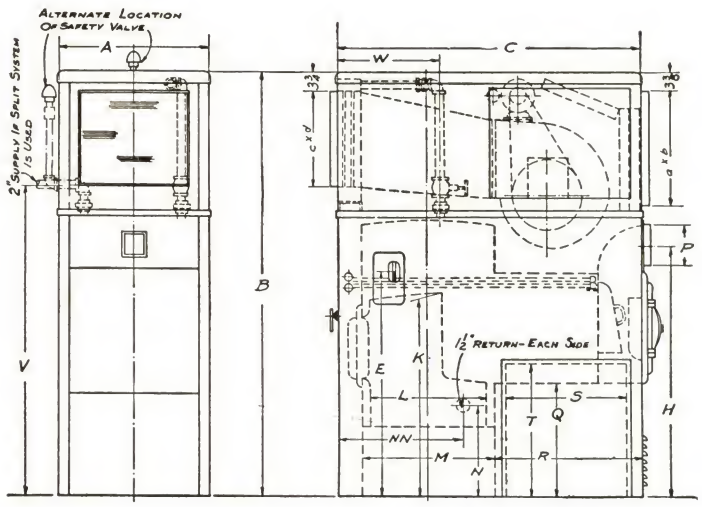
Based on Steam at 5 Lbs. Pressure.

FITZGIBBONSAIRE FOR HOT WATER

Fitzgibbonsaire		116-W	185-W	270-W	369-W	462-W
Exchanger Capacity	B.t.u.	79185	126360	198677	291600	364500
E. D. R. Hot Water	Sq. Ft.	528	842	1324	1944	2433
Fan Capacity—¼" Static	C.F.M.	1128	1800	2628	3600	4500
Air Temp. Based 65° F. Inlet	Degr's	130	130	135	140	140
Air Velocity Thru Coil	F.P.M.	600	600	600	600	600
Inlet Hot Water Temp.	Degr's	200	200	200	200	200
Outlet Hot Water Temp.	Degr's	192	190	188	189	187
Water Thru Coil	G.P.M.	19.8	25.3	33.1	53.0	56.1
Water Velocity	F.P.M.	49.5	52.4	82.8	109.7	116.1
Water Pressure Loss, Lbs.	Sq. In.	0.18	0.26	0.45	0.96	1.06
Fan Speed	R.P.M.	738	620	720	620	576

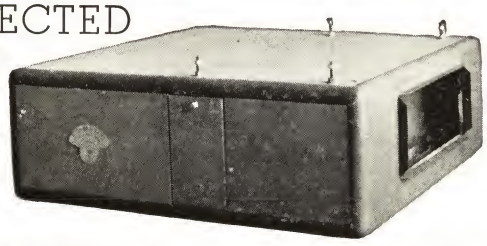
Fitzgibbonsaire (Cont'd)		116-W	185-W	270-W	369-W	462-W
Fan Size	No.	1	1⅛	2–1	2–1⅛	2–1¼
Motor Size	H.P.	⅛	½	¾	1	1
Inlet Coil Conn.	In.	1–1½	1–2	2–2	2–2½	2–2½
Return Coil Conn.	In.	1–1½	1–2	2–2	2–2½	2–2½
Height Coil Conn.	In.	51⅞	54⅞	54⅞	57⅞	65⅜
Air Intake Size	In.	12x23½	12x29½	12x47½	12x53½	15x65½
Air Discharge Size	In.	16⅝x23½	19⅝x29½	16⅝x47½	19⅝x53½	19⅝x65½
Height Overall	In.	58½	61½	61½	64½	72
Width Overall	In.	32½	38½	56½	62½	74½
Length Overall	In.	39½	42½	39½	42½	45½
Approx. Shipping Weight	Lbs.	550	650	875	1050	1200

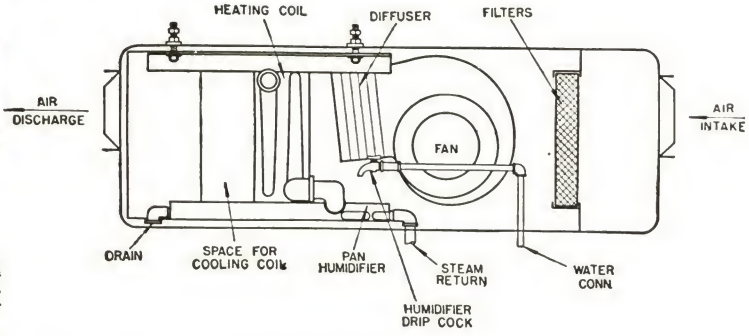
RATINGS & DIMENSIONS OF THE BOILER-AIR CONDITIONER



Fitzgibbons Boiler-Air Conditioner		130M2	130M3	163M2	163
Boiler Capacity	B.T.U.	129600	129600	163200	163200
Exchanger Capacity	B.T.U.	102000	129300	128700	163100
Temperature at Outlet Based on 65° F. Inlet	Degrees	140°	160°	140°	160°
Fan Capacity ¼" S. P.	C.F.M.	1260	1260	1590	1590
Fan Speed	R.P.M.	657	725	569	632
Motor Size	H.P.	1/3	1/2	1/3	1/2
Domestic Hot Water Gals. Saver Capacity	Hr.	170	170	220	220
Width—Bare Boiler	In.	23½	23½	26½	26½
A—Width Overall	In.	26	26	29	29
B—Height Overall	In.	73⅜	73⅜	81⅞	81⅞
C—Length	In.	52⅜	52⅜	55¾	55¾
E—Water Line	In.	40⅜	40⅜	43⅛	43⅛
H—Height Smoke Outlet	In.	43¾	43¾	48¼	48¼
K—Comb. Chamber (Gun Burner)	In.	34⅛	34⅛	38½	38½
L—Diameter	In.	20⅜	20⅜	23⅜	23⅜
M—Base Depth	In.	23½	23½	26½	26½
N—Height of Return	In.	14¾	14¾	15	15
NN—Location of Return	In.	22⅜	22⅜	24⅜	24⅜
P—Size of Smoke Pipe	In.	8	8	8	8
Q—Floor to Hor. Shell	In.	19¾	19¾	21¼	21¼
R—Base to Rear of Jacket	In.	24¾	24¾	25⅛	25⅛
S—Width of Jacket Opening	In.	21	21	21	21
T—Height of Jacket Opening	In.	26	26	26	26
V—Height of Steam Outlet	In.	55½	55½	60	60
W—Location 2" Supply (Split System)	In.	18⅜	18⅜	19⅞	19⅞
axb—Air Inlet	In.	19¾x21½	19¾x21½	23¾x21½	23¾x21½
cxd—Air Outlet	In.	15x21	15x21	18x21	18x21
Diam. Chimney	In.	8	8	8	8
Height Chimney	Ft.	25	25	30	30
Approx. Shipping Weight	Lbs.	1575	1615	1800	1850

FITZGIBBONSAIRE JUNIOR AIR CONDITIONERS for SELECTED ROOMS





AIR CONDITIONING UNIT—Complete, includes casing with hanger bolts, filters, fans with diffusers, heating coil and air valve, humidifier with heater and drip cock, water strainer, pressure reducing valve, solenoid valve, drain pan, thermal fan control, safety thermal main switch, air circulation switch, transformer and fan motor for 110 volt, 60 cycle, single phase.

Connections to the unit consist of a steam supply and return, water supply to the humidifier, humidifier overflow and dehumidifier drain, and electrical service connection to control box. Sheet metal connections consist of supply and return ducts.

The Fitzgibbonsaire Junior Air Conditioning Unit extends the scope of domestic air conditioning to:

1. **FOR HOMES ALREADY EQUIPPED WITH FITZGIBBONS BOILERS.**
2. **SUB-DIVISION OF THE HOUSE INTO AIR CONDITIONED SPACES AND HEATED SPACES.**
3. **ZONING—MULTIPLE UNITS.**

COMBINATIONS

Humidifying Only		Heating and Humidifying	
Humidifying	Filtering	Humidifying	Filtering
Tempering	Circulating	Heating	Circulating

Light in weight . . . quickly and easily installed.

Suspended from the ceiling, it takes up no floor space.

May be used in homes now equipped with hot water or steam heating systems.

OPERATING CYCLE

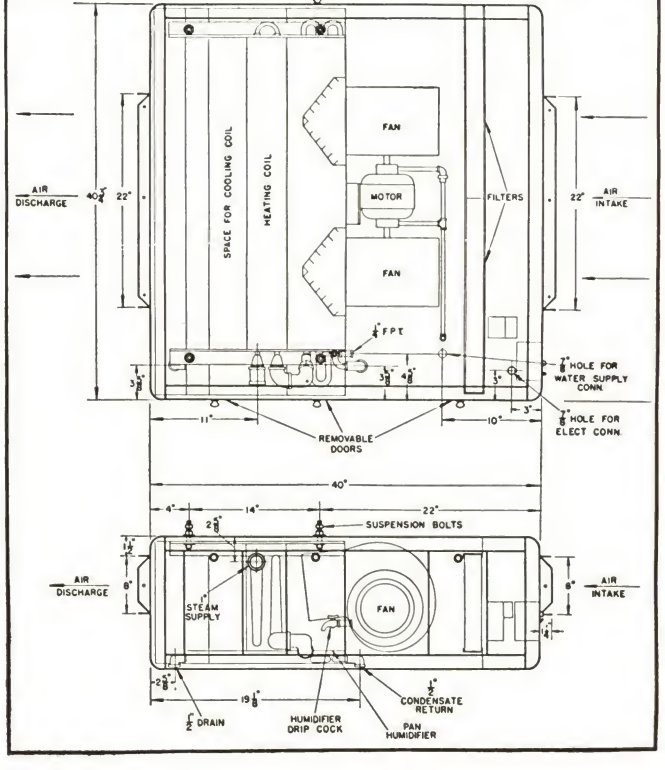
Return air is drawn from the building through a duct connected to the air intake of the Conditioner. It passes through the filters, enters the fan and is discharged through the heating coil into the supply duct, which distributes it to the various rooms. As it passes the humidifier, the air picks up water vapor. Heat for the vaporization of water is supplied by a steam coil which is an integral part of the humidifier. Water is supplied to the humidifier by means of a drip cock, which is manually adjusted.

RATINGS AND CAPACITIES
HEATING AND TEMPERING
Based on 2-lb Steam or 220° Hot Water*

Type	Heating	Tempering
Fan Speed in r.p.m.	870	870
Air Capacity in c.f.m. at 70° F.	450	550
Air Capacity in c.f.m. at Final Temperature	530	610
Output in B.t.u. per Hr.	48700	35500
External Static Pressure available in In. Water	.06	.06
Temperature of Air at Discharge in °F.	170	130
Motor Horsepower	1/30	1/30
Water Evaporated (Lb. per Hr.)	8.4	8.4
Water Evaporated (Gal. per Hr.)	1	1

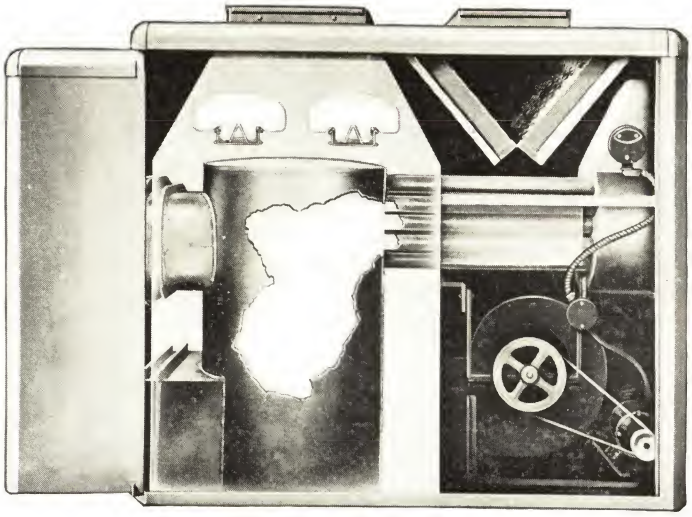
*Forced circulation and 220° water necessary with hot water systems, to maintain capacities.

The above ratings are for 60 cycle current.



FITZGIBBONS *Directaire* CONDITIONER

A DIRECT FIRED, WARM AIR FURNACE TYPE AIR CONDITIONING SYSTEM



Section Through Unit

The Fitzgibbons Directaire Conditioner is built of copper-bearing steel which resists corrosion and rust much more effectively than ordinary steel used in many types of furnaces. It is a highly efficient conditioner, designed along distinctive lines to secure the greatest volume of heating for the least amount of fuel. This is one of the reasons why it is so economical to operate and why the quick transfer of the heat through the metal is so rapidly converted into comfort giving heat. It is quiet in its operation, thereby eliminating the transmission of any combustion or mechanical sounds that might find their way into the home through the ducts provided for the distribution of the conditioned air.



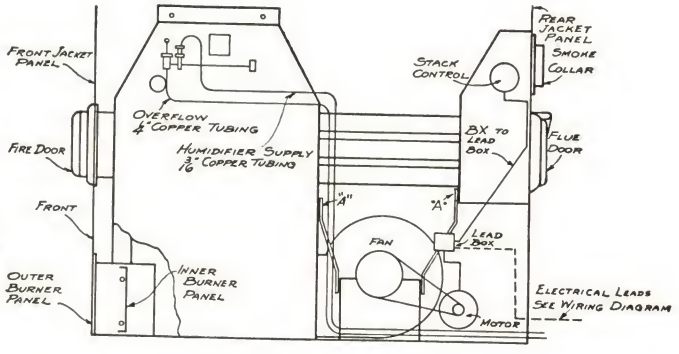
The Enclosing Jacket

Designed to completely encase the oil burner or gas burner for protection and to improve the appearance of the installation.

FEATURES AND ADVANTAGES

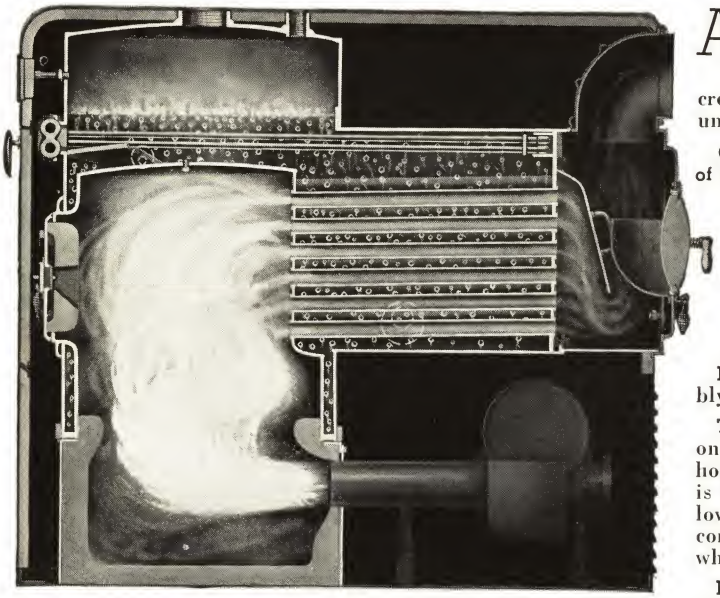
- Steel Construction
- Compactness
- Quietly Installed
- Six Sizes
- Oil, Gas, Stoker
- High Efficiency
- Quiet
- Quick Heat Transfer
- Controlled Humidity
- Removable Filters
- Easily Cleaned
- Cooling Available

Highly efficient operation is an outstanding feature of the Fitzgibbons Directaire Conditioner. Low flue gas temperatures, high CO_2 readings and resulting economy far above the average direct fired conditioner mean much to your client when considering fuel cost and first cost.



		SPECIAL 80 DIRECTAIRE		Fitzgibbons DIRECTAIRE Conditioner					
				100DA	135DA	200DA	300DA	450DA	600DA
*Heat Output at Bonnet (Oil Gas, Stoker)	BTU/hr.	80,000	100,000	100,000	135,000	200,000	300,000	450,000	600,000
Bonnet Temp. at 65° Inlet	Deg. F.	140	150	160	160	160	160	160	160
Air at Inlet—¼" Static Pressure—65° F.	CFM	985	1085	970	1310	1940	2910	4360	5830
Air at Outlet—¼" Static Pressure—160° F.	CFM	1120	1260	1145	1550	2290	3430	5160	6890
Motor Size	HP	¼	¼	¼	⅓	½	¾	1½	2
Rate of Input for: Oil	Gal./hr.	0.72	0.9	0.9	1.2	1.75	2.6	4.00	5.35
Gas	BTU/hr.	100,000	125,000	125,000	169,000	250,000	375,000	562,500	750,000
Coal	Lbs./hr.	9	11	11	15	22	33	52.0	66.0
Connection Sizes: Air Intake	In.	13x18	13x18	13x18	12x24	19x24	24x27	34x30	40x36
Air Outlet	In.	16x18	16x18	16x18	15x24	22x24	27x27	34x36	40x42
Casing: Overall Height	In.	44½	44½	49½	53⅛	58½	66	80½	90
Overall Width	In.	27	27	29	32	32	36	44	50
Inner Casing Width	In.	.....	.....	25	28	28	32	38	44
Gross Furnace Volume	Cu. Ft.	6.2	6.2	7.6	10.0	11.7	17.1	22.1	35
Firebox: Depth	In.	20⅜	.....	20⅜	23⅜	23⅜	26⅜	29⅝	35⅝
Width (Diam.)	In.	20⅜	20⅜	20⅜	23⅜	23⅜	26⅜	29⅝	35⅝
Height	In.	33	33	33¾	34½	41	47¼	54	60½
Enclosing Jacket, Overall Length	In.	72	72	69	74⅛	81	94	111	126⅜
Standard Jacket, Overall Length	In.	54	54	54	59⅛	66	79	96	111⅜
Smoke Outlet: Diam.	In.	8	8	8	8	8	9	12	14
Height	In.	24¾	24¾	39⅞	43⅝	48¼	54⅛	66	68½
Chimney: Diam.	In.	8	8	8	8	9	10	12	14
Height	Ft.	30	30	30	30	35	40	45	50
Approx. Ship'g Wgt.: Enclosing Jacket	Lbs.	790	790	900	1100	1300	1600	2450	3300
Standard Jacket	Lbs.	750	750	850	1035	1225	1500	2150	3000
*If Stoker Retort Installed in Firebox Above Floor Line, Use the Following Capacities	BTU/hr.	65,600	82,000	81,400	111,800	173,600	271,400	420,000	570,000

The FITZGIBBONS OIL-EIGHTY AUTOMATIC BOILER



FOR USE WITH ANY GOOD OIL BURNER

Here is a graceful, efficient and economical domestic heating boiler that combines with any good oil burner—gun or rotary type—to form a heating unit of outstanding merit. It insures these advantages—economical oil heat; provision for protected controls; and all-year hot water. In its design, every economy principle developed in large boiler building was rigidly adhered to—as is evident by study of the following.

FEATURES

Fitzgibbons Copper-Steel Construction—Which combines strength and resiliency with life-time, crack-proof, rust-resisting durability.

Exceptionally High Combustion Chamber—Provides ample room for complete combustion of gases without impingement against crown sheet. This contributes to efficient operation and makes it unnecessary to raise the boiler.

Complete Combustion, Efficient Heat Transfer and Quick Pick-up of Heating Load—Are assured by these exclusive features:

Completely Enclosed Down to Floor—This, with thickly insulated steel jacket, prevents escape of soot and confines heat inside boiler—a real advantage for summer hot water operation.

Machine Finished and Gasket-Sealed Doors—Prevent air leakage and soot from escaping, thus improving efficiency and operation of boiler and oil burner.

Easy to Install—Because it comes as a unit, requiring no assembly on the job other than the jacket.

Two Aquastat Tappings—While only one aquastat is required on steam or vapor installations, two aquastats are essential on a hot water boiler where a Tanksaver is used. The upper aquastat is of the "immersion" type for summer hot water control. The lower is a reverse acting aquastat wired to the circulator pump controlling its operation. This prevents lag in heating the water when house calls for heat and Tanksaver is in use.

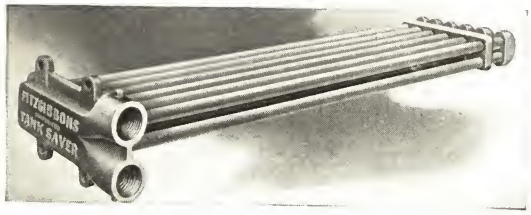
Easy to Clean—All combustion surfaces, including straight, unobstructed fire tubes, are readily accessible through large front or rear doors.

Oil Burners Can Be Installed in Rear—Which leaves front door clear for cleaning boiler.

Twelve Sizes—These make it possible to meet the exact heating needs of any residence, large or small.

Hot Water Supply

Year 'round, clean hot water, economically supplied, without storage tank, by Fitzgibbons Tanksaver illustrated below.



The FITZGIBBONS COAL-EIGHTY AUTOMATIC BOILER



FOR ANTHRACITE STOKER FIRING IN RESIDENCES

A thorough survey of domestic stoker requirements formed the basis for the design of this boiler. As a result, it satisfies every need from the standpoint of both installation and operation—is a perfect team-mate for any domestic stoker burning anthracite.

Check the following summary of features, and you will find it includes everything that could be asked for in a boiler for domestic stoker firing.

Anthracite Institute Approved

The Fitzgibbons Coal-Eighty Automatic has been awarded the CERTIFICATE OF APPROVAL of Anthracite Industries, Inc., after exhaustive tests in its laboratory at Primos, Pennsylvania.

For Ratings and Dimensions, See Page 7

RATINGS AND DIMENSIONS OF OIL-EIGHTY, COAL-EIGHTY AND GAS-EIGHTY AUTOMATIC BOILERS

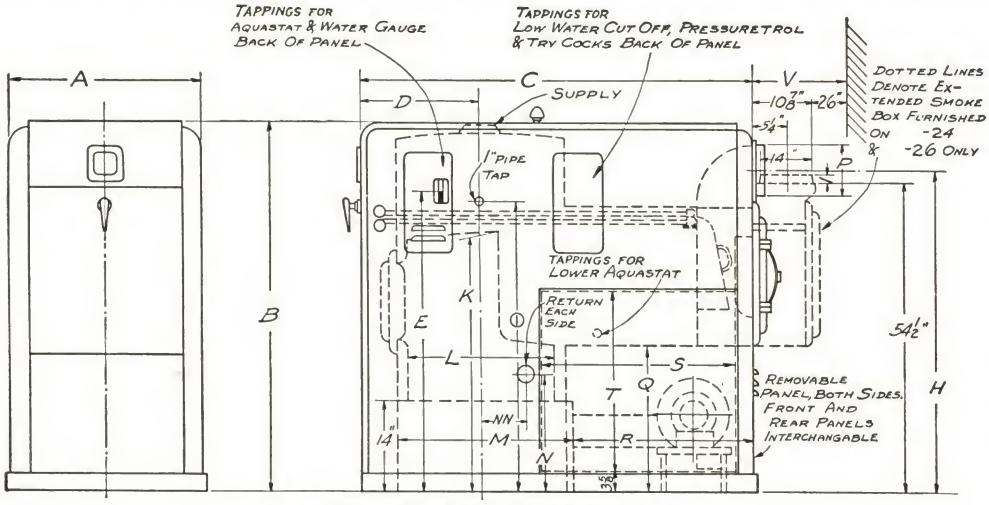


Diagram of Automatic Boiler

RATINGS

Ratings given in this catalog can be depended upon. They are the total radiation loads (taken at the boiler outlet) which the respective boilers will heat, with 2 lbs. pressure at the boiler for Steam, and 180° F. for Hot Water. Ratings are expressed in square feet of equivalent cast iron radiation, emitting 240 B.t.u. per sq. ft. per hour for Steam, and 150 B.t.u. per sq. ft. per hour for Hot Water.

Included with each boiler: flue brush and rod; steam gauge; water gauge; glass and gauge cocks; safety valve and low water cut-off.

With boilers for hot water heating a special combination thermometer, altitude gauge and relief valve are supplied.

Oil-Eighty Boiler Number		OE4	OE5	OE6	OE7	OE9	OE11	OE13	OE15	OE18	OE20	OE24	OE26
Coal-Eighty Auto. Number		CA4	CA5	CA6	CA7	CA9	CA11	CA13	CA15	CA18	CA20	CA24	CA26
Gas-Eighty Number		G4	G5	G6	G7	G9	G11	G13	G15	G18	G20	G24	G26
Rating—Steam	Sq. Ft.	425	510	612	714	901	1105	1326	1523	1800	2000	2400	2680
Rating—Hot Water	Sq. Ft.	680	816	979	1142	1441	1768	2121	2420	2820	3200	3840	4288
Heating Surface	Sq. Ft.	25	30	36	42	53	65	78	89	106	119	142	159
Furnace Volume (Less Base)	Cu. Ft.	3.2	3.2	4.4	4.4	6.2	6.2	8.6	8.6	11.3	11.3	14.7	14.7
Gross Base Volume	Cu. Ft.	3.0	3.0	3.6	3.6	4.6	4.6	5.7	5.7	6.5	6.5	8.3	8.3
Width—Bare Boiler	In.	21½	21½	23½	23½	26½	26½	29½	29½	29¾	29¾	29¾	29¾
A—Width—Overall	In.	24½	24½	26½	26½	29½	29½	32½	32½	32½	32½	32½	32½
B—Height—Overall	In.	53	53	55	55	56¼	56¼	59	59	67¼	67¼	67¼	67¼
C—Length	In.	51⅛	51⅛	53⅛	53⅛	61⅞	61⅞	68½	68½	70¾	70¾	78¼	78¼
D—Location Supply	In.	15⅝	15⅝	16⅝	16⅝	18⅛	18⅛	19⅝	19⅝	21⅜	21⅜	25	25
E—Water Line	In.	41	41	44	44	44	44	47	47	54½	54½	54½	54½
H—Height of Smoke Outlet	In.	46⅛	46⅛	48⅛	48⅛	49⅜	49⅜	51⅝	51⅝	60	60	.....	.....
I—Height of 1″ Pipe Tap	In.	39¾	39¾	43	43	43	43	46	46	53¼	53¼	53¼	53¼
K—Comb. Chamber	In.	37	37	39¼	39¼	40¾	40¾	43	43	51	51	51	51
L—Diameter	In.	18⅜	18⅜	20⅜	20⅜	23⅜	23⅜	26⅜	26⅜	29⅞x26⅜	29⅞x26⅜	37x26⅜	37x26⅜
M—Base Depth	In.	22¾	22¾	24¾	24¾	27¾	27¾	30¾	30¾	34¼	34¼	41⅜	41⅜
N—Height of Return	In.	16¾	16¾	17	17	17	17	17½	17½	18	18	18	18
NN—Location of Return	In.	5¾	5¾	6½	6½	7	7	7¾	7¾	9½	9½	13	13
P—Size of Smoke Pipe	In.	8	8	8	8	9	9	10	10	12	12	14	14
Q—Floor to Hor. Shell	In.	22¼	22¼	24¼	24¼	22¾	22¾	23¼	23¼	24	24	24	24
R—Base to Rear of Jacket	In.	23⅜	23⅜	23⅜	23⅜	29⅛	29⅛	32¾	32¾	31½	31½	31⅞	31⅞
S—Width Jacket Openings	In.	23	23	23	23	29¾	29¾	32⅞	32⅞	32	32	32	32
T—Height Jacket Openings	In.	26¼	26¼	26¼	26¼	26¼	26¼	26¼	26¼	26¼	26¼	26¼	26¼
V—Space to Open Rear Doors	In.	20	20	20	20	23	23	25	25	26	26	.....	.....
Size of Supply	In.	3	3	4	4	4	4	5	5	6	6	6	6
Size of Return	In.	2–2½	2–2½	2–3	2–3	2–3	2–3	2–3½	2–3½	2–4	2–4	2–4	2–4
Diam. of Chimney	In.	8	8	8	8	9	9	10	10	12	12	14	14
Height of Chimney	Ft.	25	25	30	30	35	35	40	40	45	45	50	50
Approx. Shipping Weight	Lbs.	965	985	1090	1120	1340	1390	1560	1690	2050	2100	2450	2540

OE 24, CA 24 and G 24, and OE 26, CA 26 and G 26 have extended smoke box like standard model.

FITZGIBBONS GAS-EIGHTY

Residence Steel Boiler for Modern Gas Heat and Year 'Round Domestic Hot Water

Automatic heating with gas for the home is very similar to automatic heating with other fuels in so far as basic combustion and heat transfer principles are concerned. Hence the design and construction of the Fitzgibbons Gas-Eighty resembles other boilers made by this company.

The Fitzgibbons Gas-Eighty is built of strong, durable rust-defying "Copper-Bearing" Steel (2½ times more rust and corrosion resistant than ordinary boiler plate steel). It is encased in a beautiful well insulated steel jacket of streamline design and the gas burner of your selection may be entirely enclosed within the jacket, out of sight.

Like all Fitzgibbons Boilers, the Gas-Eighty is easy to clean, thereby maintaining its "day-of-installation" efficiency through the years. Its quick pick-up of the heating load and rapid steaming or water heating qualities are enhanced by this feature.

Many installations of the Fitzgibbons Gas-Eighty with the leading makes of gas burners are giving splendid satisfaction in homes from coast to coast. And low fuel bills are convincing home owners of the advantage of changing to a steel boiler built for gas such as the Gas-Eighty.

Utility Companies favor the Gas-Eighty because of its fuel economy, domestic hot water supply at low cost, adaptability to leading makes of gas burners and because Fitzgibbons co-operates with their heating departments in the estimating and sizing of projects calling for gas as a fuel.

For ratings and dimensions, see page 7.



The Gas-Eighty Steel Boiler

Note attractive appearance of this modern boiler for the modern fuel.

FITZGIBBONS STOKER-EIGHTY

For Residential Heating with Bituminous Coal Stokers

Removable panels permit access to tappings for the controls and allow placement of the stoker on either side or front. Machine finished and gasket sealed doors also prevent escape of soot.

Domestic Hot Water Supply—Both summer and winter is furnished through the Fitzgibbons Tanksaver, an instantaneous heater eliminating the storage tank.

Easy to Clean—Because all combustion surfaces, including the tubes, are readily accessible through large doors at both the rear and front.

Steam, Vapor, Vacuum or Hot Water Types—Suit perfectly the requirements of residential heating. Ratings are the full load that the boiler will carry but do not include provision for domestic hot water.

All Copper Steel Construction—Plates and tubes combine strength with life-time, crack-proof, rust-resisting durability.

High Combustion Chamber—Ample room for complete combustion of the gases before they strike the crown sheet, even with the "long flame" coals. The 14-in. high base additionally helps to avoid the necessity of raising the boiler.

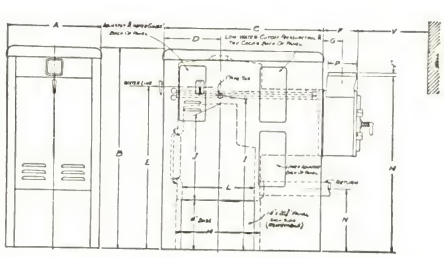
Insulating Jacket—Extending all the way down to the floor, prevents escape of soot and ash, conserves heat and gives an attractive appearance.



The Stoker-Eighty Copper-Steel Boiler

STOKER-EIGHTY SPECIFICATIONS

Boiler Number		S-5	S-6	S-7	S-8	S-9	S-11	S-13	S-15
Rating—Steam E. D. R.	Sq. Ft.	485	600	720	840	960	1100	1300	1500
Rating—Hot Water E. D. R.	Sq. Ft.	776	960	1152	1344	1536	1760	2080	2400
Heating Surface	Sq. Ft.	29	36	43	50	57	65	77	89
Furnace Volume (Less Base)	Cu. Ft.	4.5	4.5	6.5	6.5	8.5	8.5	10.8	10.8
A—Width—Overall	In.	26½	26½	29½	29½	32¾	32¾	32¾	32¾
B—Height—Overall	In.	56⅛	56⅛	58⅝	58⅝	60⅞	60⅞	67	67
C—Length	In.	45	45	53¼	53¼	55¼	55¼	61	61
E—Water Line	In.	45⅝	45⅝	48⅛	48⅛	50⅜	50⅜	56½	56½
J—Height Firebox	In.	27½	27½	30	30	32	32	38	38
L—Diameter	In.	20⅜	20⅜	23⅜	23⅜	26⅝	26⅝	26⅝	26⅝
M—Base Depth	In.	23¾	23¾	26¾	26¾	30	30	30	30
N—Height of Return	In.	17½	17½	17½	17½	18¼	18¼	18¼	18¼
P—Size of Smoke Pipe	In.	9	9	9	9	10	10	12	12
V—Space to Open Rear Door	In.	20	20	20	20	23	23	25	25
Size of Supply	In.	4	4	4	4	5	5	5	5
Size of Return	In.	4	4	4	4	5	5	5	5
Diam. of Chimney	In.	9	9	9	9	10	10	12	12
Height of Chimney	Ft.	30	30	38	38	40	40	45	45
Approx. Shipping Weight	Lbs.	1040	1050	1350	1380	1560	1580	1700	1730



FITZGIBBONS R-Z-U JUNIOR STEEL BOILER

For Coal, Oil, Gas or Stoker Firing



R-Z-U Junior—Jacketed

An adaptation of the famous Fitzgibbons R-Z-U Boiler, which has such widespread popularity in the field of larger buildings, the R-Z-U Junior is made in sizes suitable for large residential and smaller institutional, business, public, and apartment buildings. It brings to this field the same excellent heating performance and economy. In addition, it provides year 'round hot water supply—either with or without a storage tank. It is adapted for steam, vapor, vacuum, or hot water systems, and for burning anthracite and bituminous coals, or for mechanical firing with oil, gas or stoker.

The boiler may be equipped with the Fitzgibbons Tanksaver—a submerged copper coil which provides year 'round domestic hot water supply without the necessity for a storage tank. Where a tank is already installed, the boiler may be purchased with a Fitzgibbons Tankheater copper coil.

The units are exceptionally compact—largest size will pass through 31″ doorway; medium and small sizes are less than 28″ in overall width. Water line is low enough to allow boiler installation in rooms of ordinary height, without a pit. It has large doors and openings which facilitate installation of oil burners and stokers. Door edges and frames are machined for accurate fit. Extra large door at front makes tube cleaning easy.

Units can be supplied jacketed or unjacketed, as desired. Jacket is of heavy gauge steel, tastefully enameled in green.

Grate—Grate supplied for coal burning is of regulation Fitzgibbons heavy-duty type. Grate bars are readily removable if desired to change from coal to oil or other automatic firing systems.

Auxiliary Grate—This is optional equipment with all oil-fired R-Z-U Junior Boilers. Can be used for hand firing in case of temporary shut-down of primary source of heat supply. Also provides means of refuse disposal. (Only available RD12–RM15 and larger.)

Standard Equipment for Coal Burning—Included with each boiler for coal burning: iron base; rocking grates; bridge wall; fire tools, consisting of hoe, poker, slice bar; steel flue brush and rod; steam gauge; water column with water gauge; glass and gauge cocks; safety valve; damper regulator.

Standard Equipment for Oil, Gas or Stoker Firing—Included with each boiler for mechanical firing: Same as for Coal Burning, excepting rocking grates; bridge wall; fire tools; and damping regulator.

Note: When ordering for hot water heating, equipment furnished for both of above types in lieu of steam trimmings: altitude gauge; thermometer; relief valve; and damper regulator.



R-Z-U Junior—Without Jacket

FOR COAL BURNING (HAND FIRED)

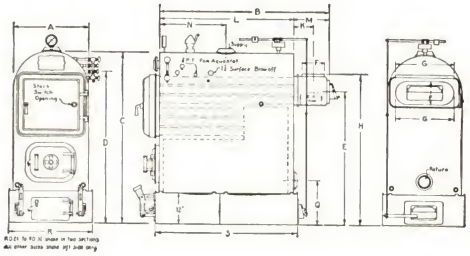
Boiler Number		RD-9	RD-10	RD-11	RD-12	RD-13	RD-17	RD-19	RD-21	RD-24	RD-29	RD-32
Rating—Steam—S. H. B. I.	Sq. Ft.	900	1000	1100	1275	1400	1700	1950	2100	2400	2900	3200
Rating—Hot Water	Sq. Ft.	1440	1600	1760	2040	2240	2720	3120	3360	3840	4640	5120
Heating Surface	Sq. Ft.	65	73	79	92	100	123	140	150	172	208	230
Grate Area	Sq. Ft.	5.3	5.7	6.2	7.1	7.8	8.1	8.8	9.2	10.2	12.4	13.5

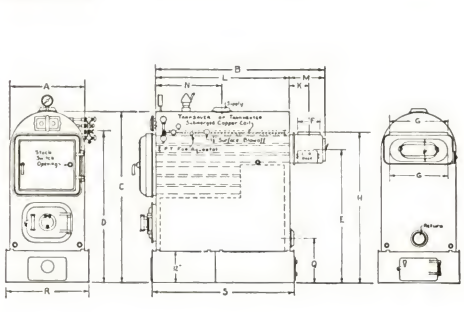
FOR OIL, GAS OR STOKER-FIRING

Boiler Number		RM-11	RM-12	RM-13	RM-15	RM-16	RM-19	RM-23	RM-25	RM-29	RM-35	RM-39
Rating—Steam S. H. B. I.	Sq. Ft.	1100	1240	1340	1560	1700	2090	2380	2550	2920	3500	3900
Rating—Hot Water	Sq. Ft.	1760	1984	2144	2496	2720	3344	3808	4080	4672	5600	6240
Heating Surface	Sq. Ft.	65	73	79	92	100	123	140	150	172	208	230
Furnace Volume—Less Basc.	Cu. Ft.	11.0	11.8	12.5	14.1	15.1	16.5	17.7	18.3	21.7	425	27.9
Gross Base Volume	Cu. Ft.	7.8	8.5	9.1	10.3	11.1	11.4	12.3	12.7	14.0	16.6	17.9

THE FOLLOWING TABLE APPLIES TO COAL, OIL, GAS, OR STOKER-FIRING

Length of Firebox—Inside	In.	32¼	35¼	38¼	44¼	48¼	44¼	48¼	50¼	56¼	68¼	74¼
Width of Firebox—Inside	In.	23¼	23¼	23¼	23¼	23¼	26¼	26¼	26¼	26¼	26¼	26¼
Height of Firebox	In.	21	21	21	21	21	21	21	21	23	23	23
A—Width	In.	26⅝	26⅝	26⅝	26⅝	26⅝	29⅝	29⅝	29⅝	29⅝	29⅝	29⅝
B—Length	In.	48¾	51¾	54¾	60¾	64¾	61¾	65¾	67¾	73¾	85¾	91¾
C—Height	In.	59¼	59¼	59¼	59¼	59¼	66¾	66¾	66¾	68¾	68¾	68¾
D—Water Line	In.	51¼	51¼	51¼	51¼	51¼	58¾	58¾	58¾	60¾	60¾	60¾
E—Hgt. & End Brchg. Con. & Combns.	In.	46⅞	46⅞	46⅞	46⅞	46⅞	52¼	52¼	52¼	54¼	54¼	54¼
FxG—Size Breeching Connection	In.	8x17¼	8x17¼	8x17¼	8x17¼	8x17¼	9x23	9x23	9x23	9x23	9x23	9x23
H—Height Top Breeching Connection	In.	52	52	52	52	52	59½	59½	59½	61½	61½	61½
K—Top Breeching Connection	In.	7	7	7	7	7	7½	7½	7½	7½	7½	7½
L—Length Bare Boiler	In.	36½	39½	42½	48½	52½	48½	52½	54½	60½	72½	78½
M—Length Smoke Box	In.	12¼	12¼	12¼	12¼	12¼	13¼	13¼	13¼	13¼	13¼	13¼
N—Location Supply Opening	In.	18	20	21	24	26	24	26	27	30	36	40
Q—Height Return Opening	In.	16¼	16¼	16¼	16¼	16¼	17	17	17	17	17	17
R—Width of Base	In.	29⅝	29⅝	29⅝	29⅝	29⅝	32⅝	32⅝	32⅝	32⅝	32⅝	32⅝
S—Length of Base	In.	39½	42½	45½	51½	55½	51½	55½	57½	63½	75½	81½
Size Supply Opening	In.	4	4	4	5	5	5	5	5	5	6	6
Size Return Opening	In.	4	4	4	5	5	5	5	5	5	6	6
Diameter Stack	In.	12	12	12	12	12	16	16	16	16	18	18
Height Stack	Ft.	35	35	35	35	35	40	40	40	40	55	55
Diameter Breeching	In.	14	14	14	14	14	18	18	18	18	20	20
Approx. Covering—Unjacketed Boilers	Sq. Ft.	39	41	43	48	50	54	58	60	67	78	83
Approx. Weight—Unjacketed Boilers	Lbs.	1790	1875	1960	2140	2200	2445	2590	2700	3025	3455	3745

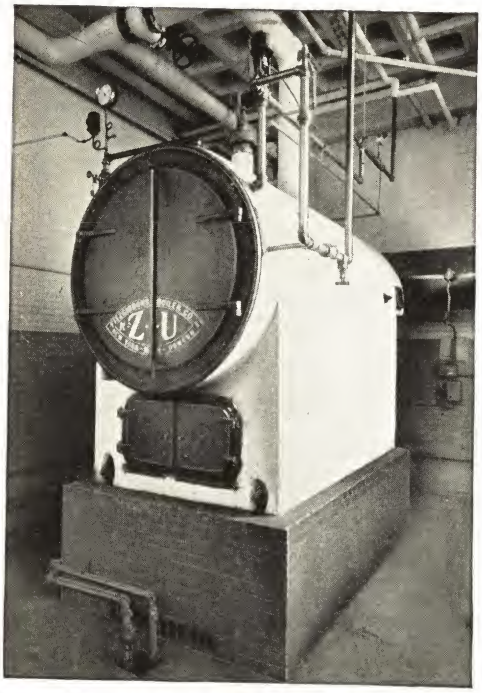




RATINGS—Ratings are the total radiation loads (taken at the boiler outlet) which the respective boilers will heat, with 2 lbs. pressure at the boiler for Steam and 180° F. for Hot Water.

Ratings are expressed in square feet of equivalent cast-iron radiation, emitting 240 B.t.u. per sq. ft. per hour for Steam, and 150 B.t.u. per sq. ft. per hour for Hot Water.

Boiler ratings quoted do not provide for hot water supply, additional capacity must be figured.



FITZGIBBONS R-Z-U FIRE BOX BOILERS

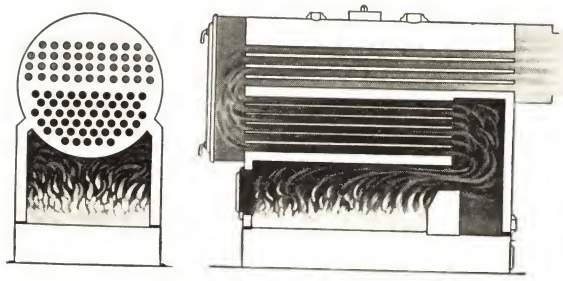
For Superior Heating Service—With Any Fuel—In Any Type of Heating System

The Fitzgibbons R-Z-U Boiler is specially adapted to space conditions where a rear smoke outlet is required. Such characteristics as all-welded steel construction cylindrical shell, quick steaming, thorough combustion, long flue travel, high efficiency of heat transfer and remarkable fuel economies have won for the R-Z-U a wide reputation as possessing every qualification for superior heating service with any fuel in any heating system.

Combustion—As proportioned for the burning of various fuels, the dimensions of the R-Z-U firebox provide that area and form which insure complete burning of every particle of combustible gas.

For the burning of coal or coke, the grates are designed to freely admit adequate primary air, while the intake of secondary air provides the proper quantity of oxygen over the top of the fire bed to force the fuel to give up every available unit of its latent heat. The secondary air stream drawn into the fire-box is mingled with a swirling rush of hot gases arising from the fire bed, directed to some extent by the form of the combustion chamber. This mixture immediately becomes heated to the point where complete combustion can take place with the consequent release of additional heat units. The secondary air stream and gas mixture is drawn over the entire length of the fire bed and in the course of the long journey, cannot fail to perform its function.

In stoker firing, the form and area of the R-Z-U combustion chamber again lends itself to best possible efficiency, while for oil or gas firing it achieves practically ideal conditions.



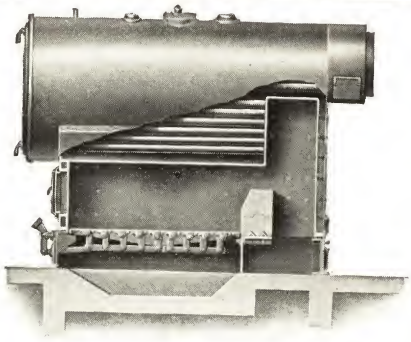
A graphic illustration of the long, "back-and-forth" gas travel, characteristic of the R-Z-U Boiler. Notice, in the end views, how the R-Z-U crown sheet naturally distributes heat over the entire width of the boiler.

Water Circulation—The design of the R-Z-U sets up a THERMO-SYPHONIC circulation of water—a progressive movement so rapid and so positive that it provides a scrubbing action that brushes the bubbles of steam from the fire tubes, thus promoting rapid steaming and retarding settlement of sediment anywhere but at the lowest levels of the water walls, from which it can be readily removed through openings provided.

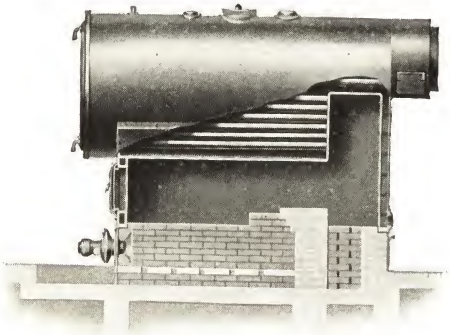
Crown sheet construction is not only conducive to free and rapid water circulation, but also exposes a large surface area together with the water walls to the direct action of radiant heat. Further, it causes the gases to mushroom out to the sides, throwing its heat into the water walls as well as directly upward in the center of the boiler. Thus, the water is heated uniformly throughout the entire width of the boiler.

Long flue travel and many tubes give full and adequate heat transfer surface.

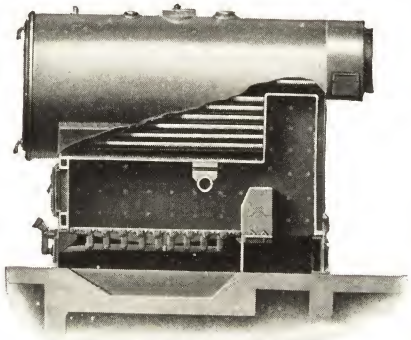
Grates—These are of selected, clean gray iron, machined to accurate fit, and sections of the same type are interchangeable, easy to dismount and replace. The rocking grate is standard for commercial sizes of anthracite, bituminous, and for coke. For smaller sizes of anthracite, the dumping grate can be obtained.



R-Z-U for Hard Coal



R-Z-U for Oil or Gas



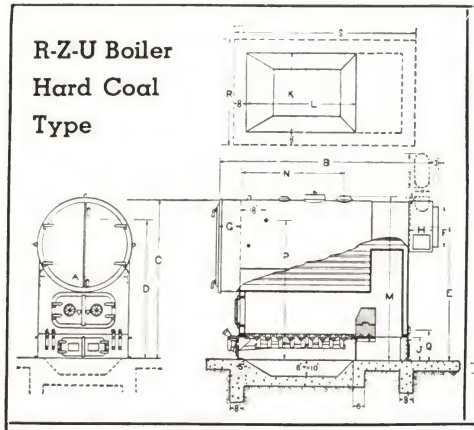
R-Z-U Smokeless-Bituminous

R-Z-U Smokeless Boiler

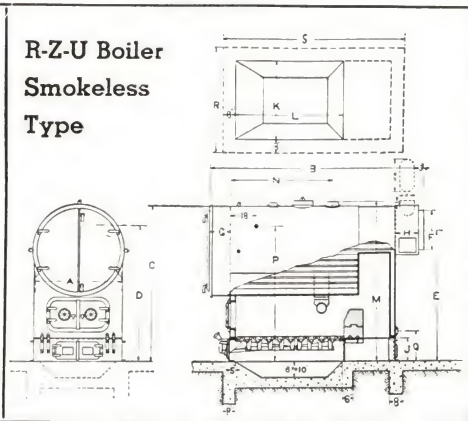
To burn bituminous coal smokelessly, the prime essential is the proper admixture of secondary air. The success of the R-Z-U Smokeless Boiler in this respect is due to the position and form of the baffle shown in the illustration below. This baffle causes turbulence in the action of the hot gases, which thus become thoroughly mixed with the secondary air drawn into the firebox. This mixture passes over and through the bed of live fire, causing carbon in suspension—the cause of smoke—to be completely consumed.

This baffle can be readily removed, adapting the boiler to new fuels.

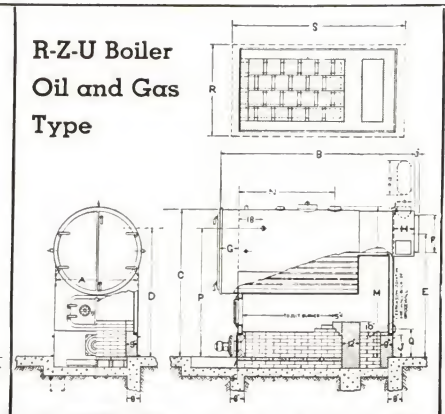
R-Z-U Boiler Hard Coal Type



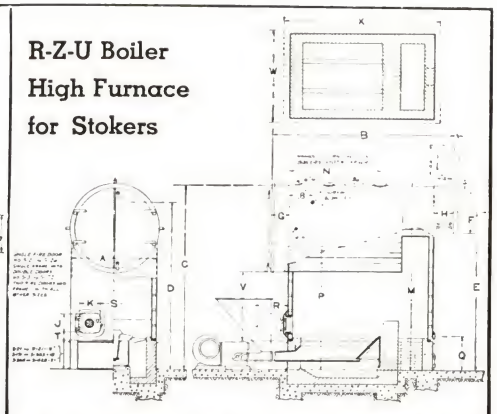
R-Z-U Boiler Smokeless Type



R-Z-U Boiler Oil and Gas Type



R-Z-U Boiler High Furnace for Stokers

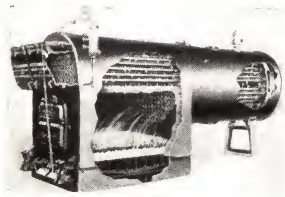


Boiler Number, Hard Coal Type	RD18	RD22	RD26	RD30	RD35	RD40	RD45	RD50	RD60	RD70	RD85	RD100	RD125	RD150	RD175	RD200	RD250	RD300	RD350
Boiler Number, Smokeless Type	RV18	RV22	RV26	RV30	RV35	RV40	RV45	RV50	RV60	RV70	RV85	RV100	RV125	RV150	RV175	RV200	RV250	RV300	RV350
Boiler Number, Oil and Gas Type	RM21	RM27	RM31	RM36	RM42	RM48	RM54	RM61	RM72	RM86	RM103	RM121	RM151	RM182	RM212	RM242	RM303	RM364	RM425
S.H.B.I. Steam Rating Hand Fired....Sq. Ft.	1800	2200	2600	3000	3500	4000	4500	5000	6000	7000	8500	10000	12500	15000	17500	20000	25000	30000	35000
S.H.B.I. Steam Rating Oil and Gas Fired....Sq. Ft.	2190	2680	3160	3650	4250	4860	5470	6080	7290	8500	10330	12150	15180	18220	21250	24290	30360	36430	42500
S.H.B.I. Hot Water Rating Hand Fired....Sq. Ft.	2880	3520	4160	4800	5600	6400	7200	8000	9600	11200	13600	16000	20000	24000	28000	32000	40000	48000	56000
S.H.B.I. Hot Water Rating Oil Gas Fired....Sq. Ft.	3500	4280	5050	5840	6800	7770	8750	9720	11660	13600	16520	19440	24280	29150	34000	38860	48570	58280	68000
Heating Surface....Sq. Ft.	129	158	186	215	250	286	322	358	429	500	608	715	893	1072	1250	1429	1786	2143	2500
Grate Area....Sq. Ft.	7.9	8.9	9.7	10.5	11.4	12.2	13.4	14.5	16.4	18.1	20.5	22.5	25.6	28.4	30.9	33.2	37.4	41.2	44.7
A—Width (Inside Diam. of Shell)....In.	30	30	36	36	36	36	42	42	48	48	54	54	60	60	66	72	78	84	84
B—Length Boiler....In.	75 1/4	87 1/4	77 1/4	87 1/4	95 1/4	105 1/4	95 1/4	102 1/4	98 1/4	109 1/4	109 1/4	123 1/4	127 1/4	146 1/4	149 1/4	145 1/4	152 1/4	155 1/4	174 1/4
C—Height....In.	66	66	72	72	72	72	81 1/4	81 1/4	87 3/8	87 3/8	93 3/8	93 3/8	102 3/8	102 3/8	111 3/8	117 3/8	123 3/8	129 1/2	129 1/2
*D—Water Line....In.	58	58	64	64	64	64	72 1/4	72 1/4	76 3/8	76 3/8	81 3/8	81 3/8	89 3/8	89 3/8	97 3/8	102 3/8	106 3/8	111 1/2	111 1/2
E—Floor to C. L. Rear Smoke Outlet....In.	57	57	62	62	62	62	70	70	72	72	78	78	85	85	93	97	102	105	105
F—Diam. Rear Smoke Outlet....In.	16	16	20	20	20	20	22	22	26	26	28	28	30	30	32	34	36	40	40
M—Height Steam Opening....In.	67 1/2	67 1/2	73 1/2	73 1/2	73 1/2	73 1/2	82 3/4	82 3/4	89	89	95	95	104	104	113	119	125 1/2	131 1/2	131 1/2
R—Width of Foundation....In.	39	39	45	45	45	45	51	51	57	57	63	63	69	69	75	81	87	93	93
S—Length of Foundation....In.	63	75	63	73	81	91	80	87	83	94	92	106	106	125	125	120	127	128	147

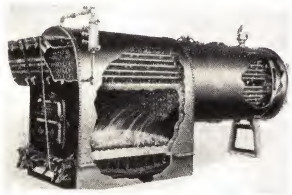
No Bridgewall Furnished on the Following Size Boilers: RD-18, RD-22, RD-26, RD-30, RD-35, RD-45, RD-50, RD-60.

Boiler Number, High Furnace for Stokers	S-21	S-27	S-31	S-36	S-42	S-48	S-54	S-61	S-72	S-85	S-103	S-121	S-151	S-182	S-212	S-242	S-303	S-364	S-425
Steam Rating (S.H.B.I. Formula)....Sq. Ft.	2190	2680	3160	3650	4250	4860	5470	6080	7290	8500	10330	12150	15180	18220	21250	24290	30360	36430	42500
Hot Water Rating (S.H.B.I. Formula)....Sq. Ft.	3500	4280	5050	5840	6800	7770	8750	9720	11660	13600	16520	19440	24280	29150	34000	38860	48570	58280	68000
Heating Surface (S.H.B.I. Formula)....Sq. Ft.	129	158	186	215	250	286	322	358	429	500	608	715	893	1072	1250	1429	1786	2143	2500
Furnace Volume (S.H.B.I. Formula)....Cu. Ft.	15.7	19.2	22.6	26.1	30.4	34.8	39.1	43.5	52.1	60.8	73.8	86.8	108.5	130.2	151.8	173.5	216.9	260.3	303.6
Average Firebox Height (S.H.B.I. Formula)....In.	32.3	31.8	34.0	33.2	32.7	35.5	37.0	37.5	38.5	40.7	44.5	45.8	50.0	51.7	54.7	56.4	61.1	65.1	69.6
Actual Firebox Volume (S.H.B.I. Formula)....Cu. Ft.	22.9	27.3	29.4	33.5	38.1	47.3	51.7	57.8	70.7	80.2	96.4	115.8	138.0	171.5	203.7	238.9	299.1	356.2	403.2
Plan Area (S.H.B.I. Formula)....Sq. Ft.	8.5	10.3	10.4	12.0	13.9	16.0	16.7	18.5	22.0	23.6	25.9	30.3	33.1	39.7	44.6	50.8	58.7	65.5	69.4
Width (Inside Diam. Shell)....In.	30	30	36	36	36	36	42	42	42	48	54	54	60	60	66	66	72	78	84
Length Boiler (Overall)....In.	74 1/4	85 1/4	75 1/4	83 1/4	92 1/4	102 1/4	93 1/4	100 1/4	114 1/4	107 1/4	106 1/4	119 1/4	123 1/4	141 1/4	145 1/4	160 1/4	167 1/4	170 1/4	169 1/4
Height....In.	72 1/2	72 1/2	78 1/2	78 1/2	78 1/2	81 1/2	87 1/2	88 1/2	90	97 1/8	105 1/8	107 1/8	120 1/8	122 1/8	129 3/4	132 1/4	141 3/4	153 3/4	163 5/8
*Water Line (See Note Below)....In.	64 1/4	64 1/4	70 1/4	70 1/4	70 1/4	73 1/4	78 1/4	79 1/4	80 3/4	85 7/8	92 7/8	94 7/8	106 7/8	108 7/8	115 3/8	117 7/8	126 3/8	136 3/8	145 1/4
Floor to C. L. Smoke Outlet....In.	63 1/4	63 1/4	68 1/4	68 1/4	68 1/4	71 1/4	76	77	78 1/2	81 1/2	89 1/2	91 1/2	102 1/2	104 1/2	111	113 1/2	121	132	138 3/4
Diam. Rear Smoke Outlet....In.	16	16	20	20	20	20	22	22	22	26	28	28	30	30	32	32	34	36	40
Height Steam Opening....In.	74	74	80	80	80	83	89	90	91 3/4	98 7/8	106 7/8	108 7/8	121 7/8	123 7/8	131 1/2	134	143 3/4	155 3/4	165 5/8
Width of Foundation....In.	35	35	41	41	41	41	47	47	47	53	59	59	65	65	71	71	77	83	89
Length of Foundation....In.	62	73	61	69	78	88	78	85	99	92	89	102	102	120	121	136	142	145	142

*Where Fitzgibbons Tanksaver or Tankheater Is Used, Increase Height of Water Line 3".



500 Series Boiler
Welded return tubular firebox.



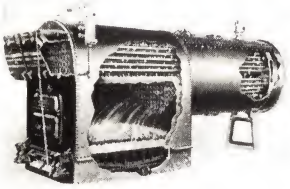
700 Series Boiler
Portable riveted firebox.



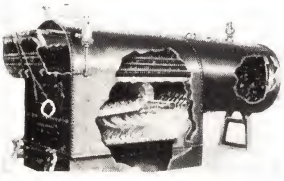
"F" Series Boiler
Portable riveted firebox.



No. 600 Series Boiler
Smokeless downdraft riveted firebox.



"P" Series Boiler
Portable riveted firebox.



No. 800 Series Boiler
Smokeless downdraft riveted firebox.

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FITZGIBBONS FOR ALL TYPES OF LOW PRESSURE AND HIGH PRESSURE SERVICE

FITZGIBBONS Steel Heating Boilers, as described within this catalog, will meet every heating need. If you have any size heating project—residential, commercial or industrial—for any kind of fuel and for any heating system—the FITZGIBBONS line supplies just the right boiler or air conditioner to meet this need. The name "FITZGIBBONS" on the boiler or air-conditioner you select means that it embodies the experience, refinements and perfection of a half century of aggressive steel boiler manufacturing and progressive development. It is your guarantee of the same quality, high efficiency and operating economy that have satisfied thousands upon thousands of owners and have won and held the esteem of the entire heating profession.

For Commercial and Industrial Installation in pressures from 15-lb. to 150-lb. w.s.p., FITZGIBBONS offers a complete line of boilers. The illustrations at the left show just a few, but full information will gladly be sent upon request.

FITZGIBBONS ENGINEERING SERVICE

Owners, Architects, Heating Engineers, Contractors, Builders and Dealers may always feel free to ask for assistance in selecting the right type and size of boiler for any heating job, and in working out specific boiler applications. Particularly where hot water service is involved, we feel confident we can be of real help. Our long and comprehensive experience in the heating field assures you of authoritative recommendations. Avail yourself of this co-operation without hesitation, for it involves no obligation.

Fitzgibbons Boiler Company, Inc.

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Works: Oswego, N. Y.

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SECTION 26

CONTINUED ⟶

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OF AMERICAN RADIATOR COMPANY
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THE COMPANY AND ITS SERVICES

Sunbeam Air Conditioning equipment is distributed through several hundred jobbers, one of whom is located in every principal city in the country, and it is installed by thousands of heating, ventilating and sheet metal contractors.

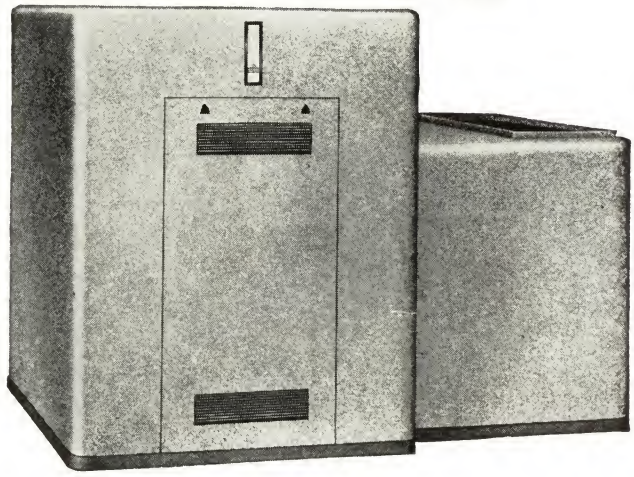
A large staff of engineers is maintained at the factory to design air conditioning systems for architects. Engineering layouts, which are furnished in blue print form, state the size of unit required. Also, layouts provide the size and location of all ducts, pipes, risers, registers and grilles. Installation specifications and illustrated instructions accompany each layout so that all details of installation will be handled in strict accordance with Sunbeam standards. There is no charge for this service.

SUNBEAM
AIR CONDITIONING UNIT

SUNBEAM OIL BURNING AIR CONDITIONING UNIT—SERIES NO. 1100

The Sunbeam Series No. 1100 represents the achievement of skilled Sunbeam Engineers whose aim has been to produce an integral, coordinated oil burning unit with the durability, efficiency and attractiveness that characterizes other Sunbeam Products, and which would, at the same time, be moderate in price. Today, home owners demand air conditioning. They also demand automatic heat. The Series No. 1100 offers both air conditioning and carefree automatic oil heat, at a price that is most acceptable. The Series No. 1100 is made in six sizes with capacities from 101,000 to 331,000 B.t.u. per hour at register.

Like the other Sunbeam units for gas and coal fuels shown herein, this Series has been designed to provide economically the many benefits of air conditioning for residences, small stores, schools or other buildings whose requirements are within the capacities of this equipment. The complete Unit provides air warmed to proper temperature and humidified to the proper degree in winter, cleaned and filtered of dust, pollen and other foreign matter, and circulated to provide healthful ventilation the year 'round. In addition, the Unit will furnish cooling ventilation in summer. Dehumidification and cooling of the air may be provided in summer by the addition of cooling equipment to the Unit.



Series No. 1100

Sunbeam Oil Burner

The Sunbeam pressure type Oil Burner is scientifically engineered, and is coordinated with the Series No. 1100. Owners' experiences under severe conditions have proven the ability of this burner to operate silently and with a minimum consumption of fuel. Precision workmanship and the use of carefully selected materials result in substantial construction and economical, trouble-free performance. While the use of the Sunbeam Oil Burner is recommended, the Series No. 1100 is available without Burner.

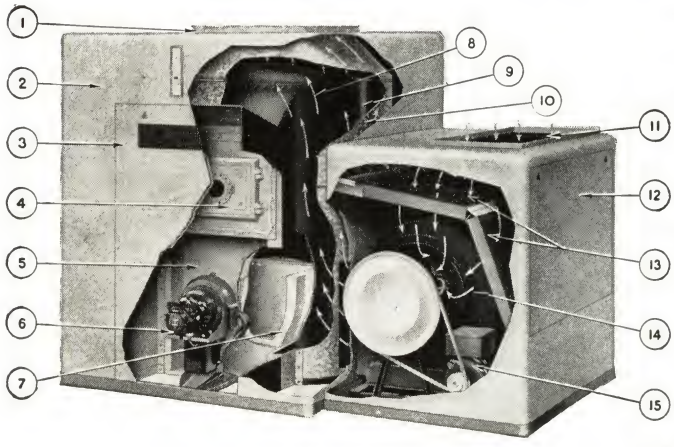
The Sunbeam Oil Burner is also available in a special conversion model for all types of central heating plants—steam, hot water, vapor boilers and warm air furnaces.

The Series No. 1100 is furnished completely equipped with necessary controls for regulating temperature and humidity. For description of blower, humidifier, filter, etc., refer to Page 4.

OUTSTANDING FEATURES OF THE SERIES No. 1100

(1) Discharge—Conditioned air passes through this opening to circulating air ducts.

(2) Exterior Cabinet—Constructed of No. 20 gauge steel. All parts are die cut and formed and are connected by interlocking slip-joints assuring ease of assembly and unusually airtight seams. Pleasing proportions, rounded corners, the absence of exterior screws, and fine grained, green crystalline baked enamel finish give this Unit an outstanding appearance.



(3) Cabinet Door—Conceals, and also gives convenient access to, heating element and oil burner.

(4) Access Door—Has glass covered observation opening for observing combustion.

(5) Burner Plate—Welded to heating element. Simplifies assembly and permanently seals the combustion chamber.

(6) Oil Burner—Is coordinated with air conditioner. Efficient, dependable, and quiet in operation. Simple to service.

(7) Pre-Cast Fire Box—Specifically designed for Series No. 1100. Fits easily and snugly into place.

(8) Heating Element—Made of heavy Boiler Plate steel, with seams riveted and welded.

(9) Radiator—Extra large to provide extra large heating surface. Baffled to give unusually long fire travel. Seams are welded leak-proof.

(10) Inner Casing—Of galvanized iron; increases efficiency, minimizes heat loss into the basement and keeps cabinet relatively cool.

(11) Intake—Air drawn from the rooms passes through this opening into blower compartment.

(12) Blower Compartment Door—Gives access to blower, motor and filters. Can be removed in summer so that cool basement air will be circulated.

(13) Filters—Effectively remove dust, dirt and other foreign matter from the air. Large filter area is provided. Filters are so arranged that basement air, when drawn into the unit for cooling ventilation, will be filtered.

(14) The Blower—High in efficiency and air moving capacity. Large, powerful and quiet. Is equipped with rubber mounted, self-aligning bearings, which require oiling only a few times a year.

(15) Motor—Of capacitor type. Many features assure silent operation. Does not cause radio interference.

SERIES No. 1100—CAPACITIES—BLOWER-MOTOR-FILTER SPECIFICATIONS

No.	†Oil burner input gallons per hr.	Maximum B.t.u. capacity at register	*Maximum c.f.m. required at 65° F.	*Approx. blower r.p.m. at ¼ in. S. P.	Diam. of blower wheel, in.	No. of blowers	Motor hp.	Motor r.p.m.	No. filters
1120	1.0	101,000	1083	467	12	1	¼	1725	4 (20x20)
1124	1.5	151,000	1624	354	15	1	⅓	1725	4 (20x20)
1127	2.0	201,000	2165	302	18	1	½	1725	5 (16x25)
1134–½–18	2.5	240,000	2550	311	18	1	½	1725	5 (16x25)
1134–¾–18	3.0	285,000	3050	314	18	1	¾	1725	5 (16x25)
1134–¾–21	3.5	331,000	3500	266	21	1	¾	1725	6 (16x25)

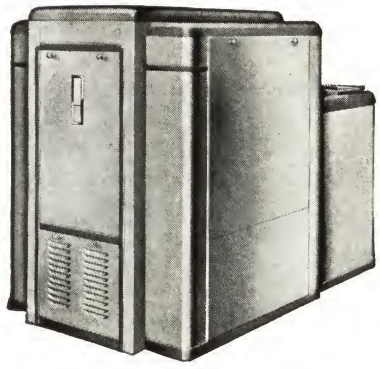
*Air heated from 65° to 165° increases 19% in volume. Therefore, warm air ducts should have capacity for 19% greater c.f.m. than listed above.
†Combustion rate of oil burner must conform to the heating requirements of the installation. Ratings based on oil having a calorific value of 140,000 B.t.u. per gallon. Minimum input of burner must not be less than 1 gallon per hour.

SERIES No. 1100—DIMENSIONS

No.	*Overall width, in.	†Overall depth, in.	Height heating compartment, in.	Height blower compartment, in.	Air discharge opening, in.	Air intake opening, in.	Approx. distance from floor to center of flue outlet, in.	Flue outlet size diam., in.
1120	67	52¼	58	36¼	18x18	14x36½	24¼	8
1124	79¾	59	58	39	22x22	16x45	17⅞	8
1127	84⅜	57⅝	61	41	23x23	20x51⅛	26 7/16	9
1134–½–18	94⅜	68⅝	68	41	32x32	20x51⅛	32 3/16	10
1134–¾–18	94⅜	68⅝	68	41	32x32	20x51⅛	32 3/16	10
1134–¾–21	100½	68⅝	68	51¼	32x32	24x55	32 3/16	10

*Allow 2 ft. at side of blower compartment for removal and replacement of filters.
†Allow 2 ft. in front for opening of door.

SUNBEAM GAS FIRED AIR CONDITIONING UNIT—SERIES "D"



Sunbeam Series "D"

This Unit provides all the advantages of air conditioning plus the desirable features of automatic gas firing.

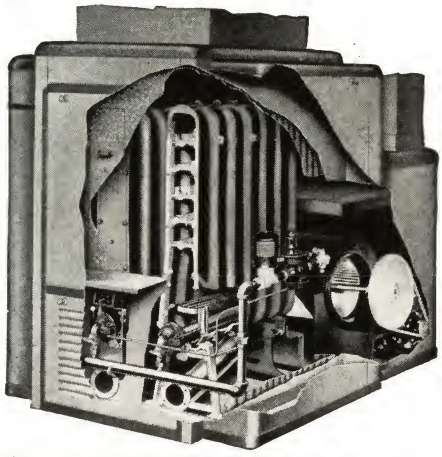
The De Luxe cabinet is constructed of No. 20 gauge furniture steel and is finished in two tones of green, smooth, baked enamel. All piping, wiring, valves and regulators are concealed within the cabinet.

This Unit, which is approved by the American Gas Association, has heating elements of cast iron, each made in two sections, the faces of which are specially packed to form a leak-proof joint.

The Series "D" comes completely equipped with necessary controls, valves, wiring, pipe and conduit for connection to gas, electricity and water lines.

Heavy construction, thermostatic pilots and the finest of controls enable it to measure up to the highest standards of safety.

For a description of blower, humidifier, filter, etc., refer to page 4.



Cutaway Showing Heating Elements, Burner, Valves, Blower and Filter

RATINGS

No.	A.G.A. B.t.u. input per hr.	B.t.u. capacity at registers	Number of burners	Gas supply tapping, in.	Flue vent size diam., in.	Approx. distance from floor to center of flue outlet, in.	Approx. shipping weight, lbs.
D-2	140,000	107,100	2	1	7	61½	1923
D-3	210,000	160,650	3	1	8	62	2517
D-4	280,000	214,200	4	1¼	9	62½	3238
D-5	350,000	267,750	5	1¼	10	63	4037

BLOWER-MOTOR-FILTER SPECIFICATIONS

No.	Blower No.	Blower c.f.m. at 65° F.	Approx. blower r.p.m. at ¼ in. s.p.	Diameter of wheel, in.	Number blowers	Motor hp.	Motor r.p.m.	Number filters and size, in.
D-2	1-12	1016	401	12	1	¼	1725	2 (16x25)
D-3	1-15	1526	344	15	1	⅓	1725	3 (16x25)
D-4	1-18	2032	300	18	1	½	1725	4 (16x25)
D-5	2-15.	2540	344	15	2	¾	1725	4 (16x25)

DIMENSIONS

No.	Width of heating compartment, in.	Overall *depth, in.	Overall height, in.	Width of blower compartment, in.	Height of blower compartment, in.	Depth of blower compartment, in.	Air discharge opening, in.	Air intake opening, in.
D-2	44½	76⅜	58	39½	41	29	16x22	12⅜x35¼
D-3	56	76⅜	58	48¼	41	29	16x34	12⅜x44
D-4	70½	79⅝	58	65⅜	41	32⅛	16x45	12⅜x59¼
D-5	82	76⅜	58	86	41	29	16x56½	12⅜x70

*Allow clearance in rear equal to depth of blower compartment for removal and replacement of filters, blower and motor. Allow 24-in. clearance in front for removal of baffles.

SUNBEAM GAS FIRED AIR CONDITIONING UNIT—SERIES "M"

This Unit, which is approved by the American Gas Association, is of modern design, has rounded corners, pleasing proportions, and is finished in green crystalline baked enamel. A convenient access door in the front panel conceals the gas manifold and burner accessories. Heating elements are of steel. Its capacities—61,200 to 153,000 B.t.u. per hour at register—are adequate for small and average size homes. While it has operating and safety equipment similar to the Series D, and meets the high Sunbeam standard of quality and efficiency, it is substantially lower in price. Overall dimensions (depending on capacity) are: Width 32 in. to 48½ in. Depth 66⅞ in. to 73¾ in. Height 54 in. *Write for catalogs.*

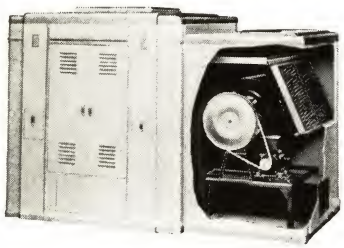


Sunbeam Series "M"

SUNBEAM STOKER FIRED AIR CONDITIONING UNIT—SERIES "S"

The Sunbeam Series "S" is designed exclusively for stoker firing and possesses features that make coal burning nearly 100% automatic. Either bin feed or hopper feed type of stoker can be installed from front, rear, either side, or below floor level through openings provided.

The heating element, constructed of No. 7 gauge boiler plate steel, has a large, No. 12 gauge steel, double radiator which will accommodate several months' accumulation of fly ash and still deliver its full rated capacity. When cleaning is necessary, it is conveniently accomplished through accessible openings provided.



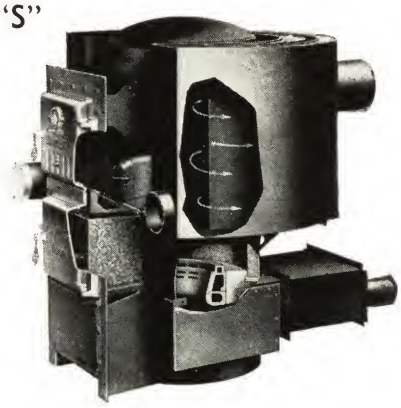
Interior View of Series "S" Showing Blower, Motor and Filters

In this view, blower is raised to permit side-to-side installation of bin-feed stoker

The large fire door and sloping clinker disposal frame make it easy to reach every part of clinker. Clinkers are dropped into a clinker pan, located within the heating element, where they are left until they have cooled and odorous gases have passed up the flue.

Cabinets have graceful lines and pleasing proportions, and are finished in two tones of smooth, green baked enamel. Their pleasing appearance will harmonize in the most attractively furnished basement.

Controls for any degree of temperature regulation, are available. For description of blower, filters, humidifiers, etc., refer to page 4.

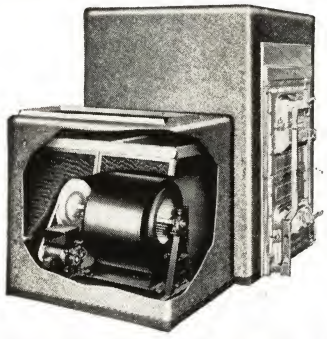


Heating Element of Series "S"

Showing double radiator, cleanout collars, fire door, clinker pan, clinker door, and housing for screw tube through which retort is inserted

SUNBEAM COAL BURNING AIR CONDITIONING UNITS—SERIES NOS. 80 AND 5500

The Series No. 80 Air Conditioner is designed for burning coal, hand fired. High efficiency, long life and attractive appearance are noteworthy features. The heating element is made of No. 7 gauge boiler plate steel, riveted and welded to assure long life and gas-tight construction. A large amount of heating surface and long fire travel make this series remarkably efficient.



Series No. 80—Coal Burning Hand Fired Model

This view shows blower, motor and filters

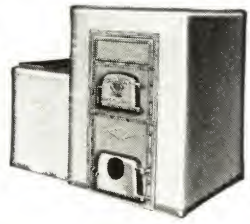
The handsome cabinets—with their graceful proportions, rounded corners and green crystalline enamel finish give outstandingly attractive appearance. Air-tight slip joints prevent heat from escaping into the basement.

Stoker Fired and Oil Burning Models—The Series No. 80 Sunbeam is also made in special Stoker Fired and in special Oil Fired models. Because of their design and construction these models are well adapted to automatic firing and operate at a high efficiency. Home owners who select this Series can change at any time from hand firing to oil burning or stoker firing.

Equipment—Controls for any degree of temperature regulation are available. For description of blower, filters, humidifiers, etc., refer to page 4.

Series No. 5500—This Series is similar in design to the Series No. 80 but is lower in price. It has a boiler plate steel heating element and is equipped with the same blower, motor and filters as the Series No. 80 and is comparable in appearance.

This Series is available in Coal Burning Models—hand or stoker fired, and Oil Burning Models—for gun or rotary type burners. Details gladly sent on request.



Series No. 5500—Gun Type Oil Burning Model

Coal burning models—hand and stoker fired—and rotary type oil burning models also available

CAPACITIES—BLOWER-MOTOR-FILTER SPECIFICATIONS—SERIES "S" AND SERIES NO. 80

No.	Coal Hand Fired		*Coal Stoker Fired		Oil Fired		Blower No.	Dia. of blower wheel, in.	Pitch dia. of blower pulley, in.	Number of blowers	Motor h.p.	Number filters, in.
	B. t. u. capacity at register	†C. f. m. required at 65° F.	B. t. u. capacity at register	†C. f. m. required at 65° F.	B. t. u. capacity at register	†C. f. m. required at 65° F.						
24-S	.....	.....	150,000	1610	.....	.....	1–15	15	15	1	1/2	4(20x20)
27-S	.....	.....	200,000	2145	.....	.....	1–18	18	15	1	3/4	5(16x25)
**2280	103,000	1112	113,000	1210	117,000	1260	1–12	12	12	1	1/4	4(20x20)
2480	118,000	1269	129,000	1381	134,000	1439	1–12	12	12	1	1/4	4(20x20)
2780	155,000	1666	169,000	1814	176,000	1890	1–15	15	15	1	1/3	4(20x20)
3080	182,000	1962	199,000	2136	207,000	2225	1–18	18	15	1	1/2	5(16x25)
3480	222,000	2385	242,000	2596	252,000	2705	1–21	21	15	1	3/4	6(16x25)

†Air heated from 65° to 165° F. increases 19% in volume. Therefore, warm air ducts should have capacity for 19% greater c.f.m. than listed above.

*Combustion rate of stoker must conform to heating requirements of installation. Ratings based on coal having a calorific value of 12,000 B.t.u. per pound, and oil with a calorific value of 140,000 B.t.u. per gal.

**This size is not available in a special Stoker Fired model.

DIMENSIONS SERIES "S" AND SERIES NO. 80

No.	▲Overall width in.	Height heating compartment, in.	Height blower compartment, in.	▲Width of blower compartment, in.	Overall *depth in.	Air discharge opening, in.	Air intake opening, in.	Smoke collar diameter, in.	Approximate distance from floor to center of smoke collar, in.
24-S	91 5/16	61 1/2	55	34 1/16	58 3/8	26x26	16 1/4 x44 3/16	9	43 1/4
27-S	98 11/16	67	56 1/2	37 11/16	63 3/8	30x30	20 3/8 x50 5/16	9	44 1/8
2280	73 1/2	60	36 1/4	29 1/2	43 5/8	20x20	14 x36 1/2	9	41 3/4
2480	75 1/2	60	36 1/4	29 1/2	46 1/8	22x22	14 x36 1/2	9	41 3/4
2780	86 1/4	67	39	33 3/4	51 5/8	25x25	16 x45	10	43 5/8
3080	91 3/8	67	41	36 3/8	54 5/8	27x27	20 x51 1/8	10	44 1/4
3480	101 1/2	67	51 1/4	42 1/2	58 1/2	32x32	24 x55	10	45 1/4

*Smoke Pipe Tee extends out approximately 28 in. additional in Nos. 24-S, 27-S, 2280 and 2480, and 36 in. larger sizes.

▲Allow clearance at side equal to width of blower compartment for removal and replacement of filters, blower and motor.

SUNBEAM EQUIPMENT

All the different series of Sunbeam Air Conditioning Units shown on the preceding pages are furnished complete with the same types of equipment. These are briefly described below.

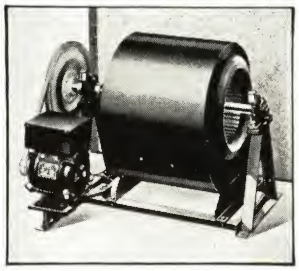
THE BLOWER

These blowers are large, powerful and silent. They operate at low speeds, consuming a minimum of current and move a large volume of air at low velocities and at comparatively low temperatures.

The blower and motor are securely mounted on an integral, rigid angle iron frame which prevents vibration and its possible resulting noise. Because of this integral base, pulleys are quickly and easily aligned and remain in alignment indefinitely.

Blowers and motors have extra capacity for summer cooling operation or to overcome greater than average resistance in the ducts. Blowers are equipped with rubber mounted, self-aligning bearings. Large oil reservoirs are provided.

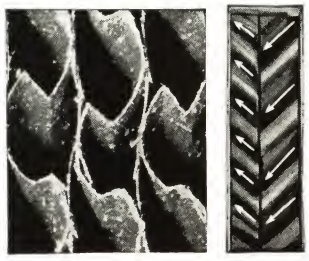
Motors, of the capacitor type, specially designed for air conditioning installations, are equipped with a special safety device to protect them against damage from overloading. They do not cause radio interference.



Blower and Motor

AIR FILTERS

These filters combine the two desirable qualifications of high cleaning efficiency and long life. They offer comparatively little resistance to the circulating air after a period of service which finds many other types of filters completely clogged and in need of replacement. Their capacity to hold more dirt, dust, soot, lint, pollen and bacteria—and thus their longer life—is due to the "V" angle construction and to the fact that they can be treated with an unusually large amount of adhesive coating without filling up the passages through which the air must circulate. When clean filters are finally required, they can be obtained at the same low cost of ordinary filters.



Sunbeam Filter

Top view (left) and side view showing "V" angle construction which assures uniform absorption of foreign matter.

CONTROLS

Each Sunbeam, whether for coal, oil or gas, is or can be equipped with a control system to provide regulation of temperature and humidity at practically any degree of sensitivity desired by the architect or owner. These controls also assure safety of operation of the various parts of the air conditioner.

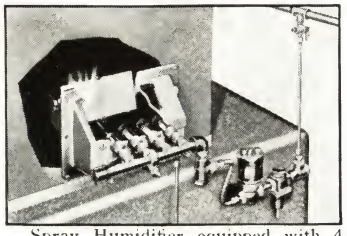
SPRAY HUMIDIFIER

This new type of spray humidifier, automatically controlled by a room humidistat, has proven its ability to properly humidify the air even in those sections where salts, lime and "hard" water prevent functioning of other types of humidifiers. It has 4 nozzles. When one nozzle does clog, it is turned off and the next one turned on, until all nozzles are clogged. All nozzles are cleaned at one time—a simple operation requiring only a few minutes. Cleaning is necessary only a few times during a heating season. Amount of water atomized can be adjusted to the air's ability to absorb moisture—and thus prevent condensation in the plenum chamber—by changing the position of the atomizing plate.



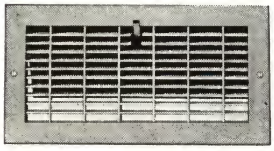
Humidistat

Solenoid valve, installed in water line and controlled by humidistat, is so wired that when humidistat calls for moisture the solenoid valve cannot open unless blower is running; blower cannot run unless heat is available in bonnet. Therefore, moisture is never introduced unless there is heat and air movement to absorb and carry away moisture. Humidistat can be set to maintain any desirable relative humidity.



Spray Humidifier equipped with 4 nozzles; capacity-adjusting atomizing plate; pressure reducing valve; solenoid valve; 2 strainers; and pipe leading from aluminum pan to drain.

REGISTERS AND GRILLES



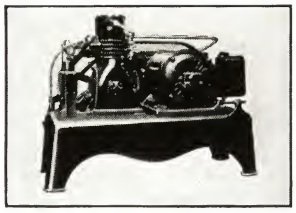
Sunbeam Registers and Grilles are of high quality and are coordinated with Sunbeam Air Conditioning Units. There is a size and type for every air conditioning need, for every price demand, and finishes to match any decorative scheme.

Sunbeam Adjustable "Fabrikated" Registers and Grilles are outstanding from the standpoint of appearance, construction and performance.

Patented, *individually adjustable bars* give complete control of the direction of air flow.

COOLING AND DEHUMIDIFYING UNIT

Where dehumidification and cooling are desired, the Sunbeam refrigerating unit with cooling coils can be installed in connection with the Sunbeam Winter Air Conditioning Unit. Or if cold water is available, it can be circulated through cooling coils. Duct system and registers can be designed and sized to carry warm, conditioned air in winter when heating plant is operating and also to distribute cool, conditioned air in summer when cooling plant is in operation.

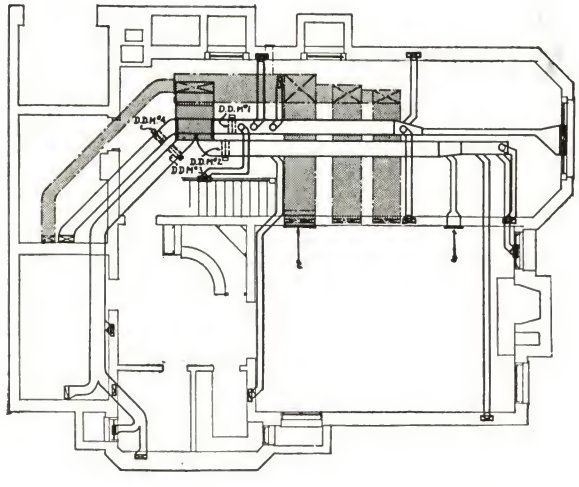


Refrigeration equipment may be installed when the Sunbeam Winter (heating) System is installed, or it can be added later.

ZONE CONTROL OF TEMPERATURE

In houses of many rooms or of the rambling type, it is difficult to maintain an even, uniform temperature in all rooms, whether the heating medium be air, water or steam, when entire building is controlled by only one thermostat. Zone Control overcomes this difficulty. The house is divided into zones. A thermostat is placed in one room in each zone. A trunk line or main duct with branches leads directly from Sunbeam Air Conditioning Unit to each zone. A damper, operated by a motor, is installed in each main duct. When a zone thermostat calls for heat, the duct damper motor opens a damper in the duct which it controls, turns on the heat source and blower. When thermostat is satisfied it closes the damper it controls, turns off source of heat and blower. The heat source is "on" and blower is operating when any one zone thermostat is demanding heat.

Advantages of Zone Controls include, besides uniform, even temperature in every room, quicker response and fuel economy because overheating is avoided. With Zone Control any desired temperature can be maintained in any zone.



ESTABLISHED 1901

THE HEIL CO.

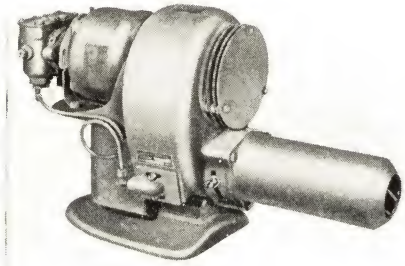
Conversion Oil Burners, Industrial Oil Burners, Furnace-Burner Units, Boiler-Burner Units, Air Conditioning Equipment, Water Systems

GENERAL OFFICES
3000 West Montana Street, MILWAUKEE, WIS.
FACTORIES: MILWAUKEE, WIS., HILLSIDE, N. J.

HEIL OIL HEATING EQUIPMENT — BUILT AND BACKED BY A PIONEER MANUFACTURER

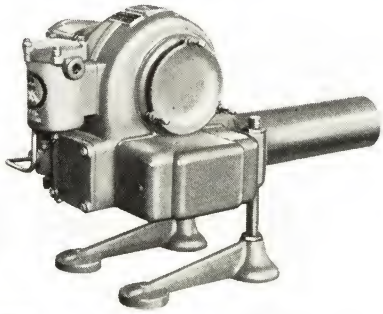
Heil oil heating equipment has been developed from the original line of Combustion oil burners introduced to the trade in 1918. In 1929, THE HEIL CO. purchased the Combustion Oil Burner Co., and since 1929 Heil Engineers have perfected and introduced a complete series of conversion oil burners, furnace burner units, winter air conditioning units, boiler-burner units, and split systems.

HEIL CONVERSION OIL BURNERS



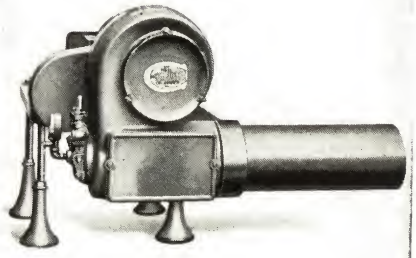
Model X Heil Oil Burner

⅛ hp. resilient mounted motor; fuel unit consisting of oil pump, strainer, automatic shut-off valve; Sirocco type fan statically and dynamically balanced; 110/10,000-volt transformer; electric ignition; automatic controls. Ratings: 700 sq. ft. steam; 1100 sq. ft. hot water; 1250 sq. in. hot air or 175,000 B.t.u. per hour. Burns No. 3 oil.



Model 2A Heil Oil Burner

⅙ hp. cradle mounted motor; internal gear type pump; belt driven 110/10,000-volt transformer; electric ignition; large capacity Heil oil filter; efficient Heil shut-off valve; automatic controls. Ratings: 2100 sq. ft. steam; 3350 sq. ft. hot water; 3400 sq. in. hot air or 500,000 B.t.u.'s per hour. Burns No. 3 oil.



Model 4 Heil Oil Burner

½ hp. single-phase motor; 100/12,000-volt transformer; twin electric ignition; belt driven pump; large capacity Heil oil filter; efficient Heil shut-off valve; automatic controls. Ratings: 5000 sq. ft. steam; 8000 sq. ft. hot water; 8300 sq. in. hot air or 1,200,000 B.t.u.'s per hour. Burns No. 3 oil.

Model 1SS Heil Oil Burners

Motor fan and pump mounted in line; cradle mounted ⅛ hp. motor; large capacity Heil oil filter; electric ignition; efficient Heil shut-off valve; 110/10,000-volt transformer; internal gear type oil pump; automatic controls. Ratings: 1000 sq. ft. steam; 1600 sq. ft. hot water; 1650 sq. in. hot air. 240,000 B.t.u.'s per hour. Burns No. 3 oil.

Conversion Burners Not Illustrated

Model 3 Heil Oil Burner

⅓ hp. single-phase motor; 110/10,000-volt transformer; belt driven pump; electric ignition; large capacity Heil oil filter; efficient Heil shut-off valve, automatic controls. Ratings: 3500 sq. ft. steam; 5600 sq. ft. hot water; 5800 sq. in. hot air or 840,000 B.t.u.'s per hour. Burns No. 3 oil.

Heil Industrial Oil Burner Equipment

A complete series of power units and nozzle assemblies for installation in bake ovens, lead pots, large heating boilers and all industrial applications. Ask a Heil representative for literature and recommendations or write to THE HEIL CO., Milwaukee, outlining your requirements and the industrial application to be made.

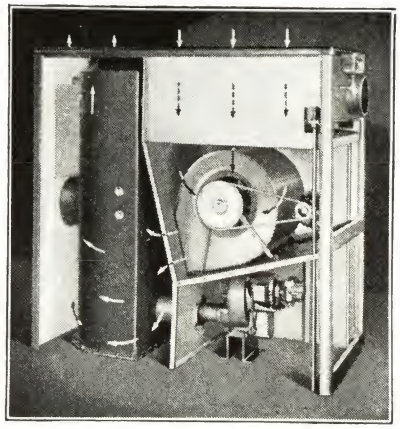
HEIL MODEL F100 ACTIV-AIR CONDITIONING UNIT



Heil Model F100 Activ-Air Conditioning Unit Enclosed in Its Attractive Cabinet Type Casing

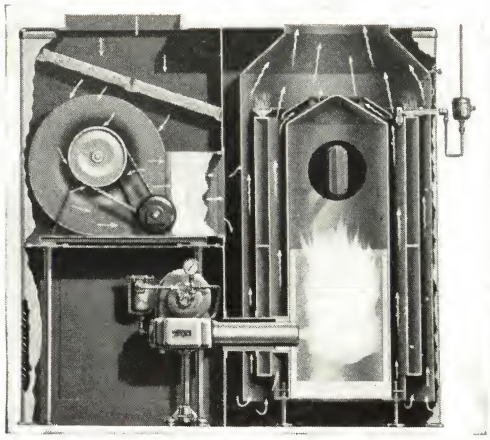
The Heil Model F100 Activ-Air Conditioning Unit is a compact, completely automatic winter conditioning unit for installation in small and medium sized homes. This efficient Heil Activ-Air Unit performs all the necessary air conditioning operations quietly, automatically and efficiently.

The complete line of Heil Activ-Air Conditioners includes two greater capacity models, the F120 and F150. Specifications and Ratings of all Heil Activ-Air Conditioning Units can be found on the next page.



Cut-away View of Model F100 Unit. The Arrows Explain Its Operation

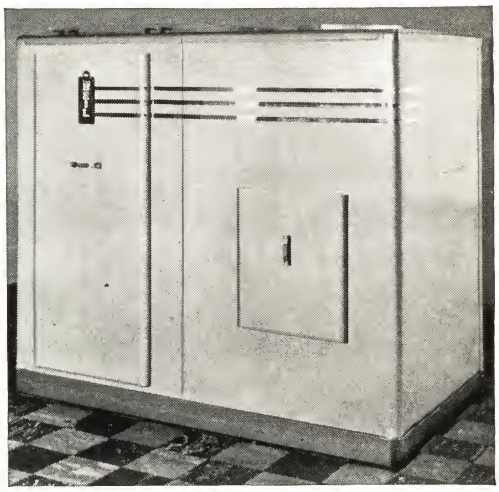
HEIL ACTIV-AIR CONDITIONING UNITS



Cross Section of Heil Model F120 and F150 Activ-Air Conditioning Unit. Extra Large Heating Surfaces and Long Flue Travel Account for Low Fuel Consumption

SPECIFICATIONS

	Model F100	Model F120	Model F150
Capacity (B.t.u. per hr.)	100,000	120,000	150,000
Replacement type filter area, sq. in.	1000	1280	1920
Float control humidifier evaporating capacity lb. per hr.	2	10	12½
Burner	Model X (Standard) No. 1SS (Optional)	No. 1SS (Standard) Model X (Optional)	No. 1SS (Standard) Model X (Optional)
Maximum Blower output c.f.m., at ⅜ in. W.S.P.	2600	2600	5200
Blower r.p.m.	500	500	500
Blower motor, hp.	¼	¼	⅓



Heil Model F120 and F150 Activ-Air Conditioning Unit

HEIL ACTIV-FLO BOILER BURNER UNITS

Heil Activ-Flo Boiler Burner units are suitable for steam, vapor or hot water heating service in the home. The high operating efficiency of these units insures low fuel cost and brings automatic oil heating within the reach of homeowners everywhere.

The Heil Activ-Air-Flo Conditioning Unit (shown below) is an indirect system which will provide circulating, humidified, air to every room in the home or, if desired, such rooms as bathroom, kitchen, garage, etc. can be heated by radiators and the other rooms by circulating, conditioned air.

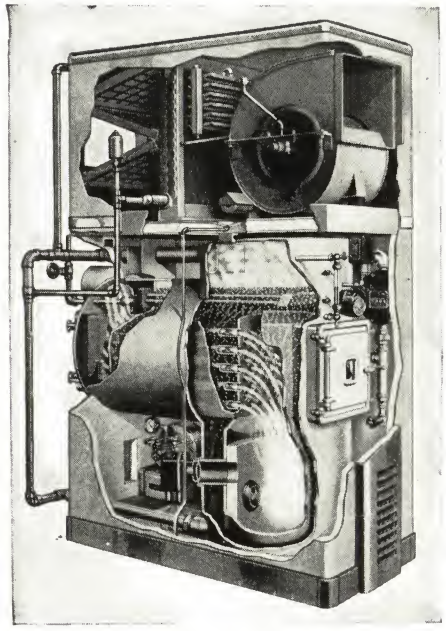
HEIL NO. 40 ACTIV-FLO BOILER BURNER UNIT

SPECIFICATIONS

Maximum boiler output in B.t.u. per hr.	140,000
Steam radiation (sq. ft.) E.d.r.	525
Pounds of evaporation from 150° F. water to 2 lbs. steam	140
Hot water radiation (sq. ft.) E.d.r.	950
Gallons of oil burned per hour	1.35
Minimum recommended chimney, in	8½x13
Minimum chimney height, ft.	25



Heil No. 40 Activ-Flo Boiler Burner Unit



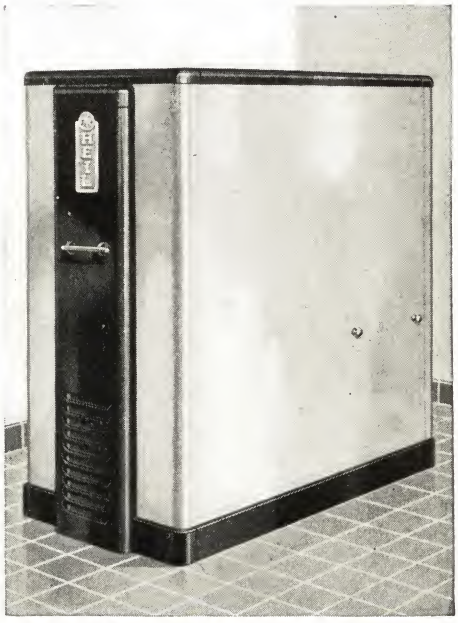
Cutaway View of Heil Activ-Air-Flo Conditioning Unit Showing Conditioner Installed on Top of Boiler-Burner Unit

SPECIFICATIONS HEIL ACTIV-FLO BOILER-BURNER UNIT (Right)

	H-Tee 50	H-Tee 65
Maximum boiler output in B.t.u. per hr.	200,000	275,000
Steam radiation (sq. ft.) E.d.r.	800	1050
Pounds of evaporation from 1500° F. water to 2 lbs. steam	200	260
Hot water radiation (sq. ft.) E.d.r.	1330	1830
Gallons of oil burned per hr.	1.85	2.50
Minimum recommended chimney, in.	8x12	13x13
Minimum chimney height, ft.	35	35

SPECIFICATIONS ACTIV-AIR-FLO CONDITIONING UNIT (Left)

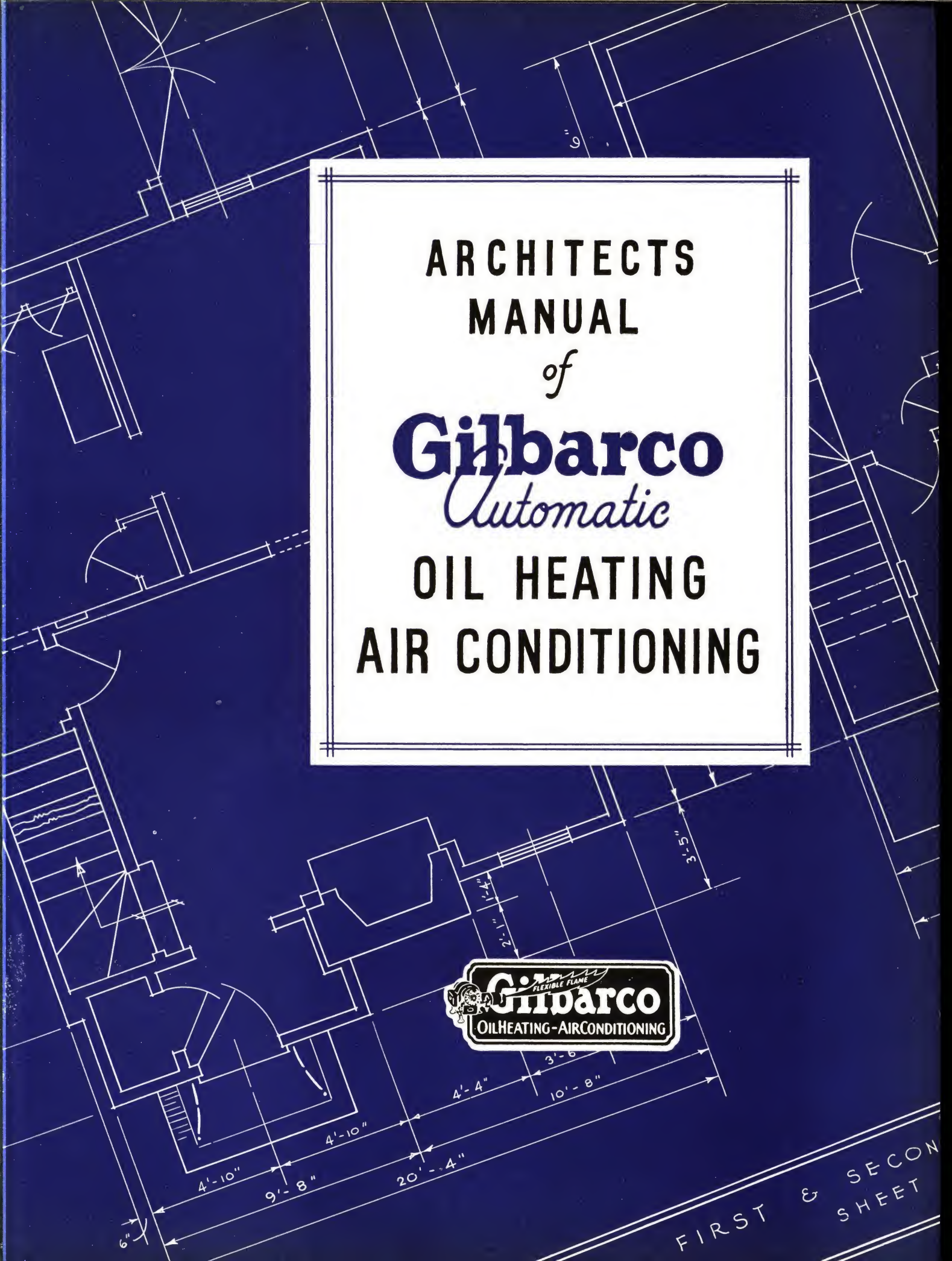
	Model 50–140	Model 65–140
Maximum boiler output B.t.u. per hr.	200,000	275,000
Maximum output of conditioner, B.t.u. per hr.	140,000	140,000
Maximum blower output c.f.m. at ⅜ in. W.S.P.	1600	1600
Blower r.p.m.	525	525
Motor hp., 110-v., 60-cy., 1750 r.p.m. split-phase	¼	¼
Filter area, sq. in.	1200	1200



The Heil H-Tee 50 and 65 Activ-Flo Boiler-Burner Is Encased in an Attractive, Insulated Enameled Steel Jacket

MEMORANDA

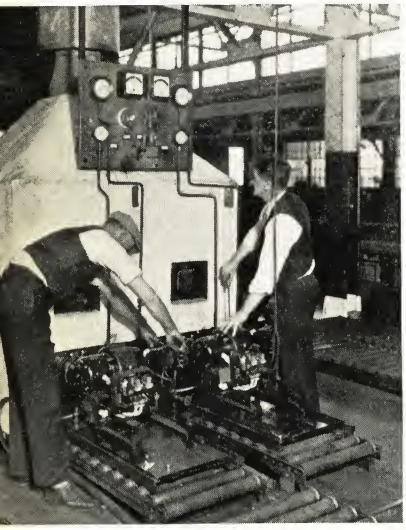
ARCHITECTS MANUAL of Gilbarco Automatic OIL HEATING AIR CONDITIONING



FLEXIBLE FLAME
Gilbarco
OILHEATING-AIRCONDITIONING



The Company behind GILBARCO . .



Gilbarco Burners are actually fire tested before shipment. Nothing is left to chance.



With a capacity for pouring 40 tons of metal per day the Gilbert & Barker Foundry rates as one of the largest in New England.



General view of one of the Gilbert & Barker Machine Shops (there are two others)—modern machinery, plenty of light and efficient workmen make for properly built products.

THE COMPANY

The stability and character of the company and its experience in producing oil burning equipment means much to your repulation and your clients' satisfaction. Today there are thousands of oil burners installed throughout the country whose makers have gone out of business and whose owners are deprived of the service which they have a right to expect from such equipment. In the selection of automatic home heating it is vitally essential to know that the manufacturer has sufficient knowledge and resources to ensure not only a dependable product but dependable service throughout the life of the equipment.

ITS PRODUCTS

The GILBERT & BARKER MFG. COMPANY is one of the oldest and largest manufacturers of gasoline and oil dispensing and storage and oil burning equipment. It was established in 1865. More than seventy years ago this old New England firm manufactured the famous Springfield Gas Machine—a machine that used gasoline to generate gas for heating and lighting purposes. Fifty years ago a complete line of Industrial Oil Burning equipment was introduced and quickly became known throughout the country. Thirty-one years ago a line of gasoline and oil dispensing and storage equipment was produced, which is now sold in 108 countries throughout the world. Almost 10 years ago the now famous "Gilbarco" Oil Burner was introduced in a range of models to meet all heating requirements, both in homes and public and commercial buildings. In 1934 the Company entered the Domestic Air Conditioning Field with the most advanced equipment developed up to that time.

Today the "Gilbarco" lines include 6 models of Domestic Oil Burners which enable an individualized solution of any heating problem; 8 models of specially designed Boiler-Burner Units; 10 models of Domestic Air Conditioning Units; 2 models of Gravity Furnaces; 12 models of Industrial Heavy Oil Burners; the "Gilbarco" Hot Water Heater; and the "Gilbarco" Portable Summer Air Conditioner.

ITS POSITION IN THE FIELD

In Oil Burning Equipment and as a subsidiary of the world's largest oil company, the GILBERT & BARKER MFG. COMPANY occupies the enviable position of having more experience and knowledge of oil and oil burning equipment than any other manufacturer in the industry. The efficiency and dependability of "Gilbarco" Units has lifted them in nine short years to unquestioned leadership in their field. This leadership is just as pronounced abroad as it is in America. "Gilbarco" Oil Burners are rendering satisfactory performance in England, France, Germany, Norway, Sweden, Switzerland, Denmark, Roumania, Italy, and other foreign countries. You can specify "Gilbarco" with complete confidence in the equipment and the company which stands squarely behind it.

We reserve the right to change all specifications herein without notice or liability.

GILBERT & BARKER MANUFACTURING COMPANY

SPRINGFIELD, MASSACHUSETTS, U. S. A.

CHICAGO

TORONTO, PARIS, LONDON, SYDNEY

NEW YORK SALES OFFICE AND SHOWROOMS
ROOM 2437, 30 ROCKEFELLER PLAZA

●

Sold and Installed by authorized dealers throughout the United States and by Esso Marketers in the Following States:

BOSTON, MASSACHUSETTS — METROPOLITAN NEW YORK — EASTERN PENNSYLVANIA
NEW JERSEY — MARYLAND — DELAWARE — NORTH CAROLINA
VIRGINIA — WASHINGTON, D. C.

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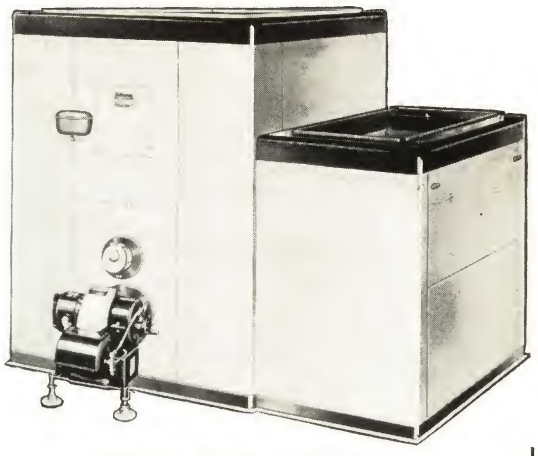
De Luxe Models FBD 110, FBD 125, FBD 150, FBD 200 and FBD 250

Finest and most efficient oil heating and air conditioning equipment on the market. A compact, self-contained unit in baked enamel cabinet, the same superlative finish as your electric refrigerator. Burner and controls, enclosed in cabinet, are easily accessible through ventilated door. The finish is duo-tone green with dull chromium trim.



Model FBSA 80

This new unit is designed and engineered for the small home.



Models FBS 350 and FBS 450

A series of models which provide automatic air conditioning for the medium size home or the largest estate, school, bank, store or similar public building.
The burner is not enclosed in cabinet. Duo-tone green finish.

GILBARCO Series "F"

OIL HEATING WARM AIR CONDITIONERS

MODERN CONSTRUCTION DEMANDS AIR CONDITIONING

75% of all new homes in a single large metropolitan area were Air Conditioned in 1934, and the percentage was increased to 90% in 1937. So has the modern science of Domestic Air Conditioning developed into an essential in the modern mode of living.

The need for Air Conditioning is readily understood when you consider that in the New York area there are but 80 ideal days in any year—73 days when cooling is desirable—and 212 days when heat is necessary usually with humidification. Thus it can be seen that during approximately 60% of every year, Gilbarco Oil Heating—Air Conditioning is essential to a comfortable atmosphere.

BECAUSE IT PROVIDES

Comfort. The human body liberates heat in three ways—radiation, convection and evaporation. We know by experience that a room temperature of 70° F. seems to provide the proper relation to the body temperature of 98.6 F. for comfort. Even with this normal temperature we are uncomfortable in draughts or in low humidity air because of the increased rate of transfer from the body caused by convection and evaporation.

Health. Fortunately the requirements of a healthful atmosphere are closely related to the conditions necessary for a comfortable atmosphere. The temperature and humidity and air movement are in balance with conditions resulting from the rate of heat loss from the body, which eliminates undue strains on the body mechanisms due to chills or overheating.

Properly humidified air prevents the nose, throat and nasal passages from drying out, thereby assisting in eliminating one of the sources of respiratory diseases, such as colds, influenza, grippe, catarrh, etc. Dry air also affects the skin, causing it to become dry, itchy, wrinkled and chapped. Thus the most important requirement of a healthful atmosphere is a proper combination of temperature, air movement and humidity.

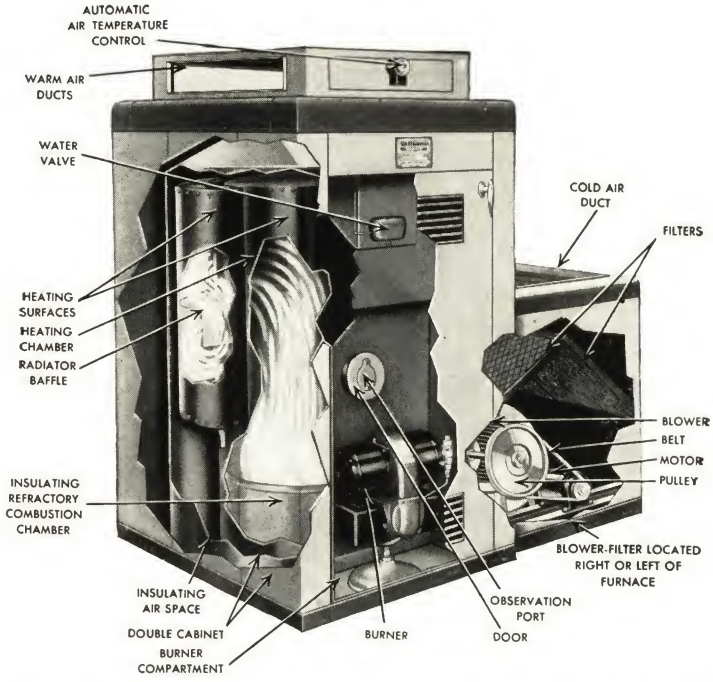
Humidity. When winter air at 0° F. and 35% relative humidity filters into a house and is heated to 70° F. the relative humidity is reduced to 8%, which is much drier than the air on the dryest desert. This air acts like a sponge and absorbs moisture from the skin at an excessive rate, cooling the body of the occupant too fast, and leaving him cold. If the humidity were increased, a truly comfortable atmosphere would exist because the bodily heat loss would be in balance with conditions resulting from a correct temperature and humidity. Thus it is obvious that temperature alone is not a measure of comfort and that there is an urgent need for proper humidification.

Air Movement. When the air in a room is still and stagnant, we feel oppressed, due to the film of air saturated with bodily moisture which surrounds the occupant. A gentle movement of air corrects this condition with no change in room temperature or humidity, as well as leveling out the temperature difference between the floor and ceiling. Modern warm air conditioning equipment produces a movement of clean warm air at the proper humidity to completely fill all rooms and all parts of all rooms.

Air Cleaning. The purity or cleanliness of the air is another vital requirement. The necessity for air cleaning is obvious when we consider it carries floating particles of carbon, soot, ash, sand, leather, animal excretion, stone, wood, rust, paper, threads of cotton, wool, silk, animal and vegetable matter, bacteria and plant pollen. The air filters remove these particles and by so doing reduce sickness and relieve hay fever sufferers.

Utility and Economy. Modern air conditioning equipment requires comparatively very little floor space and eliminates the octopus of pipes so familiar to older types of warm air heating. It permits the basement or cellar to be made into attractive housing quarters or recreation rooms, rather than space devoted to ash cans and various other inconveniences of old-fashioned heating.

Other Advantages. Old type heating plant combustion losses are reduced tremendously in the "Gilbarco" Warm Air Conditioner. The recirculation of air through filters effectively reduces the amount of labor required for dusting and vacuum cleaning. The humidity control maintains woods and fabrics in their proper condition, resulting in less replacement of furniture, curtains, pictures, etc. Sickness is reduced. The annual cost of sickness, disease, lost time, doctor and medicine bills have been estimated and runs into millions of dollars per year. Gilbarco Air Conditioning Units will play their part in the reduction of this waste. The cost of the equipment is small in comparison to the results obtained.



DEPENDABLE HEATING COMFORT AND ECONOMY

THE UNIT — ITS ADVANTAGES

Design. "Gilbarco" Series "F" Warm Air Conditioning Systems are efficient, dependable and unusually economical in operation. They are specially designed for oil fuel and develop a much higher degree of heating efficiency than is possible with any other type of equipment. The oversized radiator within the furnace, with its long, retarded gas travel insures a maximum amount of heat with a minimum amount of fuel. The filtering and humidifying equipment is engineered according to the most advanced principles of this new science and the fan and motor are of sufficient capacity and durability to insure many years of efficient service.

1. A warm-air heater that provides automatic dependable heat without which your home cannot be considered truly modern.
2. A Gilbarco Oil Burner . . . the most efficient, dependable and economical oil burning unit ever devised.
3. Humidification to add the moisture required for proper humidity.
4. An automatically-controlled, silent blower for forcing the conditioned air to all parts of all rooms.
5. Necessary controls to insure dependable service at all times.
6. Highly efficient filters which remove dust, lint, pollen, etc., insuring clean, healthful air at all times.

SPECIFICATIONS—GILBARCO SERIES "F" AIR CONDITIONERS

Model	Heating Capacity B. T. U. per hour at Plenum	Heating Capacity B. T. U. per hour at Registers	Humidifying Capacity Pounds Water per hour	Burner Model No.	BLOWER				DIMENSIONS (Inches)										
					C.F.M. Max.	Fan Dia. In.	Motor H.P.	Filters No. — Size All 2" thick	A	B	C	D	E	F	G	H	I	J	K
FBSA80	100,000	80,000	5.2	GB00	1200	10	1/6	4-15x20	28	30	54	63	43	20½	10¾	21½	19½	24	20
FBD110	137,500	110,000	7.0	GB1	1700	12	¼	4-20x20	36	45	66	63	36	....	....	36½	27½	34	24
FBD125	156,250	125,000	8.0	GB1	2000	12	¼	4-20x20	43	51	73	63	36	....	....	43	35	34	24
FBD150	187,500	150,000	12.0	GB1	2500	16	⅓	6-16x25	43	51	77	63	42	....	....	43	35	42	28
FBD200	250,000	200,000	14.0	GB1	3000	16	½	6-16x25	54	63	88	63	42	....	....	55	46	42	28
FBD250	312,500	250,000	16.0	GB1	3500	18	¾	6-20x20 3-16x20	54	63	90	63	56	....	....	55	46	52	28
FBS350	420,000	350,000	18.0	GB2	4500	18	¾	6-20x20 3-16x20	61	65	97	71	56	17	30	57	53	57	28
FBS450	540,000	450,000	20.0	GB2	5500	21	1	2-16x20	61	65	97	71	59	17	30	57	53	57	28

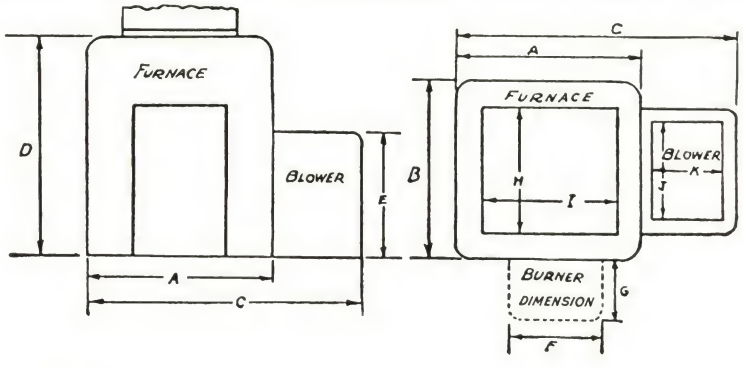
Special Models for 750,000 and 1,000,000 B.T.U. Output per Hour at the Register Available. Consult the Factory.

F indicates Series

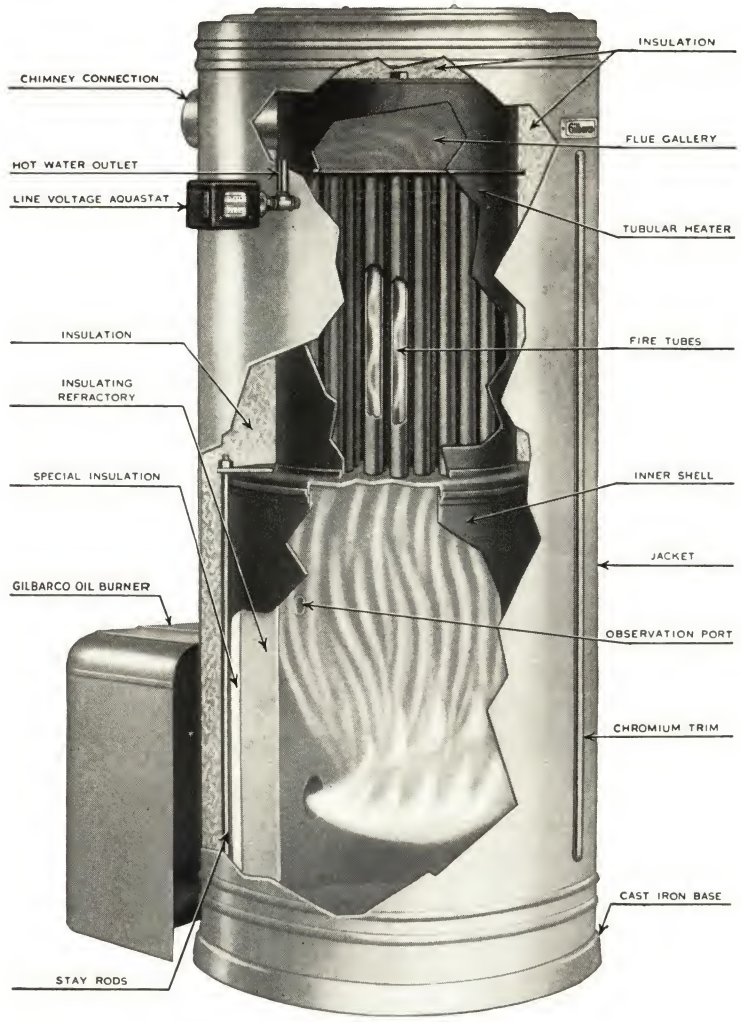
B " Blower

D " De Luxe Cabinet Enclosing Burner

S " Standard Cabinet, Burner Not Enclosed

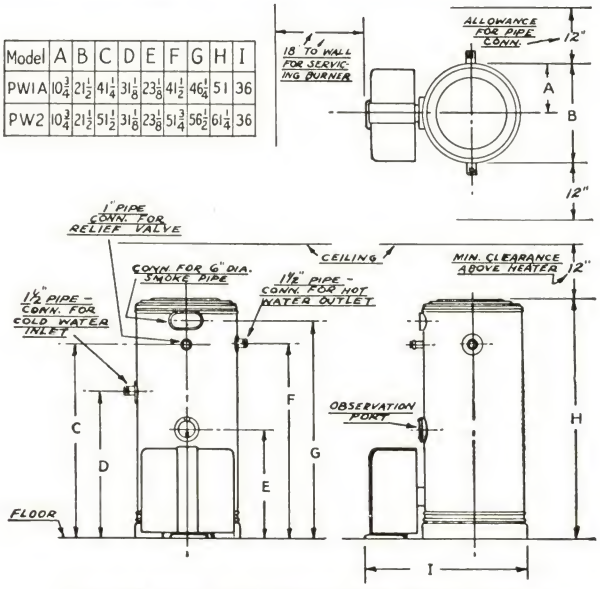


. . . GILBARCO HOT WATER HEATERS



Cutaway View Showing Fire Travel

Model	A	B	C	D	E	F	G	H	I
PW1A	10¾	21½	41¼	31⅛	23⅜	41½	46¼	51	36
PW2	10¾	21½	51½	31⅛	23⅜	51¾	56½	61¼	36



Floor Layout for Gilbarco Hot Water Heater

MODEL PW1A and MODEL PW2

YEAR ROUND HOT WATER

For the Smallest or Largest House

Beautifully finished in sage green enamel with chromium trim, this heater offers the most advanced engineering principles applicable to water heating equipment.

Automatic, dependable, it relieves you of every hot water responsibility, and provides an abundant supply of hot water at all times.

Low priced fuel, the same as you use in your furnace or boiler is burned in this heater, an economical feature with the further advantage that only one oil storage tank is necessary. In either the smallest or the largest home, it is the most economical method of supplying hot water automatically and dependably.

SPECIFICATIONS

Ratings: PW1A—90 gallons hot water per hour, 100° F. temperature rise; 110 gallons hot water per hour, 80° F. temperature rise. PW2—130 gallons hot water per hour, 100° F. temperature rise; 165 gallons hot water per hour, 80° F. temperature rise.

Boiler: Vertical tubular boiler. Working pressure 160 lbs. per square inch. Test pressure 350 lbs. per square inch. Special copper-alloy boiler, tin plated on water surface for corrosion resistance, long life and clean water.

Combustion Chamber: Pre-cast refractory, completely insulated.

Burner: Gilbarco pressure atomizing type, constant ignition, fully automatic, compact unified construction. Approved by Underwriters' Laboratories, Inc.

Controls: Combustion Control consisting of stack relay—High Limit Safety Control consisting of immersion type aquastat.

Insulation: Rock wool blanket surrounds boiler and refractory combustion chamber, with double thickness around combustion chamber.

Jacket: Heavy-gauge cabinet steel finished in sage green enamel.

Floor Space: See drawing at left.

Tappings: 1½ inch inlet and outlet tappings for circulating lines.

Flue Connection: 6 inch oval.

Storage Tank Sizes: A storage tank must be used in conjunction with this heater. This tank should have a storage capacity equal to the maximum load in gallons of water per hours, as determined from the number and type of fixtures, and should not be less than 30 nor greater than 300 gallons storage capacity for the PW1A and not less than 30 nor greater than 500 gallons storage capacity for the PW2.

The PW1A heater should not be installed where the total daily demand exceeds 1000 gallons of hot water.

GILBARCO BOILER-

SERIES "A6"

77% OVERALL EFFICIENCY

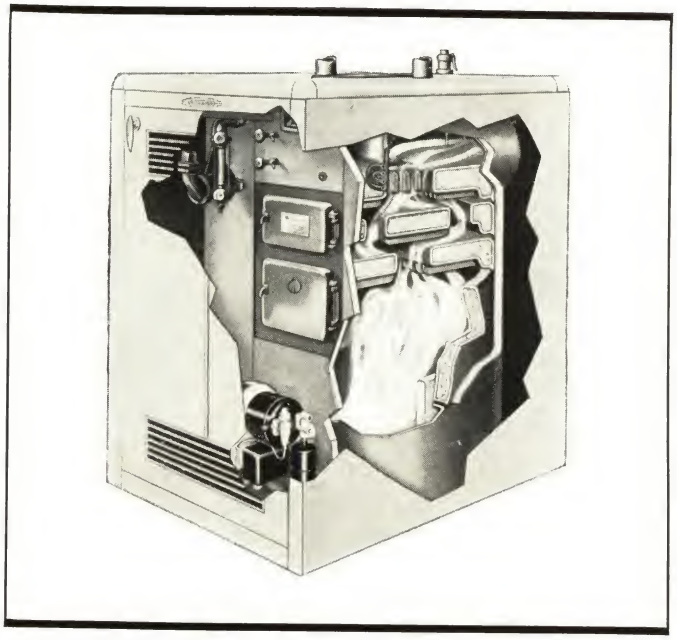
FOR STEAM, VAPOR
AUTOMATIC, DEPENDABLE,
A NEW STANDARD

Design. The boiler especially designed for fuel oil is of cast iron, which can be moulded into the most effective kind of heat absorbing surfaces. The gases are retarded and forced into intimate contact with the heat absorbing surfaces. As the gases rise from the combustion chamber, their path through the many small passages is so controlled as to cause them to travel spirally between each projecting fin: thus, the hottest gases are in constant contact with heat absorbing surfaces and stratification is not possible. Special provision has been made in the design and construction of these units to make installation easy and effective.

Automatically, they will provide abundant domestic hot water all year round on the steam models, and throughout the winter months on the hot water models. Year round domestic water with hot water boilers can be obtained by installing auxiliary equipment. The boilers are designed in three models for both steam and hot water systems.

Construction. Gilbarco Boiler Units (Oil Fired) have heavy gauge reinforced metal jackets. The boiler is insulated with a close fitting Rockwool blanket. Heating is accomplished by means of a standard Gilbarco Oil Burner of correct size for the boiler and radiation capacity. The Gilbarco burner is the outstanding piece of oil burning equipment in the world today from the standpoint of dependability and economy in operation.

Standard Equipment. Built-in water coil — Aquastat for summer hot water furnished on steam systems only — Low water cut-off on steam systems — Insulating type refractory combustion chamber — Pressuretrol on steam systems — High limit immersion aquastat on hot water systems.



GILBARCO SERIES "A6" RATINGS

Unit Number	Gross Output B. T. U. Per Hour	Square Feet Steam Radiation				Square Feet Hot Water Radiation				Domestic Water Coil Capacities, Gallons of Water in Three Hrs. 100° F. Temperature Rise			
			Without Domestic Water Coil	With Standard Coil	With Special Coil		Without Domestic Water Coil	With Standard Coil	With Special Coil	Steam Boilers at 180° F. Average Temp.		Hot Water Boilers at 150° F. Average Temp.	
		Gross	Net	Net	Net	Gross	Net	Net	Net	Standard Coil	Special Coil	Standard Coil	Special Coil
A6—19	131,500	548	350	321	291	876	560	539	514	40	80	20	40
A6—20	168,000	700	450	416	391	1120	720	692	674	45	80	22.5	40
A6—22	206,400	860	550	515	491	1376	880	853	834	50	80	25	40

RATING NOTES

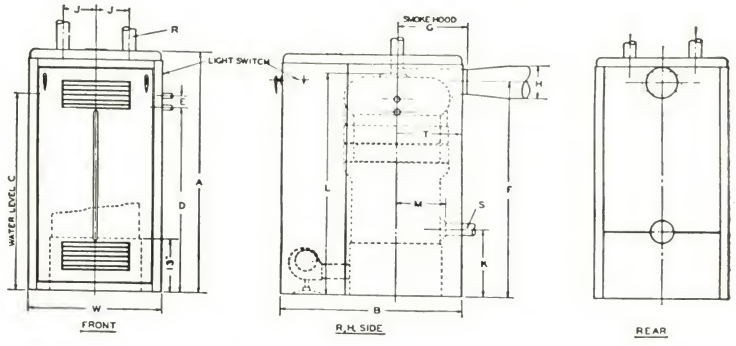
Note: *Gross Rating is the total output in square feet of radiation at the boiler nozzle.*

Note: *Net ratings represent the allowable standing cast iron radiation which can be connected to each boiler when the domestic hot water load is as shown at the top of each column. No deduction for the hot water coil, regardless of storage tank size, should be made from the net ratings, since the maximum load imposed by each coil has already been deducted.*

Note: *All ratings expressed in square feet are based on a heat emission of 240 B.T.U. per square foot for steam and 150 B.T.U. per square foot for water.*

Note: *Series "A6" boilers show an overall efficiency of 77% at rated capacity for continuous firing.*

Note: *When ordering, be sure to specify whether the unit is for a steam or hot water system and add the letter "S" for steam or "W" for hot water to the unit number. For example: A6-19-S for steam and A6-19-W for hot water. Also specify whether with standard domestic water coil or special domestic water coil.*

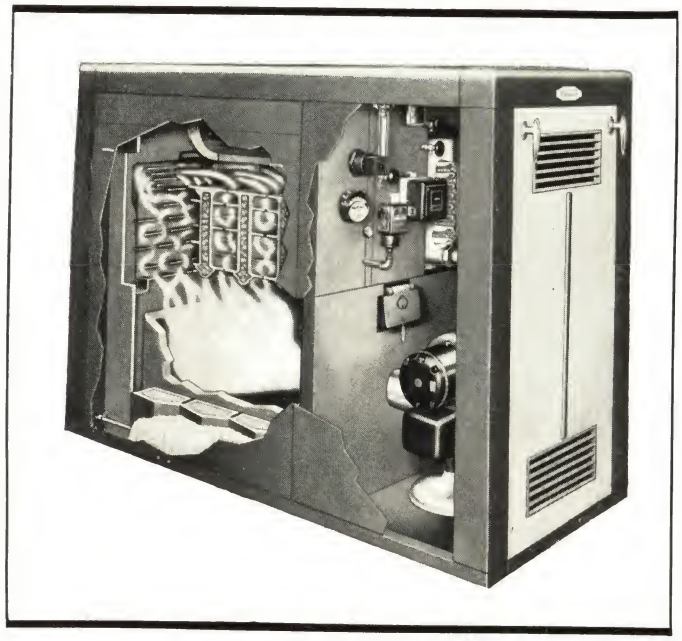


SERIES "A6" DIMENSIONS

	A	B	C	D	E	F	G	H	J	K	L	M	W	R	S	T
A6—19	57½	39 13/16	47½	44⅛	2⅞	51½	16 7/16	8	7 13/16	16⅞	54¼	11⅝	31½	2-2½	4	13¼
A6—20	57½	41⅞	47½	44⅛	2⅞	51 13/16	17⅝	9	8 15/16	16⅞	54¼	12 3/4	34	2-3	4	14¼
A6—22	57½	44⅞	47½	44⅛	2⅞	51 13/16	18 7/16	9	9 13/16	16⅞	54¼	13⅞	36	2-3	4	15⅛

UNITS (OIL FIRED)

and HOT WATER SYSTEMS ECONOMICAL—THEY CREATE FOR HOME HEATING UNITS



SERIES "BF"

80% OVERALL EFFICIENCY

Design. This series incorporates new methods of fire travel, heat absorption and water circulation which account for the unusual overall efficiency.

A large area of finned and prime heat-absorbing surfaces which are scientifically placed and proportioned absorb the heat from the gases of combustion. As the hot gases from the combustion chamber meet the first row of fins, they give up their heat and are retarded by rubbing against the fins. The hotter gases which have not come in contact with the heat-absorbing surfaces and which have not been retarded move at a high velocity to the next row of heat-absorbing surfaces. Water circulation is positive and unrestricted. Definite up and down currents are established which make for complete separation of steam and water. This illustration shows the large unrestricted area through which the water circulates. A small water content achieves quick steaming, and the large area of steam liberating surface at the water line permits rapid separation of steam and water and achieves a steady boiler water line. Series "BF" Units are made in five models for both steam and hot water systems.

It combines the following features:

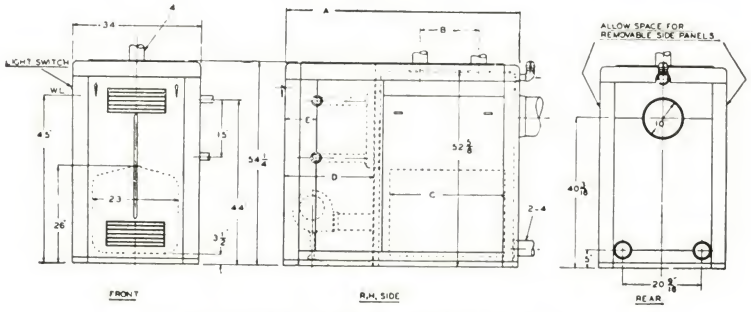
1. Extended fin type heating surfaces.
2. Low draft loss.
3. Large combustion chamber.
4. Quick steaming.
5. Water-backed combustion chamber.
6. Ground joints between sections.
7. Unique gas travel.
8. Positive internal water circulation.
9. Large steam liberating surface.
10. Compact size.
11. Maximum accessibility for ease of servicing.

Construction. Like Series "A6" units, the boilers of the "BF" Series are of cast-iron construction insuring efficiency and maximum durability.

Standard Equipment. Same as Series "A6."

GILBARCO SERIES "BF" RATINGS

Unit Number	Gross Output in B. T. U. Per Hour	Square Feet Steam Radiation				Square Feet Hot Water Radiation				Domestic Water Coil Capacities, Gallons of Water in Three Hrs. 100° F. Temperature Rise			
			Without Domestic Water Coil	With Standard Coil	With Special Coil		Without Domestic Water Coil	With Standard Coil	With Special Coil	Steam Boilers at 180° F. Average Temp.		Hot Water Boilers at 150° F. Average Temp.	
		Gross	Net	Net	Net	Gross	Net	Net	Net	With Standard Water Coil	With Special Water Coil	With Standard Water Coil	With Special Water Coil
BF—3	187,200	780	500	428	384	1248	800	740	706	100	160	50	80
BF—4	262,800	1095	700	628	584	1743	1120	1060	1026	100	160	50	80
BF—5	337,200	1405	900	828	784	2248	1440	1380	1346	100	160	50	80
BF—6	412,800	1720	1100	1028	984	2752	1760	1700	1666	100	160	50	80
BF—7	487,200	2030	1300	1228	1184	3246	2080	2020	1986	100	160	50	80



SERIES "BF" DIMENSIONS

Number of Boiler	BF3	BF3	BF5	BF6	BF7
Number of Double Sections	3	4	5	6	7
A	39½"	47½"	64½"	72½"	80½"
B	0"	8"	16"	24"	32"
C	15⅜"	23⅜"	31⅜"	39⅜"	47⅜"
D	15⅞"	15⅞"	24⅞"	24⅞"	24⅞"
E	6"	6"	9 1/16"	9 1/16"	9 1/16"

RATING NOTES

Note: *Gross Rating is the total output in square feet of radiation at the boiler nozzle.*

Note: *Net ratings represent the allowable standing cast iron radiation which can be connected to each boiler when the domestic hot water load is as shown at the top of each column. No deduction for the hot water coil, regardless of storage tank size, should be made from the net ratings, since the maximum load imposed by each coil has already been deducted.*

Note: *All ratings expressed in square feet are based on a heat emission of 240 B.T.U. per square foot for steam and 150 B.T.U. per square foot for water.*

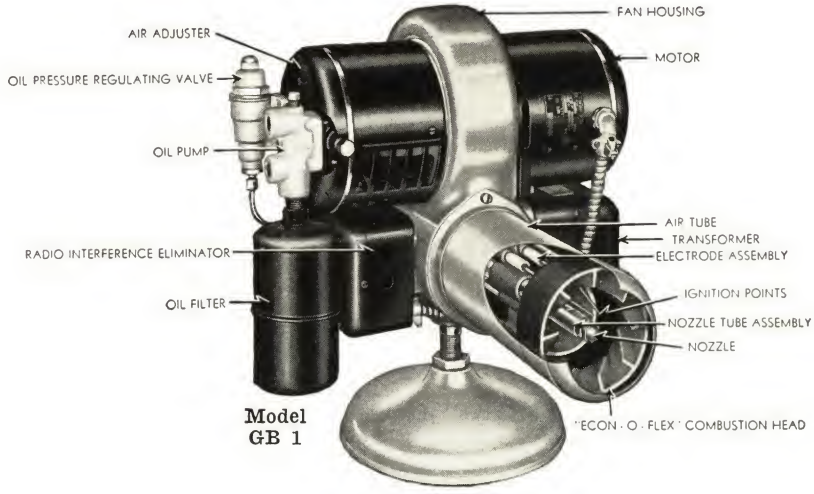
Note: *Series "BF" boilers show an overall efficiency of 80% at rated capacity for continuous firing.*

Note: *When ordering, be sure to specify whether the unit is for a steam or hot water system, and add the letter "S" for steam or "W" for hot water to the unit number. (Example: BF3-S if for steam; BF3-W if for hot water.) Also specify whether with standard domestic water coil or special domestic water coil.*

GILBARCO OIL BURNERS

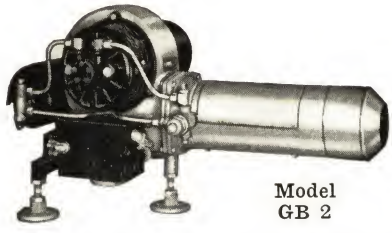
DESIGNED and CONSTRUCTED BY THE LEADERS in the INDUSTRY

6 MODELS



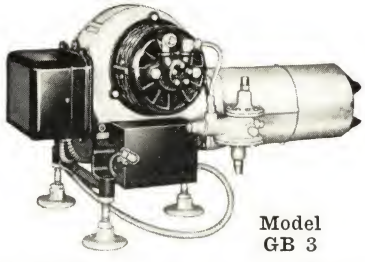
Model GB 1

Unquestionably the finest low-priced, high quality oil burner for small homes, bungalows and similar buildings with small heating systems. Has a radiation capacity of 1150 square feet of steam or 1840 square feet of hot water. Burns low-cost heating oil, is completely electric and fully automatic.



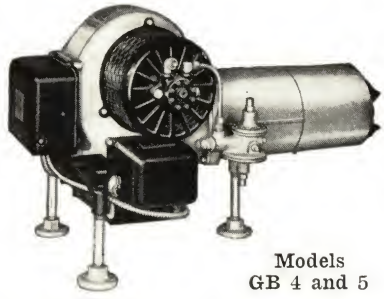
Model GB 2

Model "GB2," especially adapted for smaller and medium sized homes. Equipped with the famous, patented Econ-O-flex combustion head, electric ignition, radio filter, fully automatic controls. Burns low-cost heating oil. Easily handles up to 2250 square feet of steam radiation or equivalent.



Model GB 3

The ideal burner for bringing years of comfort to larger residences. Handles up to 4400 square feet of steam radiation or equivalent. Its quiet, dependable, efficient, fully automatic operation, burning low-cost heating oils, is your assurance of most heat per dollar.



Models GB 4 and 5

Designed for economical, maintenance-free operation in commercial installations such as public buildings, theatres, churches, schools, apartments, stores, etc. Capacity of 10,000 square feet of steam radiation or equivalent on the "GB5." Burns low-cost oil, has dual electric ignition and fully automatic controls.

"Econ-O-flex" Controlled Combustion Gives You "Most Heat per Dollar"

"Econ-O-flex" Controlled Combustion is the most efficient method of obtaining heat from fuel that has ever been accomplished. The "Econ-O-flex" Combustion Head is the "carburetor" which, like the carburetor in an automobile, mixes the air and oil vapor so that every particle of oil comes in contact with the correct amount of air to support combustion. The more thoroughly the oil and air vapor are mixed, the more heat units you will secure from the oil you burn.



The "Econ-O-flex" Combustion Head is a patented feature which, when combined with varying nozzle angles, makes it possible to fit the flame to the particular size and shape of any combustion chamber in ordinary use. This provides a flexibility in flame shape obtainable in no other burner. The "Econ-O-flex" Combustion Head results in the highest combustion efficiency ever produced in an oil burner and fuel savings which make "Gilbarco" just as outstanding in economy of operation as in other Gilbarco exclusive features.

SPECIFICATIONS—GILBARCO OIL BURNERS

Note: The specifications in the paragraphs immediately below are common to all A.C. models of the Gilbarco Oil Burners. Specifications and characteristics which differ in the various models are listed in the table at the bottom of this page. GILBERT & BARKER MFG. CO. reserves the right to change these specifications without notice or liability.

Finish. Attractively finished in black and red gloss enamel on smoothly polished metal surfaces, making for easy dust removal.

Type and Design. Pressure atomizing type, fully automatic. Compact unified construction. Design permits performance of practically any mechanical service without disturbing setting.

Adaptability. Can be used in steam, hot water, vapor or hot air systems, with round, rectangular or square fire boxes.

Flexibility of Firing Rate. Each model is easily adjusted to burn the exact amount of oil required to properly heat the boiler or furnace.

Flexibility of Flame Shape. With the patented unique Econ-O-flex Combustion Head, together with the proper nozzle, the flame can be made to fit the particular shape of the combustion chamber involved. This head is largely responsible for the unusually efficient and trouble-free operation of the Burner.

Air Supply and Control. Air is supplied by a low pressure fan, mounted directly on motor shaft. Special "Gilbarco" Air Control created by Gilbert & Barker provides positive means for adjusting the air for proper combustion.

Patented Nozzle Tube Assembly. Weighs from five to eight times as much as competitive assemblies, which prevents radiant heat from the fire box from raising the nozzle temperature to the point where any oil remaining in the nozzle will be carbonized.

Motor. Long hour motor, specially designed for high efficiency and low temperature rise, with built-in thermal overload protection.

Pump. Internal gear type, direct driven from motor shaft through flexible coupling.

Pressure Regulating Valve. Adjustment provided for accurate setting of oil pressure for proper atomization. Valve also acts as positive oil cut-off preventing "drooling" at nozzle.

Oil Filter. Each model is equipped with an oil filter of proper size, which prevents dirt passing through to working parts of Burner.

Electrodes. Electrodes, made of special alloy, highly resistant to heat and erosion, are strongly mounted in Isolantite insulators, which are well protected from heat or damage. Electrode tips are cooled by air stream and do not come in contact with oil spray, thus precluding fouling.

Radio Filter. Prevents operation of Burner from interfering with radio reception.

Controls. Special Gilbarco Low voltage controls of high quality are provided. Completely electric and fully automatic, assuring fool-proof and safe operation.

Fuel. Will give reliable and satisfactory operation on the various grades of Domestic heating oils now funrished. These burners are listed with the National Board of Fire Underwriters for use with either No. 2 or No. 3 oil as defined by the Commercial Standards of the Department of Commerce CS 12-35.

Approvals. Underwriters' Laboratories, Inc., Mass. State Dept. of Public Safety; N. Y. Board of Standards and Appeals; State of Connecticut; City Fire Marshal, Philadelphia; Hydro Electric of Canada.

SPECIFICATIONS OF AND CAPACITIES FOR 60 CYCLE MOTOR BURNERS

(Write to us for capacities of D.C. and odd cycle motor burners.)

MODEL NUMBER	GB0	GB1	GB2	GB3	GB4	GB5
Max. Oil Capacity per Hour, U. S. Gallons	2.6	3.00	6.00	11.00	15.00	25.00
Total Steam Radiation (Radiation, piping, and pickup)	970	1150	2250	4400	6000	10,000
Total Hot Water Radiation (Radiation, piping, and pickup)	1550	1840	3650	7050	9600	16,000
Nozzle	Single	Single	Single	Twin	Twin	Twin
Ignition (Continuous Electric)	Single transformer	Single transformer	Single transformer	Single transformer	Two sets electrodes two transformers	Two sets electrodes two transformers
Motor (size)	1/12 H. P.	1/12 H. P.	1/8 H. P.	1/6 H. P.	1/4 H. P.	1/3 H. P.
Controls	Stack mounted Protectorelay and Thermostat	Stack mounted Protectorelay and Thermostat	Stack mounted Protectorelay and Thermostat	Protectorelay Protectostat and Thermostat	Protectorelay Protectostat and Thermostat	Protectorelay Protectostat and Thermostat
R. P. M.	1750	1750	1750	1750	1750	1750

DIMENSIONS

MODEL NUMBER	GB0	GB1	GB2	GB3	GB4	GB5
Overall burner length* (standard model)	18 7/8"	19 3/16"	34 3/16"	31"	36 7/8"	36 7/8"
Overall burner length* (extended model)	27 1/2"	27 13/16"	42 1/16"	42 1/2"	47 3/8"	47 3/8"
Service clearance required at rear of burner (standard)	18"	18"	4 3/4"	6"	6"	6"
Service clearance required at rear of burner (extended)	26"	26"	4 3/4"	6"	6"	6"
Width center line to motor side	8 1/8"	7 7/8"	8 3/4"	9 1/8"	11 1/4"	11 1/4"
Width center line to pump side	10 1/8"	10 3/8"	8 1/4"	13"†	15 3/4"†	15 3/4"†
Overall width	18 1/4"	18 1/4"	17"	22 1/8"†	27"†	27"†
Air tube diameter	4 3/8"	4 3/4"	5 11/16"	6 3/4"	8 1/2"	8 1/2"
Minimum height floor to center line air tube	7 5/8"	7 7/8"	7 1/8"	7 1/8"	13 1/8"	13 1/8"
Maximum height floor to center line air tube	9 5/8"	10 1/4"	11 5/8"	9 3/8"	16 3/8"	16 3/8"
Minimum overall height	17 1/8"	18 3/16"	16"	16"	23 7/8"	23 7/8"
Maximum overall height	19 1/8"	20 9/16"	20 1/2"	18 1/4"	27 1/8"	27 1/8"

*In figuring for external clearances allow 4 1/2" for entrance of air tube into refractory wall.
†Can be reduced by 4" if oil filter is mounted remotely.

GILBARCO PORTABLE AIR CONDITIONER

CLEANS, COOLS, DEHUMIDIFIES AND CIRCULATES PURE VITALIZING AIR THROUGHOUT THE SUMMER SEASON WHEN CONDITIONING IS SO IMPORTANT TO REFRESHING COMFORT

SPECIFICATIONS

Gilbarco Portable Air Conditioner

Gilbarco Portable Air Conditioners set a standard for Advanced Design, Rugged Construction, and Manufacturing Precision. Every Gilbarco Unit passes a minute inspection of every part and every assembly of parts . . . is run-in under actual load conditions for a period of 24 hours before leaving the factory.

COOLING MACHINE. Heavy Duty 2 cylinder type Compressor; built to highest precision standards. Includes special suction and discharge valves, compact positive shaft seal, special oiler, plus the engineering and manufacturing refinements which show their merits by actual history.

MOTOR. Long hour duty, ample capactiy, high starting torque; furnished for variety of current characteristics.

DRIVE. Double V-belts insure quiet operation and reduce slippage and friction losses. Convenient adjustment for belt tightening.

CONDENSER-AIR FAN. Specially selected for quiet and efficient operation. Direct connected to shaft of motor driving Cooling Machine. Fan is of centrifugal type, designed to deliver large volumes of air under sufficient pressure and velocity to assure proper condensing effect.

CONDENSER AND COOLING COILS. Uniformly corrugated copper fins are bonded with metal to 1/2 inch copper tubes. Tubes are staggered on close diagonal spacing. Double circuit to prevent pressure drop. Six corrugated fins per inch give (a) more surface, (b) increased turbulence for heat removal, and (c) in the Cooling Coil better moisture pick-up. Turbulence further increased by extended fin spacers. Coil specially dip coated. As efficient and effective as any ever made for this service.

ROOM-AIR FAN. Specially designed for quiet and efficient operation. Direct connected to fractional H.P. motor. Fan is of centrifugal type, designed to deliver large volumes of air.

AIR FILTER. One Special cellular filter cleans both the room air and the fresh outside air. Large area . . . Low resistance . . . Easy to replace.

MANUAL CONTROL SYSTEM. Finger tip controls to the right and left of the special Gilbarco grille.

APPEARANCE. Attractive and harmonious design.

BALANCED COMFORT. The dehumidifying and cooling capacities are so engineered and balanced, that the temperature and relative humidity of the room air will fluctuate in a relation to each other during the cooling season to give comfortable room conditions.

MOTOR PROTECTION. The motor is protected by a built-in protective relay which cuts out if the motor gets too hot and cuts in again when conditions are normal. (Direct current motors have manual reset.)

LUBRICATION. Five accessible lubrication points require attention only at infrequent intervals. An oil sight glass located in the side of the compressor crankcase permits quick inspection of the amount of oil in the crankcase.



GB90

ROOM-AIR VENTILATOR. Simply by moving the Room-Air Exhaust control, the entire volume of room air will be thoroughly and quickly exhausted to the outside. This feature is of great value after heavy smoking or excessive occupancy.

SOUND ISOLATION. The compressor and its motor are mounted as low as possible in the cabinet and are isolated from the base by effective vibration dampeners. Other moving parts are also mounted as close to the base as possible. The entire unit has been designed to reduce the operating sound level to a minimum.

INSTALLATION. Located in front of a convenient window, the conditioner is connected to the outdoor air by means of one Window Adapter, which combines the Fresh-Air inlet, Condenser-Air suction and Condenser-Air discharge ducts. Connected to a suitable electric power supply, the unit is ready for operation. No water or drain connections are necessary.

WINDOW ADAPTER. The weather-tight window adapter may be quickly and easily adjusted to windows varying from 27″ to 48″ wide with sills 26″ to 38″ high.

WATER COOLED UNITS. For localities where climate or installation conditions indicate a need for slightly larger capacity, water cooled condensing units are available.

CAPACITIES AND DIMENSIONS

Portable Gilbarco Conditioners

Capacity — B.T.U. per hour	9400
Motor — Compressor	3/4 H.P.
Motor—Room-Air Circulating Fan	1/20 H.P.
Watts Consumed — Average Total per hour	1230

Electric Current Characteristics—
A.C., 60 Cycle, Single Phase, 110, 220 or 208 Volts
A.C., 50 Cycle, Single Phase, 110 or 220 Volts
Direct Current, 115 or 230 Volts

Room-Air Circulation	310 C.F.M.
Fresh Outside Air for Ventilation	60 C.F.M.
Room-Air Ventilation	315 C.F.M.

Dimensions — Decorative Casing
39-3/4″ long x 15-5/8″ wide x 41-1/4″ high

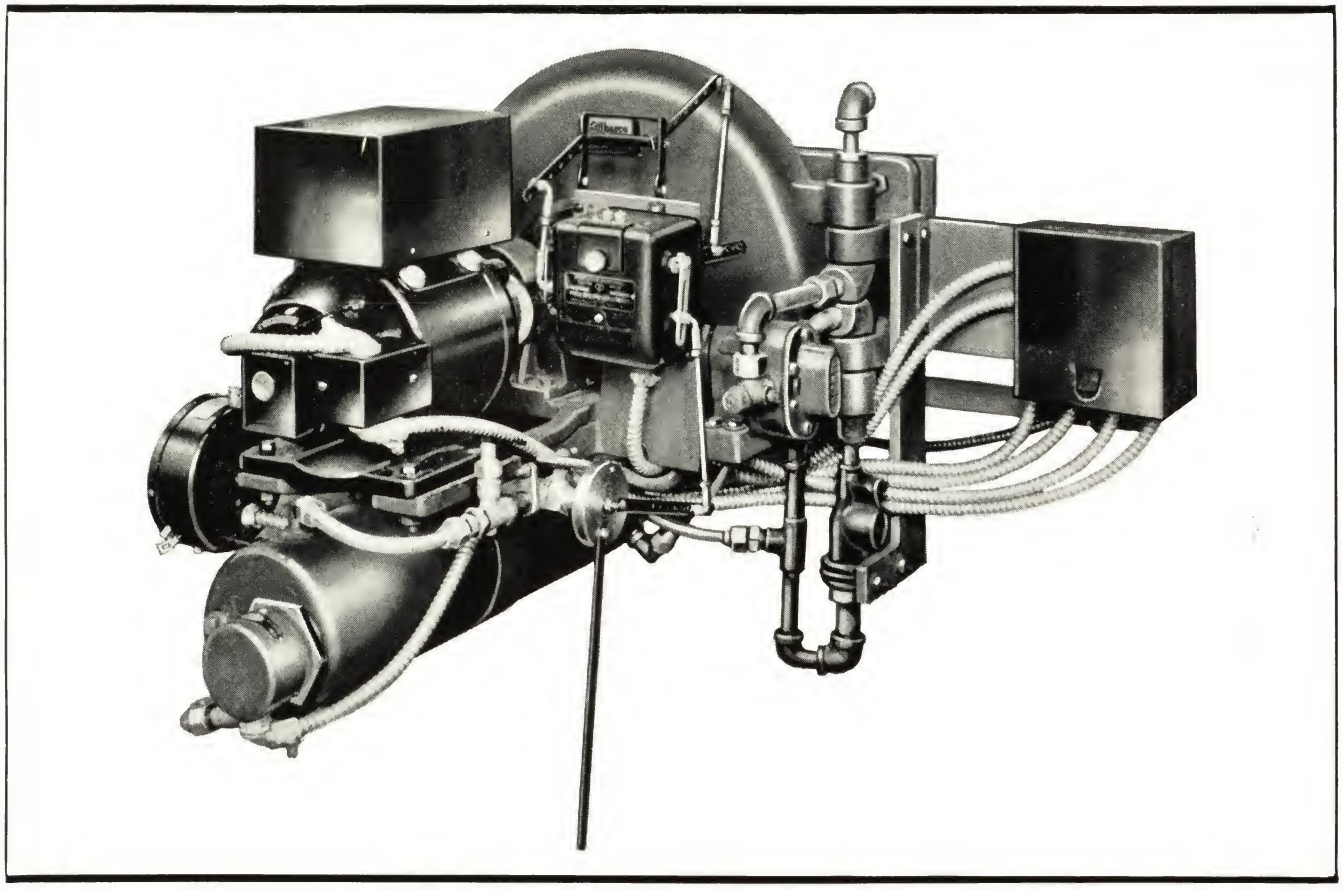
Dimensions — Standard Window Adapter
Fits Windows from 27″ to 48″ wide
Fits Sills from 26″ to 38″ high
Sash to be raised 8″

Net Weight — Unit with Casing	500 lbs.
Shipping Weight (approximately)	710 lbs.

. . . GILBARCO HEAVY OIL BURNERS

FOR HEATING, POWER AND INDUSTRIAL APPLICATION

Complete Range of Models and Capacities



HORIZONTAL ROTARY CUP BURNERS

for Economical, Unfailing Performance in

HOTELS · APARTMENTS · SCHOOLS · CHURCHES · FACTORIES · DAIRIES · PUBLIC BUILDINGS · ETC.

The Burner. Designed to burn No. 5 and No. 6 commercial fuel oils within the limits of the specifications as shown in following table. Effective and positive interlocking of the relative volumes of oil and air assures efficient operation throughout the burner capacity range.

Type Burner	Grade of Oil	Flash Point		Max. % Water & Sediment	Pour Point Max.	Max. Viscosity
		Min.	Max.			
Manual or Semi-Auto.	No. 5	150		1.0	15° F.	500 Sec. Saybolt Univ. @ 100° F.
Automatic	No. 5	150		1.0	15° F.	300 Sec. Saybolt Univ. @ 100° F.
Manual or Semi-Auto.	No. 6	150		2.0	15° F.	300 Sec. Saybolt Furol @ 122° F.
Automatic	No. 6	150		2.0	15° F.	150 Sec. Saybolt Furol @ 122° F.

NOTE: When the viscosity of No. 5 oil exceeds above, pre-heating equipment should be used.

Three Types of Operation. Manual, Semi-Automatic, or Automatic. Any one of the three methods of operation may be High-Low-Flame controlled. The burner is also designed without pump, for application where oil is fed to the burner by gravity or separate pump set.

Oil Heaters for preheating the oil are of standard water or steam heating design. In cases where hot water or steam are not available (as on cold starting periods) a special electric heater element with suitable heater tank is furnished. Return line tempering steam heaters are also available.

Operation. All models are hinged-mounted enabling them to be swung to an open position. The hinges are designed to permit the use of rigid type pipe connections for the oil supply and return.

From the storage tank fuel oil is drawn through the strainer by the pump and delivered through the oil control valves, pressure relief valve and returned to the storage tank. The relief valve functions to create sufficient pressure to assure uniform oil feed to the oil cup.

The oil is discharged off the edge of the revolving oil cup at high velocity causing proper atomization, then mixed with the proper proportions of air delivered from the air nozzle which encloses the oil cup.

The air supplied by the fan or primary air is supplemented by secondary air introduced through suitable openings in the combustion chamber by the influence of the draft.

The oil control valve provides for the regulation of the quantity of oil burned, and the primary air adjustment is made by means of an air shutter.

Synchronization of air and oil or High-Low-Flame control is effected by means of an adjustable linkage which may be actuated by a suitable regulator by steam pressure, water temperature, or electricity.

The secondary air supply adjustment should be synchronized with the oil and primary air.

Capacities of the various models are of such a range that any requirement can be met.

PARTIAL LIST OF MANY G&B OIL BURNER INSTALLATIONS

PUBLIC AND COMMERCIAL BUILDINGS

Central Maine Power Co.	office, Augusta, Maine
Belfast Library	Belfast, Maine
Barnstable Court House	Barnstable, Mass.
Laboratory, Dr. N. B. Nesbett	Belmont, Mass.
American Red Cross	Boston, Mass.
Eastern S.S. Co., India Wharf	Boston, Mass.
McLeod Hospital	Boston, Mass.
Perry Furniture Co.	Boston. Mass.
N. B. Smith Bldg.	Boston, Mass.
Brimfield Library	Brimfield, Mass.
Chas. McGregor	Brookline, Mass.
Absorpine Water Co.	Detroit, Mich.
Ford Motor Co.	Detroit, Mich.
Kroger Grocery & Baking Co.	Detroit, Mich.
Belle Isle Light House	Belle Isle, Mich.
Michigan Mut. Liability Ins. Co.	Detroit, Mich.
Kesbec Service Station	Bronx, N. Y.
New England Tel. & Tel. Co.	Wareham, Mass.
Strand Theatre	Haverhill, Mass.
Keystone Tire Co.	Philadelphia, Pa.
Dutch Cake Bakery	Somerville, Mass.
Phila. & Western R.R. Terminal	Upper Darby, Pa.
Easthampton Library	Easthampton, Mass.
Orpheum Theatre	Foxboro, Mass.
Home for the Aged	Framingham, Mass.
Franklin City Court House	Greenfield, Mass.
Publix-Lawler Theatre	Greenfield, Mass.
Melrose Hotel	Harwichport, Mass.
Kensington Farms	Hatchbille, Mass.
Colonial Theatre	Haverhill, Mass.
N. E. Telephone Co. Bldg.	Holyoke, Mass.
Reno's Garage	Hull, Mass.
Huntington Inn	Huntington, Mass.
Cape Cod Hospital	Hyannis, Mass.
Madison Theatre	Jamaica Plains, Mass.
Morehouse Baking Co.	Lawrence, Mass.
New England Tel. & Tel. Co.	Malden, Mass.
W. B. Z. Transmitting Station	Millis, Mass.
Suffolk Square Garage	Malden, Mass.
Hampshire County Ct. Hse.	Northampton, Mass.
C. of C. Bldg.	Salem, Mass.
Town Hall	Scituate, Mass.
New England Tel. & Tel. Co.	Somerville, Mass.
Plymouth County Hospital	St. Hanson, Mass.
Home for Aged Men	Springfield, Mass.
Turners Falls Power & Elec. Co.	Turners Falls, Mass.
Pumping Station	Walpole, Mass.
Post Office Bldg.	Westboro, Mass.
Strand Theatre	Westboro. Mass.
Quaboag Hotel	West Warren, Mass.
American Antiquarian Society	Worcester, Mass.
Harvard Private Hospital	Worcester, Mass.
Washington Apartments	Providence, R. I.
Home for the Aged	Providence, R. I.
Beacon Oil Co.	E. Providence, R. I.
The Park Inn	Danielson, Conn.
Day Kimball Hospital	Putnam, Conn.
Dr. Vosburgh Hospital	Altamont, N. Y.
Alexander Dept. Store	Bronx, N. Y.
Kramer Realty Co.	Brooklyn, N. Y.
A. R. Olson Building Corp.	Brooklyn, N. Y.
Chappaqua Library	Chappaqua, N. Y.
New Theatre	Hoosick Falls, N. Y.
Albea Court Aparts.	Larchmont, N. Y.
Kisco Lodge Hotel	Mt. Kisco, N. Y.
Riverview Hotel	Ossining, N. Y.
Triebol's Garage	Red Hook, N. Y.
DeBorah Power House	Troy, N. Y.
U. S. Hotel	Westbury, N. Y.
Dellwood Dairy	Yonkers, N. Y.
Garden City Post Office	Garden City, L. I., N. Y.
Le Rose Shops	Hempstead, L. I., N. Y.
Job Haines Old Folks Home	Bloomfield, N. J.
Municipal Bldg.	Butler, N. J.
W. B. O. Broadcasting Station	Carlstad, N. J.
C. S. Investment Co., Inc.	Elizabeth, N. J.
Monmouth County Court House	Freehold, N. J.
Newark Terminal & Transport. Co.	Newark, N. J.
S. O. of N. J. Hangar, Newark Airp't	Newark, N. J.
Cooper Apartments	Rutherford, N. J.
Reynolds Research Lab., Inc.	So. Kearney, N. J.
Nevins Bros. Dept. Store	Trenton, N. J.
Rutland County Court House	Rutland, Vt.
Northeast Realty Corp.	Baltimore, Md.
Rukert Terminal Corp.	Baltimore, Md.
Public Health Centre	Catonville, Md.
The Country Store	Washington, D. C.
Washington Hospital "C"	Washington, D. C.
New York Decorating Co.	Washington, D. C.
Pharmaceutical Building	Washington, D. C.
Real Title Company	Clarendon, Va.

CHURCHES AND RELIGIOUS INSTITUTIONS

St. Francis Church	Hollowell, Maine
St. Joseph Convent	Lewiston, Maine
Catholic Church	Old Town, Maine
First Baptist Church	Agawam, Mass.
Holy Redeemer Rectory	Boston, Mass.
St. Luke's Church	Rochester, N. Y.
Holy Family Church	Detroit, Mich.
Mt. Carmel Church	Detroit, Mich.
Our Lady of Rosary	Detroit, Mich.
St. Jerome's Church	Detroit, Mich.
St. Margaret Church	Bronx. N. Y.
St. Patrick's Chnrch	Wareham, Mass.
St. Matthews Rectory	Limerick. Maine
Presbyterian Church	Antrim, N. H.
St. Patrick Church	Fiskdale, Mass.
Christ Episcopal Church	Westerly, R. I.
St. Barnabas Church	Falmouth, Mass.
St. Patrick's Convent	Brockton, Mass.
Immaculate Conception Chnrch	Cambridge, Mass.
Immaculate Conception Rectory	Cambridge, Mass.
St. Stanislans Rectory	Chelsea, Mass.
Doolittle Home Universities	Foxboro, Mass.
Methodist Church	Greenfield, Mass.
St. Joseph's Church	Leicester, Mass.
Elliot Congregational Church	Newton, Mass.
First Congregational Church	Norwood, Mass.
St. Ann's Church	Quincy, Mass.
Bethany Congregational Church	Rockhill, Mass.
Baptist Church	Rockland, Mass.
St. Monica's Church	So. Boston, Mass.
Notre Dame Church	Southbridge, Mass.
Colonial Church	So. Hadley, Mass.
Our Lady of Sacred Heart	Springfield, Mass.
St. Mary's Church	Ware, Mass.
Sacred Heart Rectory	Watertown, Mass.
First Church of Christ Scientist	Worcester, Mass.
Immaculate Conception Hall	Providence, R. I.
First Congregational Church	Wallingford, Conn.
Unitarian Retreat	So. Woodstock, Conn.
Temple Beth El Jacob	Albany, N. Y.
St. Paul's Church	Brooklyn, N. Y.
Immaculate Conception Church	Corinth, N. Y.
St. Bartholomew Church	Hohokus, N. J.
Rose Hill Cemetery	Linden, N. J.
St. Anthony Church Rectory	Northvale, N. J.
St. Boniventure's Church	Paterson, N. J.
Bethany Baptist Church	Washington, D. C.
St. Mary's Star of the Sea	Baltimore, Md.
Nativity Mission	Taoma Park, Md.
St. Lukes Church	Pawtucket, R. I.

BANKS

State Trust Company	Augusta, Maine
Augusta Trust Company	Boothbay Harbor, Maine
Augusta Trust Company	Gardiner, Maine
So. Paris Savings Bank	So. Paris, Maine
Albany Savings Bank	Rochester, N. Y.
Emigrant Ind. Savings Bank	Bronx, N. Y.
Commercial St. Bank	Detroit, Mich.
Mechanics Bank	New Haven, Conn.
Springfield Five Cent Sav. Bank	Springfield, Mass.
National Shawmut Bank	Charlestown, Mass.
Conway National Bank	Conway, Mass.
Dedham Institute of Savings	Dedham, Mass.
Falmouth National Bank	Norwood, Mass.
First National Bank	Foxboro, Mass.
Middleboro Savings Bank	Middleboro, Mass.
Home Savings Bank	Newton, Mass.
Union Trust Company	Springfield, Mass.
Woburn Five Cent Savings	Woburn, Mass.
Gen. Industrial Bank	New Haven, Conn.
Chase National Bank	New York. N. Y.
Bank of Utica	Rockville Center, N. Y.
Union Bank & Trnst Co.	Oxford, N. C.
Merchants & Mechanics Bank	Norfolk, Va.

SCHOOLS

Kent's Hill Seminary	Kent's Hill, Maine
Emerson School for Boys	Exeter, N. H.
Wareham High School	Wareham, Mass.
Bedford Hills High School	Bedford Hills, N. Y.
Valley Forge Military Academy	Wayne, Pa.
Great Neck Prep.	Nassau, N. Y.
Barnstable Grade School	Marstons Mills, Mass.
Boston University	Boston, Mass.
Holy Trinity School	Greenfield. Mass.
Millis High School	Millis, Mass.
Plympton School	Waltham, Mass.
Chicopee School Adm. Bldg.	Chicopee, Mass.
St. Charles Parochial School	Woburn, Mass.
Woods Hole School	Woods Hole, Mass.
R. I. College of Pharmacy	Providence, R. I.
Rectory School	Pomfret, Conn.
Public School No. 16	Albany, N. Y.
LaSelette Seminary	Altamont, N. Y.
Public School No. 5	Walden, N. Y.
Loyola College	Baltimore, Md.
St. Josephs School	Fullerton, Md.

CLUB HOUSES

Masonic Bldg.	Old Town, Maine
Midvale Country Club	Rochester, N. Y.
Federation of Women's Clubs	Detroit, Mich.
Odd Fellows Hall	Wareham, Mass.
B. P. O. Elks	Holyoke, Mass.
I. O. O. F.	Holyoke, Mass.
Lawrence Boys' Club	Lawrence, Mass.
Oyster Harbors Club	Osterville, Mass.
Falcon Lair Club	Palmer, Mass.
American Legion, Perkins Post	So. Boston, Mass.
St. Vincents Girls Club	So. Boston, Mass.
Metacomet Golf Club	E. Providence, R. I.
The Newman Club	Albany, N. Y.
Carmel Country Club	Carmel, N. Y.
Sailors Snug Harbor	New York, N. Y.
Knights of Columbus Hall	Bayonne, N. J.
Ft. Lee Athletic Club	Ft. Lee, N. J.
Rolling Road Golf Club	Baltimore, Md.
Knights of Columbus	Rutland, Vt.

POLICE AND FIRE STATIONS

Central Fire Station	Cohassett, Mass.
Onset Fire Dept.	Onset, Mass.
Greenfield Fire Station	Greenfield, Mass.
Needham Fire Station	Needham, Mass.
Osterville Fire House	Osterville, Mass.
Dist. Comm. Police Station	Revere, Mass.
Scituate Fire Station Hose 4	Scituate, Mass.
W. Springfield Police Station	W. Springfield, Mass.
Kearney Fire Alarm Hdq.	Kearny, N. J.

FOREIGN INSTALLATIONS

Presidential Residence	Buenos Aires, Argentina
Hotel Nogaro	Mar del Plata, Argentina
La Cigarette Orientale	Brussels, Belgium
American Petroleum Co.	Liege, Belgium
Hradčin Castle	Prague, Czechoslovakia
Vestkustons Petroleum	Aktiebstag, Gotenborg, Sweden
Automobilforhandler	Skive, Denmark
Credit Lyonnais	Lyons, France
Agence Havas	Paris, France
Societa Italo-Americana	Genoa, Italy
S. A. R. de Telefoane.	Bucharest, Roumania
H. R. H. Prince Nicolae	Bucharest, Roumania
Mission Gymnasium	Nuden, Switzerland
Hotel Posthouse	Celerina, Switzerland
Hotel Erika	Lugano, Switzerland
Prefecture D'Oran	Oran, Algeria
Societe Michelin	Algiers, Algeria
Institut Pasteur	Tunis, Tunisie
Cathedral at Trondhjem	Norway

"Gilbarco" Automatic Oil Heating—Air Conditioning

Sold and Installed by

HOLLAND FURNACE COMPANY

Manufacturers and Installers of Holland Forced Air Conditioning Systems, and Holland Vaporaire Heating Systems, Including Automatic Coal Burning, Gas Burning and Oil Burning Equipment

HOLLAND, MICHIGAN

The Company

The HOLLAND FURNACE COMPANY, established in 1906, pioneered in warm air heating for the home—just as it has pioneered in home air conditioning. It is today the world's largest installer of home heating and air conditioning systems.

Its 33 years' of steady, substantial growth is undoubtedly due to a rigid policy that every installation must be right in every respect.

Sales Offices

There are over 425 direct factory branches of the HOLLAND FURNACE COMPANY in the United States. Manufacture, sales, installations, and service are directly supervised with HOLLAND assuming all responsibility.

LOCAL BRANCH OFFICE





Trained Heating Men

Every Holland branch has one or more thoroughly qualified heating men with whom the architect may consult. His practical experience in the field, combined with the thorough training given, makes him thoroughly qualified in quoting Holland products.

Architectural Service

Direct factory supervision relieves the architect of the burden of responsibility. With Holland assuming the responsibility, and co-operating with the architect at the time of construction, he is assured of a properly installed heating system.

WHAT THE HOLLAND SYSTEM DOES FOR THE HOME OWNER

Leading health authorities the world over acknowledge that of all the different types of heating devices there is none more suitable for the home than a scientifically designed heating system, circulating cleaned, humified and warmed air. Many State laws specifically demand that schools, churches and auditoriums be heated by this type of system. Such a system circulates and changes the air in all rooms several times each hour. It moistens the air and provides uniform, moderate warmth in every nook and corner of every room. When such a system is employed there is little variation in the degree of warmth at floor line, breathing line or ceiling. Heat alone is not comfort. When the air you breathe is artificially warmed, it must also be scientifically circulated, cleaned and humified.

Holland provides a refreshing, stimulating indoor atmosphere by properly warming and humidifying the air and keeping it in constant circulation. The combination of these essential elements produces an ideally healthful condition in the home.

HOLLAND VAPORAIRE HEATING SYSTEM

The Holland Vaporaire Heating System is especially adapted for the home, church, school and such other buildings where healthful heat is desired.

Specifications

(a) It burns all types of fuel—gas, oil, coke, coal—efficiently; (b) one may burn either bituminous or anthracite, including the small pea and buckwheat sizes, without changing grates; (c) low maintenance and servicing cost; (d) economical in the use of fuel; (e) efficient heat transfer from the fuel to the circulated air; (f) provides healthful heat because it furnishes proper humidity, circulation, and moderately warmed air; (g) prevents cold floor drafts; (h) simple to operate; (i) it is flexible and can be operated in accordance with outdoor weather conditions; (j) it provides even temperature throughout the home; (k) it may be converted into a fan forced air system or air-conditioning system; (l) guaranteed heating service.

Step-saving regulator or thermostat is operated from upstairs.

Vaporaire risers are covered with heavy fireproof asbestos.

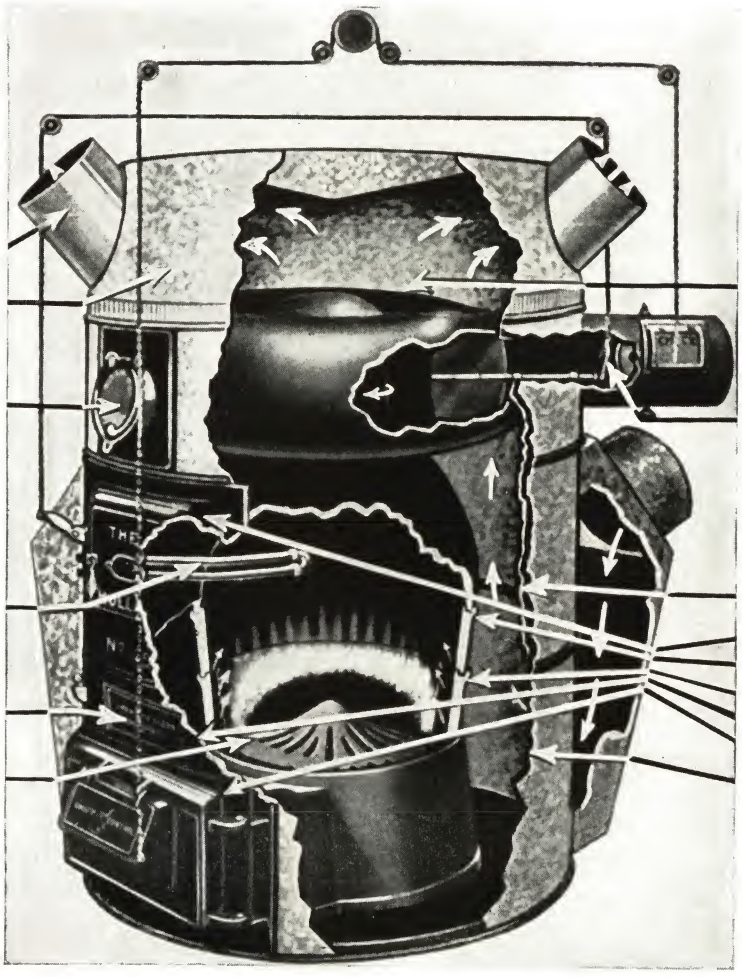
Heat distributor distributes conditioned air to all risers with less friction.

Clean-out door and safety valve.

Hot water for all household uses.

Holland's humidifier automatically keeps the air properly moistened.

The cone-shaped grate in combination with mixing celled primary combustion chamber keeps the fire against the outside walls.



Vaporaire risers are out of the way.

Holland's heat radiator is a one-piece casting with no bolts to expand or joints to leak.

Direct-indirect damper forces heat to make a complete circuit of the radiator.

Return air accelerators conserve basement room and increase circulation 30%.

Heat insulator keeps heat from escaping into basement.

Leakproof cup-joints. Tightly fitted and cemented joints prevent leaks.

Dustproof casing keeps out basement dirt.

CONSTRUCTION

Holland Furnaces—(a) Made of Hollandized iron, the highest grade of cast iron; (b) minimum number of sections; (c) constructed of non-corrosive materials; (d) are of durable construction for long serviceable life; (e) no leakage of combustible gases or smoke into the air-heating chamber; (f) cup joints are deep, and wide, to allow for proper expansion; (g) joints sealed with asbestos furnace cement made to our own specifications.

Furnace Base Plate—Cast in one piece with deep flange to allow proper sealing to ash pit. It is slightly concave in order to hold water for moistening of the ashes. Cup pressure joints prevent ash-dust entering the air heating chamber and distributing system.

Ash Pit—It is of sturdy construction. Deep, cast in one section, machined to fit over base.

Grate—(a) Is of circular design; (b) cast in one piece; (c) cone shaped to keep the fuel at the walls of fire pots; (d) operates on roller bearings; (e) narrow air slots prevent the smaller sizes of fuel dropping into the ash pit.

Fire Pot—Made in two sections to allow for expansion and contraction of the metal. The lower half is cast with funnel shaped air jets for injecting pre-heated air to unite with the combustibles. This feature alone is worth the slight additional cost.

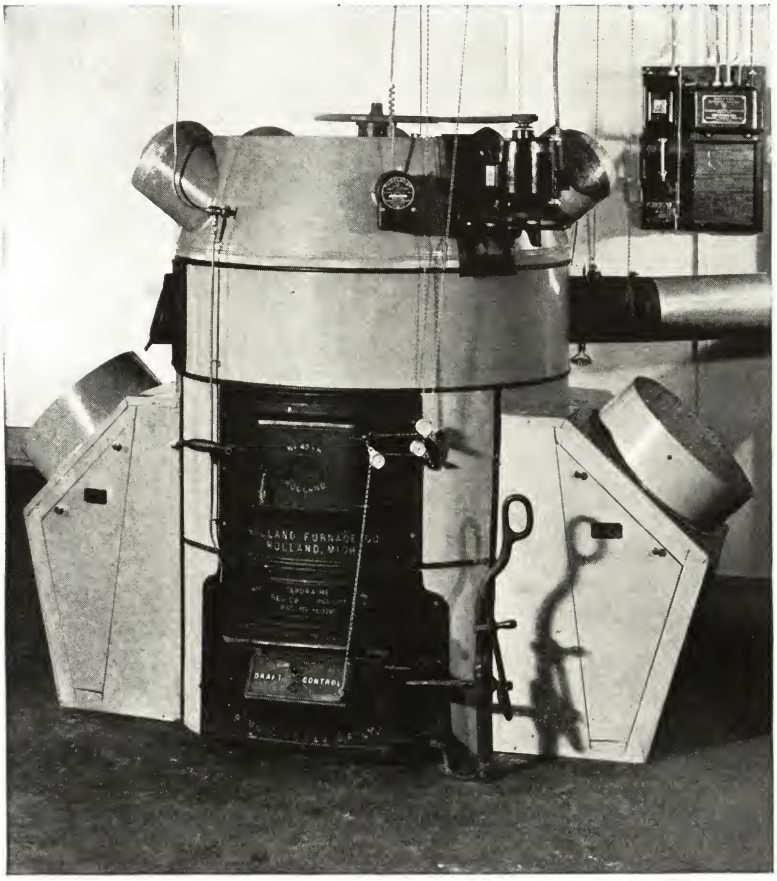
Combustion Chamber — (a) Is a one-piece, core-made casting; (b) it is of rigid construction, designed to provide the maximum of space to complete combustion. This insures against smoke and gas leakage into the air-heating chamber; further, it provides extra heat radiation.

Radiator—(a) Is a core-made casting constructed in one section throughout; (b) it is gas and smoke proof. (c) Because of its direct-indirect damper, it provides a complete fire travel the full length of the radiator before the hot gases enter the chimney flue, thus the maximum of heat transmitting surfaces are available.

Humidifier—(a) The Holland Humidifier is an integral part of every Holland Vaporaire Heating Unit. (b) It is hand-operated with a drip sight valve. (c) Assures constant flow of water to humidifier at all times. (d) Evaporates sufficient water to provide proper relative humidity. (e) An overflow outlet allows the surplus water to moisten the ashes which eliminates dust when cleaning the furnace.

HOLLAND TYPE "A" AIR CONDITIONER

Filtered Air—Automatically Controlled



A product of the HOLLAND FURNACE COMPANY, Holland's Type "A" Air Conditioner is an electrically powered circulator that forces air to every room, creating greater winter comfort and also a summer cooling effect. The air is filtered which results in greater cleanliness in the home.

(a) This equipment can be attached to any good warm air furnace with satisfactory results; (b) draws the cold air off the floor of the rooms and brings the warmer air down from the ceiling, thus the floors are always warm; (c) operates very quietly; (d) provides from four to six air changes per hour in each room heated; (e) increases over-all efficiency of the heating system; (f) reduces the heat transmission through leader pipes and furnace casing; (g) prevents overheated furnaces; (h) lowers fuel consumption.

HOLLAND FURNACE, WEIGHTS AND CAPACITIES

Furnace No.	Diam., fire-pot, in.	Diam., outer casing, in.	Over-all height, casing and hood, in.	Area of grate, sq. in.	Diam. of smoke pipe, in.	Wght. of castings and casings, lbs.	Net B.t.u delivery at registers hourly forced air	Piping capacity, sq. in.	Residence heating capacity, cu. ft. (aver.)
37-A	19	37	64	227	8	980	50,000	350	6,000
40-A	21	40	65	276	8	1085	65,000	475	9,000
45-A	24	45	66½	355	8	1245	85,000	600	14,000
50-A	27	50	67½	462	9	1500	120,000	750	22,000
60-A	31	60	69½	695	9	2000	175,000	1000	32,000
24-Steel	24	45	66½	314	9	925	85,000	570	14,000
27-Steel	27	50	67½	415	9	1070	105,000	700	22,000

HOLLAND TYPE "B" AIR CONDITIONER

The entire heating system with the "B" air conditioner may be placed in the basement or heater room. Due to the compact design it is possible to utilize the remaining part of the basement for recreational purposes.

The air conditioner draws the cold air from all the principal rooms of the residence, filters it, and delivers the warmed and humidified air to the rooms by means of concealed ducts.

The blower unit itself is located at the rear of the furnace with the silent balanced fan wheel, motor, and filters. The motor is suspended in resilient mountings, providing for quiet operation. The blower and motor frames are supported on cork mountings. Handy service doors provide for ready entrance for oiling moving parts and the removal of filters.



With Holland's controls, the entire system is automatic. During the heating season, the control operates the draft as well as the air conditioner motor. The home may be left for several days at a time and entirely in charge of the automatic controls which will keep the room temperature at a predetermined thermostatic setting regardless whether the furnace is oil, gas, or stoker fired.

During the summer months, the blower unit may be operated at a higher rate of speed. Circulating the air at this higher rate provides cooling effect, creating greater comfort.

HOLLAND FURNACE COMPANY

HOLLAND AUTOMATIC FURNACE AIR CONDITIONER

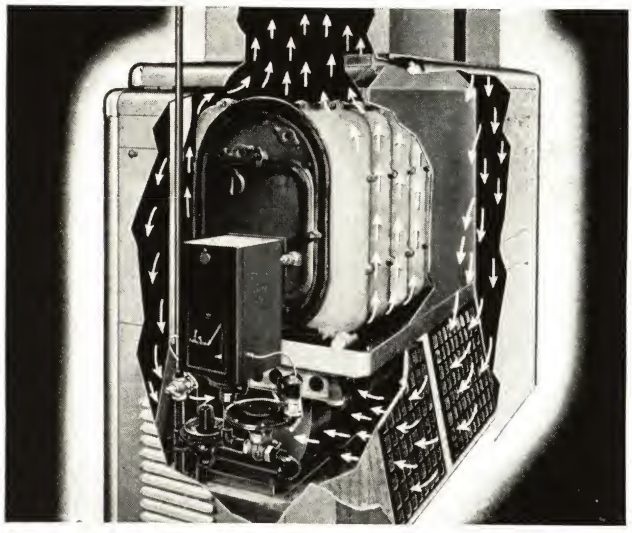
FOR OIL OR GAS



In this attractive cabinet Holland engineers have combined an entirely new warm air furnace and air conditioner with automatic heating equipment using gas or oil as fuel. The burners for the two fuels are instantly interchangeable so that the home owner is not limited to the one originally chosen should the cost of that fuel become exorbitantly high.

Incorporated in this compact unit are many improvements for safety, silence, and economy. The entire heat transfer medium is made of Hollandized cast iron, and because of its unique heat-storing construction, all possibility of "cold 70" or alternating hot and cold periods is eliminated. Low operating costs are being found by thousands of users.

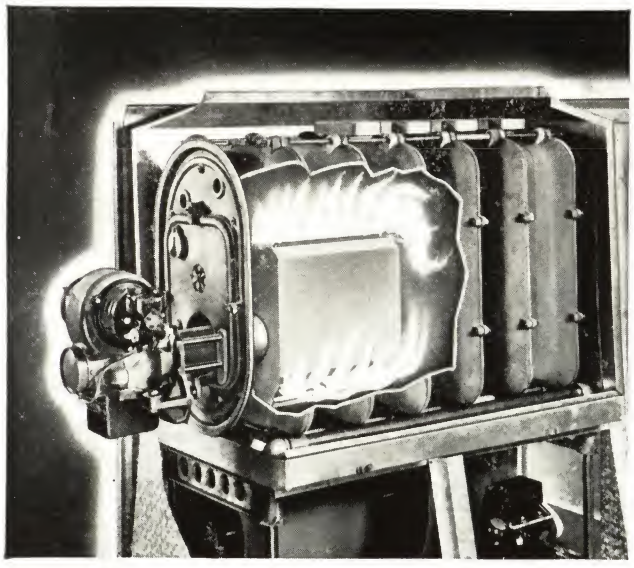
HOLLAND AUTOMATIC FURNACE AIR CONDITIONER



Holland Atmospheric Gas Burner applied to the Automatic Furnace Air Conditioner

Each unit employs two separate casings, one within the other. Cool air from the rooms is drawn down between the casings under suction, eliminating any outward leakage. The air is preheated by contact with the inner casing, and passed through a large filter area to assure thorough removal of dirt.

Twin blowers distribute the air evenly over the heating surface and at the same time serve to insulate the unit from the floor, thus eliminating the heat loss found in ordinary furnaces.



Holland Oil Burner applied to the Automatic Furnace Air Conditioner

Although extremely compact, this unit has more heating surface than many larger ones due to the hollow ribs. Every square inch, moreover, is active heating surface, radiating warmth only to the air going into the rooms. A special adaptation of the Holland Cascade Humidifier avoids the dangers of excessively dry air by supplying ample moisture at all times.

The new type oil burner combustion chamber heats instantly, giving immediate maximum combustion efficiency. It is constructed of a high temperature metal, and makes obsolete the ordinary brick refractory which insulates the flame from the heating surfaces.

UNIT SPECIFICATIONS

Unit Number (Gas or Oil)	440	545	650	760
Capacity—B.t.u./hr. at registers	85,000	115,000	145,000	180,000
Approximate heating capacity—cubic feet	15,000	21,000	28,000	34,000
*C.f.m. delivery at ½-in. s.p.	1,579	1,900	2,256	3,158
Motor horsepower	¼	⅓	⅓	½
Motor voltage	110	110	110	110-220
Smokepipe size, inches	8	8	8	8
Minimum chimney size, inches	8½ x 8½	8½ x 8½	8½ x 13	8½ x 13
Overall length, inches	65¾	73	80½	88
Overall width, inches	41	45	45	45
Minimum basement depth, inches	80	80	80	80
Minimum clearance at rear of unit, inches	24	24	24	24

* Variable speed motor pulley may be adjusted to meet installation requirements.

HOLLAND OIL BURNER—TYPE CG-1

The Holland Oil Burner, Type CG-1 may be installed in most domestic warm air, hot water or steam systems.



MECHANICAL DESCRIPTION

Pump—Gear type, self-lubricating. 20-gallon capacity, vacuum pull 25 inches at 100-lb. pressure.

Motor—⅙ hp., 1145 r.p.m. direct drive to fan and pump.

Pressure Cut-off Valve—Adjusted to close at 20% decrease in operating pressure. Prevents overflow of oil into combustion chamber.

Ignition Transformer—10,000 volts operating only when burner starts.

Current Requirements—110 volt, 60 cycle standard.

Oil Specifications—Tested for A.O.B.A. No. 3 light. Burns No. 1 or No. 2 in absence of No. 3.

Combustion Chamber—Special Holland pre-cast refractory assuring maximum operating efficiency.

Controls—Protect against ignition, flame, or power failure; room thermostat regulates house temperature; furnace hood control prevents overheating of heat generator.

Approval—CG-1 Oil Burner carries the Underwriters' Label. Also approved by New York Board of Standards and various cities requiring approval.

HOLLAND BITUMINOUS COAL BURNER



The Holland Bituminous Coal Burner may be installed in most domestic heat generating systems employing warm air, hot water, or steam as the heat transfer medium.

MECHANICAL DESCRIPTION

Sizes—Available in capacities of 20, 30, and 40 lb. per hour. Each burner hopper has a 400-lb. fuel capacity.

Air Volume Control—Automatically regulates the amount of air in accordance with condition of fire and fuel rate. Assures complete combustion, greater efficiency, and saving in fuel.

Shear Plate—Prevents foreign material in coal from damaging equipment. Obstructions easily removed without emptying hopper or backing out feed screw.

Smoke Eliminator—By-pass cast in retort admits air under pressure to feed screw, preventing hopper smoke.

Current Requirements—110 volt, 60 cycle standard.

Coal Specifications—Bituminous or semi-bituminous, top size one inch, low ash content, 2500° fusion temperature.

Combustion Chamber—Special Holland design built of high-temperature refractory material in the ashpit.

Controls—Completely automatic to insure safe, dependable operation. Includes a room thermostat, protective limit control, and time relay to maintain fire during mild weather.

HOLLAND ANTHRACITE COAL BURNER

Available in anthracite districts; equipped with automatic ash removal mechanism. Approved by Anthracite Industries, Inc.

SECTION 26

CONTINUED ⟶

KAUSTINE COMPANY, INC.

Engineers and Manufacturers of Winter Air Conditioning Equipment

MAIN OFFICE AND FACTORY

PERRY, N. Y.

Consult Telephone Directory for Local Offices
For Sewage Disposal Equipment, see File Index

KAUSTINE AIR FURNACE FOR WINTER AIR CONDITIONING
With Kaustine Modulated Velocity Control

System Operating on Constant Balanced Pressure

The Kaustine Modulated Air Furnace operates on constant balanced pressure assuring automatic, even and comfortable temperature. Cold drafts and overheating are eliminated by balanced pressure. Air is properly filtered and humidified.

The velocity of the air is regulated by the Kaustine Murdock Airflometers according to the temperature rising from the heating chamber. The airflometers are located on top of the furnace casing in the warm air and return air ducts. Constant pressure is maintained as long as there is a temperature of at least 80° in the heating section of the furnace.

Greater Efficiency of Continuous Pressure

During the Spring and Fall, air with less than 100° of heat is sufficient to comfortably heat the home. Delivery of air under pressure at less than 100° of heat to all rooms in the house is possible only in the Kaustine unit. When the burner starts, a Helix (sensitized metal coil), located in the warm air section of the airflometers and fastened to the shaft, starts opening at 80° and this operates a mercury tube which turns on the electric current to the blower. The airflometers continue to open as the temperature rises. When the thermostat has become satisfied the burner stops and the blower continues to operate as long as there is 80° temperature in the furnace. As stated above, during the Spring and Fall temperature of 80° to 100° will heat the house. Other types of air conditioning units do not start to circulate heat until the temperature in the furnace reaches 125° to 130° which causes the room temperature to become higher than required during the Spring and Fall.

During the colder weather the airflometers starting at 80° continue to open until at 130° they are completely opened, allowing maximum circulation of warm air through the furnace and house.

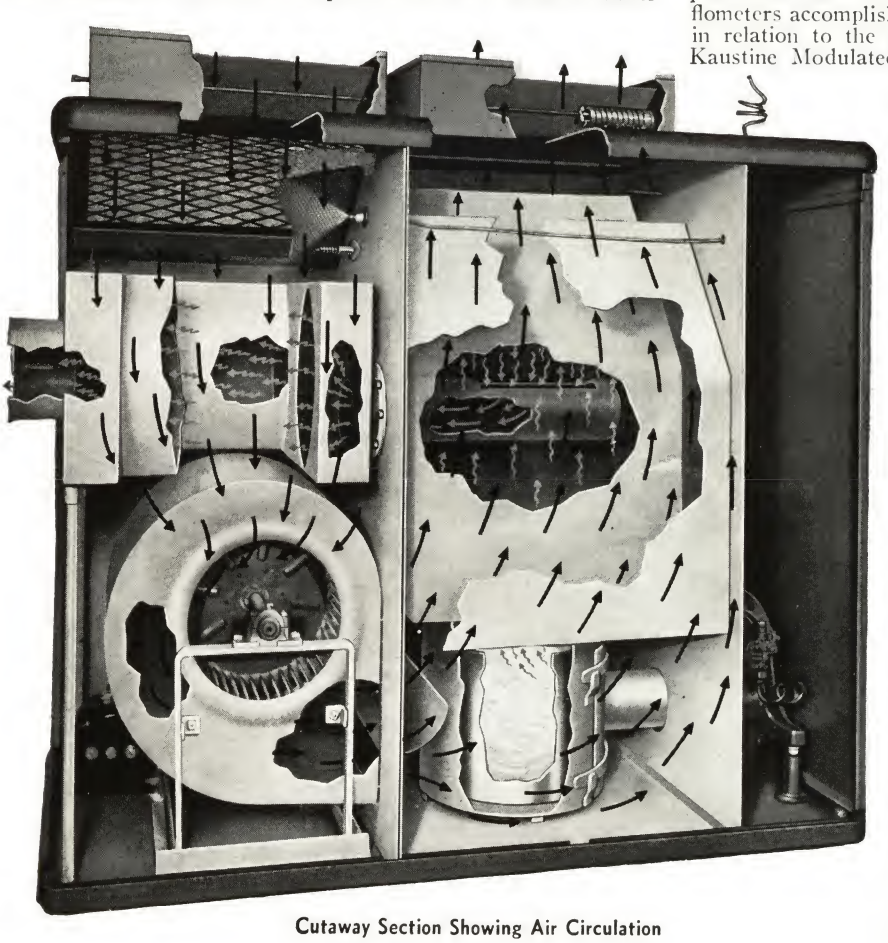
Elimination of Cold Drafts

Warm air being a relative term, if the air delivered into the room is of a higher temperature than the desired heat, it should be called "warm air," as it adds to the heat of the room. However, if the velocity is beyond the speed of the "comfort" zone it will feel cold to the person, "comfort zone" in heating meaning a combination of temperature and air movement such that the person sitting in the room is not conscious of the air movement. The Murdock Airflometers, controlled by the thermostatic arrangement of Helix, automatically regulate the supply of air delivered to the rooms, permitting the furnace to operate until the temperature at the registers falls to 80°.

Stratification caused by the natural tendency of warm air to rise must be overcome to heat the rooms evenly. This can only be done by circulating the air constantly under pressure as long as there is a usable heat emitting from the registers. Because the air at the outside walls will necessarily be cooler than the air at the inside walls, it is necessary to keep the air circulating under pressure if a temperature within the comfort zone is maintained throughout the room.

Absolute Velocity Control in Relation to Air Stream Temperature—The Kaustine unit equipped with Murdock Airflometers accomplishes this perfectly as the velocity is controlled in relation to the air stream temperature. At no time is the Kaustine Modulated Air Furnace dependent upon gravity for the circulation of warm air, thereby excluding any possibility of stratification.

The usual winter air conditioner must stop the blower when the temperature at the registers falls to 125° but with the Kaustine unit circulation is maintained until the temperature falls to 80°.



Cutaway Section Showing Air Circulation

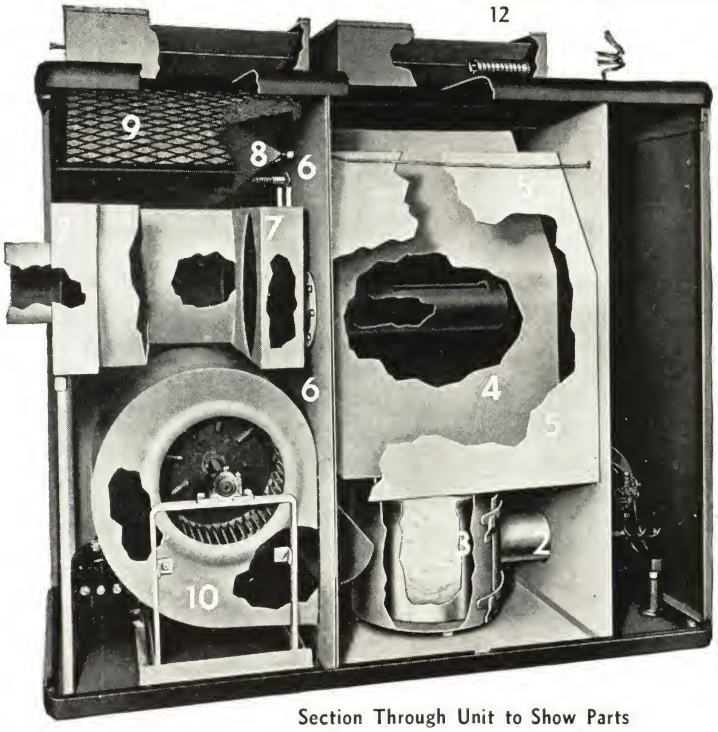
The Operation of the Unit

The Kaustine Modulated Air Furnace operates by the counter-flow method. The counter-flow principle is to divide the air chamber of the furnace into two sections, using a metal partition. The combustion chamber is in the warm air side and the radiator or heat economizer in the return or cold air side. The return air is drawn through the airflometers. (The meter placed in the return air duct is controlled by the meter placed in the warm air duct preventing the building of pressure in the furnace. As the warm air meter opens and closes so does the return air meter.) The air then passes through oil impregnated glass filters.

A spray target humidifier is installed immediately below the filter and above the radiator. The humidifier operates only when the airflometers are completely open. A mercury tube located on warm air end of the airflometer shaft opens the electrically-operated solenoid valve, forcing water through a self-cleaning spray nozzle. The stream hits a target with considerable force, forming a mist which is absorbed in the air stream. Any excess moisture is piped to the cellar drain.

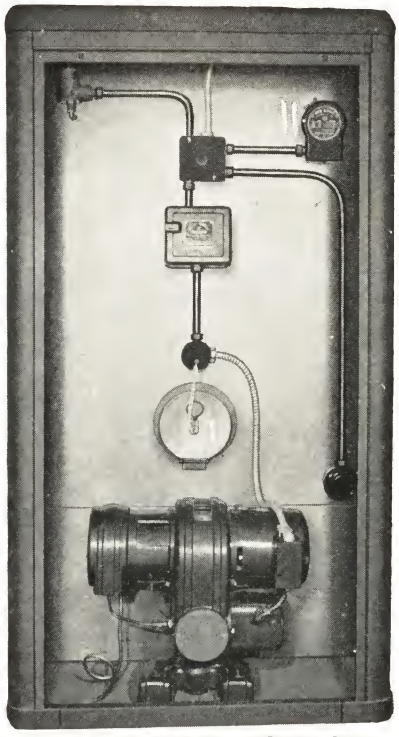
The air is then preheated as it wipes the heated surfaces of the radiator or heat economizer.

Description of Outstanding Features



Section Through Unit to Show Parts

1. Upper Service Door
2. Lower Service Door
3. Firing Chamber
4. Combustion Chamber
5. Radiation Shields
6. Separation Sheet
7. Radiator or Economizer
8. Humidifier
9. Filters
10. Blower
11. Limit Control
12. Airflometer

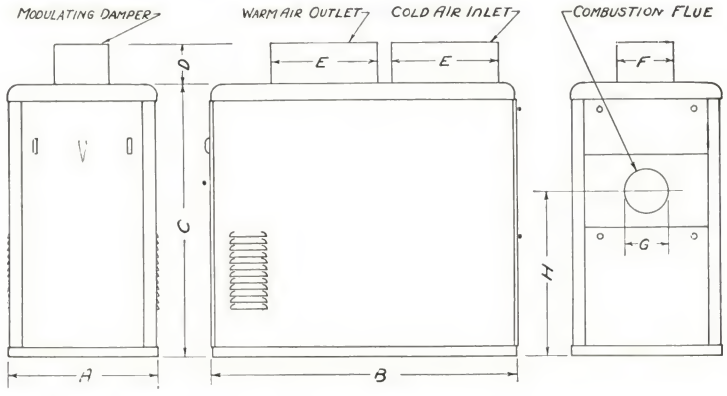


Front View With Front Casing Door Removed

The blower and motor are located directly below the radiator. The blower bearings are mounted on rubber cushions and the blower frame on rubber vacuum cups. The blower and motor are mounted on a heavy insulation board and are not directly connected to any part of the furnace. It is therefore very quiet in operation and all vibration is eliminated.

The preheated air from the blower circulates around and underneath the circular firing chamber lined with chrome steel. The chrome steel lining which is installed in the firing chamber at the factory, heats instantly producing a high CO rating (13.4 to 14.6 within three minutes). This is a very important reason for the low cost of operation as efficient combustion temperatures are reached in a minimum of time. The high chrome content of this firepot assures extra long life.

Section Showing Air Circulation—Note in the illustrations the unique design of the rectangular combustion chamber which comes to a peak at the top. The rectangular shape of the chamber conforms to the shape of the casing equalizing the air space around all four sides of the combustion chamber. Radiation shields are placed between combustion chamber and outer casing. The warm air proceeds upward, wiping the sides, front and back of the combustion chamber and of the radiation shields. Radiation shields direct the air to a hot peak immediately under the airflometers in the warm air duct. The heated air then passes through the airflometers into the warm air duct, the volume of heated air being regulated according to the heat units it contains.



The combustion chamber, firing chamber and radiator or heat economizer are constructed of the correct thickness of metal and electrically welded to assure a long service life and give quick radiation of heat.

Outer casings are attractively finished in a gray wrinkled, baked enamel with contrasting blue trim at top and base. The unit is constructed for use with either gun or rotary type oil burners or gas burner.

SAFETY FEATURES

All controls required by the Underwriters are included.

The limit control is located in the cold air section of the unit, above the radiator, below the filters. If for any reason circulation is stopped the temperature rising to a point of 100° will stop the burner.

The service door operates on a spring hinge and the opening of this door automatically shuts off the burner. In order to start the burner the electric switch must be turned on.

KAUSTINE MODULATING AIR FURNACE—GUN TYPE BURNERS

No.	B.t.u.	Blower Size	C.f.m. capacity	Blower motor	A	B	C	D	E	F	G	H
0811	80,000 to 110,000	11″	800 to 1400	1/6 hp.	29″	64″	47″	8″	21″	10″	8″	29″
0124	120,000 to 140,000	13″	1000 to 1600	1/4 hp.	32″	66″	60″	8″	24″	12″	9″	36½″
0157	150,000 to 180,000	15″	1500 to 2000	1/3 hp.	32″	66″	60″	8″	24″	12″	9″	36½″
0207	200,000 to 270,000	17″	2200 to 3400	1/2 hp.	38″	82″	66″	8″	28″	15″	9″	42″

KAUSTINE MODULATING AIR FURNACE—ROTARY TYPE BURNERS—(Type H, Slow Speed Atomization; Type F, High Speed Atomization)

No.	B.t.u.	Blower Size	C.f.m. Capacity	Blower Motor	A	B	C	D	E	F	G	H
RH or F 101	100,000 to 125,000	11″/13″	1100 to 1500	1/4 hp.	32″	66″	60″	8″	24″	12″	9″	36½″
RH or F 152	135,000 to 175,000	13″/15″	1500 to 2000	1/4 hp./1/3 hp.	32″	66″	60″	8″	24″	12″	9″	36½″

KAUSTINE MODULATING AIR FURNACE—GAS BURNER

No.	B.t.u.	Blower Size	C.f.m. Capacity	Blower Motor	A	B	C	D	E	F	G	H
G811	80,000 to 100,000	11″	800 to 1400	1/6 hp.	29″	64″	47″	8″	21″	10″	8″	29″
G124	120,000 to 140,000	13″	1000 to 1600	1/4 hp.	32″	66″	60″	8″	24″	12″	9″	36½″
G157	140,000 to 170,000	15″	1500 to 2000	1/3 hp.	32″	66″	60″	8″	24″	12″	9″	36½″

Write for A.I.A. Folder on Heating and Winter Air Conditioning

LENNOX FURNACE CO., INC.

Aire-Flo Air-Conditioning Units—Riveted Steel Furnaces

MARSHALLTOWN, IOWA

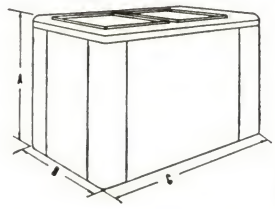
DEALERS IN PRINCIPAL CITIES

SYRACUSE, NEW YORK

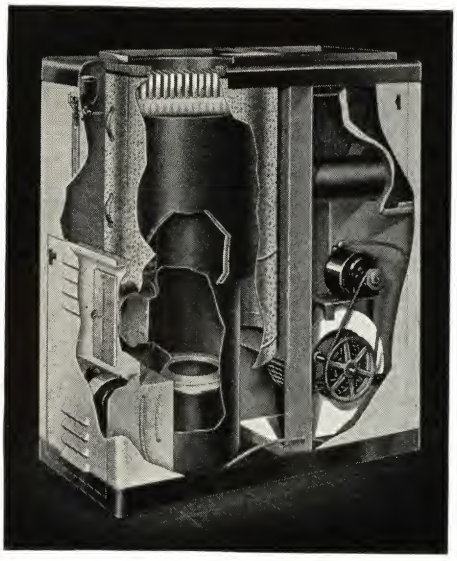
LENNOX WINTER AIR CONDITIONING UNITS

The Lennox line of warm-air heating and air-conditioning equipment is complete, containing units specially designed for every type of fuel, and sizes ranging from 36,000 to 800,000 B.t.u. per hour at the register. All heaters of the famous Lennox steel construction — permanently dust and gas-tight. Every unit throughout the line is designed to deliver air at uniform temperature and velocity to all warm-air ducts. As a result, a Lennox installation is unusually easy to balance.

Lennox units have long been noted for their high efficiency, quick response to temperature changes, and long life. The company has been manufacturing steel heating equipment exclusively for more than 40 years, and has pioneered the field of residential forced-air heating. Complete specifications and descriptions of the complete line on request.



LENNOX OIL-FIRED AIRE-FLO UNITS



Lennox H2 Series Oil Aire-Flo—3-Stage Burner

The simplest, most efficient oil-fired unit Lennox has ever made for the small and medium home. Low, medium and high fires provide proper heating, regardless of weather. Air stratification and "Cold 70" entirely eliminated. Exclusive electrical cooperative control of oil and air results in clean, odorless, intense fire. Controlled draft on all three stages. Ample filter area. Large silent blower. Ceramic plate type humidifier. Compact steel cabinet beautifully finished in baked enamel. Complete automatic controls.

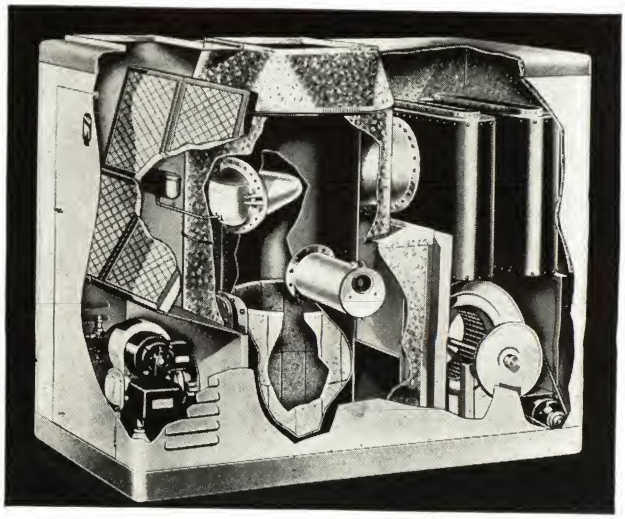
Unit No.	B.t.u. at register	Heating surface, sq. in.	Normal c.f.m.	Number, and size of filters, in.	Dimensions, in.		
					A	B	C
H2-10	80,000	5,688	1050	2-20x20	55	25	55
H2-13	115,000	7,475	1510	3-16x25	61	29½	61

Lennox F3 Series Oil Aire-Flo—Pressure Burner

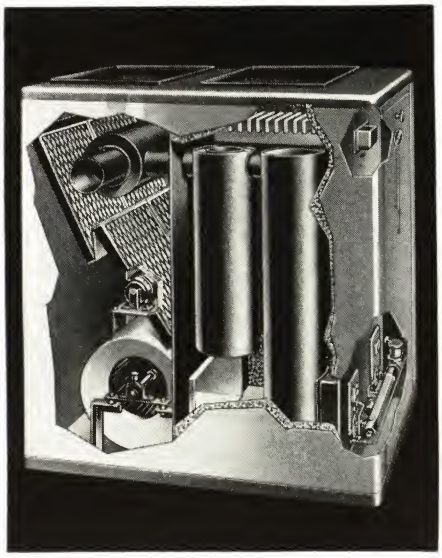
Exclusive counter-current principle uses full volume of cold air to insulate the cabinet and to extract heat from flue radiators. Low stack losses. Inserted steam-type humidifier. Large glass filters. Low-speed blower.

Insulating type, pre-cast refractory results in cleaner fire, faster heating and higher efficiency. Heater, filters, blower, humidifier and oil burner in one attractive enameled steel cabinet.

Unit No.	B.t.u. at register	Heating surface, sq. in.	Normal c.f.m.	Number, and size of filters, in.	Dimensions, in.		
					A	B	C
F3-125-1	80,000	11,358	1050	4-16x20	59	40	73½
F3-125-2	100,000	11,358	1310	4-16x20	59	40	73½
F3-125-3	125,000	11,358	1640	4-16x20	59	40	73½
F3-200-1	150,000	14,597	1960	6-16x20	59	48	83
F3-200-2	175,000	14,597	2300	6-16x20	59	48	83
F3-200-3	200,000	14,597	2620	6-16x20	59	48	83
F3-300-1	250,000	17,683	3300	9-16x20	63	60	104
F3-300-2	300,000	17,683	3920	9-16x20	63	60	104



LENNOX GAS-FIRED AIRE-FLO UNITS



J1 Series Gas Aire-Flo—Basement Model

Highest efficiency possible without condensation of flue gases. Quick heating. Complete automatic safety controls. External lighter. Ceramic plate humidifier. Silent, low-speed blower. Extra-large filter area. Special burners. A.G.A. approved. Attractive enameled automobile-steel cabinet. A complete range of sizes. The ideal unit for clean, automatic gas heating at low cost.

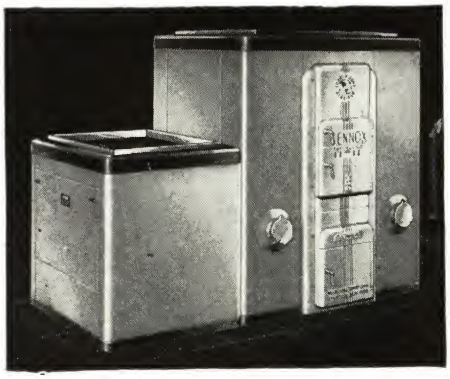


JH-1 Series Gas Aire-Flo— Hi-Boy First Floor Model

Similar to the J-1 series basement model except that the blower and filters are mounted under the heater. Unit can be set on legs or on platform enclosing a cold-air gathering chamber. Ideal for stores, offices or for homes without basements. Requires minimum floor space. Attractive appearance, suitable for open installation.

Unit No.	B.t.u. at register	Heating surface, sq. in.	Normal c.f.m.	Number, and size of filters, in.	Dimensions, in.		
					A	B	C
J1- 55	36,000	3,100	470	1-20 x20	55	20	38
J1-110	71,000	6,046	930	2-16 x25	56½	25	44½
J1-165	106,000	8,998	1400	4-16 x20	56½	35	47½
J1-220	141,000	11,890	1850	5-16 x25	56½	45	50½
J1-275	176,000	14,925	2300	5-16 x25	56½	55	50½
J1-330	212,000	17,910	2700	6-16 x25	56½	65	50½
JH1-110	88,000	6,046	1100	2-11½x27	80	25	29
JH1-165	132,000	8,998	1750	3-11½x27	85	35	29

LENNOX STOKER-FIRED AIRE-FLO UNITS



CS-1 Series Stoker Aire-Flo

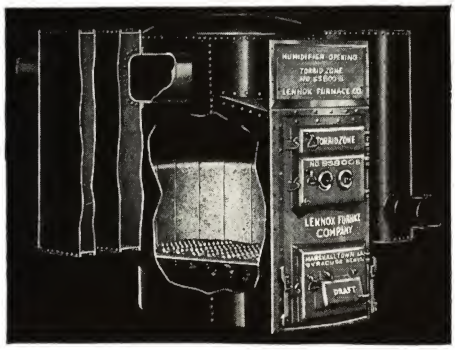
Specially designed for stoker operation, with two extra large flue radiators to utilize the heat ordinarily forced up the chimney. Special stoker tunnel permits access from rear or either side. Ceramic humidifier. Large filter area. Silent, low-speed blower, Built-in clinker pouch for soft coal. This unit materially increases savings made possible with stokers.

Unit No.	B.t.u. at register	Heating surface, sq. in.	Normal c.f.m.	Number, and size of filters, in.	Dimensions, in.		
					A	B	C
CS1-2422	125,000	10,001	1640	4-20x20	59	80	40
CS1-2461	165,000	10,001	2160	6-16x25	59	84	40
CS1-2962	180,000	13,917	2360	6-16x25	61	91	48
CS1-2963	200,000	13,917	2620	6-16x25	61	91	48
CS1-2982	280,000	13,917	3680	6-20x20 3-16x20	61	93	48

LENNOX HEAVY DUTY FORCED AIR FURNACE

SS-800-B

800,000 B.t.u. per hour at the register in one unit. Extra heavy riveted steel, lined with firebrick, to withstand the severe service required of this type of equipment. Especially economical for stores, churches, theaters, schools and other buildings in its heating range. Heavy-duty blowers to take care of ventilation requirements. Complete specifications on request.



Unit No.	B.t.u. hr. at register	Heating surface, sq. in.	C.f.m.	Dimensions, in.		
				A	B	C
SS-800-B	800,000	28,728	As required	66	96	62

A COMPLETE LINE

There are almost 200 different sizes and styles of heating and air conditioning equipment in the Lennox line. Regardless of whether you are designing a gravity or a forced-air system, whatever the size, whatever fuel your client plans to burn, you will find a Lennox unit perfectly adapted to that one particular installation. Write for complete specifications. Engineering advice and service available on request.

MAY OIL BURNER CORPORATION

Manufacturers of the Quiet May "Heat-an-Aire" Conditioner the Quiet May Oil Furnace and the Quiet May Oil Burner

FACTORY AND GENERAL OFFICES

BALTIMORE, MD.

NEW YORK OFFICE, 331 MADISON AVENUE



QUIET MAY HEAT-AN-AIRE CONDITIONER (Split System) Available in range of capacities up to 216,000 B.t.u. Provides ample year 'round tankless domestic hot water.



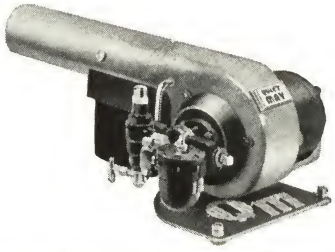
QUIET MAY OIL FURNACES (For steam, hot water, or vapor systems). Available in range of capacities up to 1,800 sq. ft. E.D.R. steam or 2,880 sq. ft. E.D.R. hot water. Provides ample year 'round tankless domestic hot water. No circulators, no flow control valve, no hot water storage tank needed.



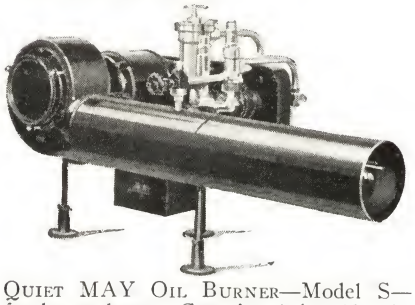
QUIET MAY OIL BURNER—De-Luxe model BB. Capacity, 1 to 2¼ gals. per hour.



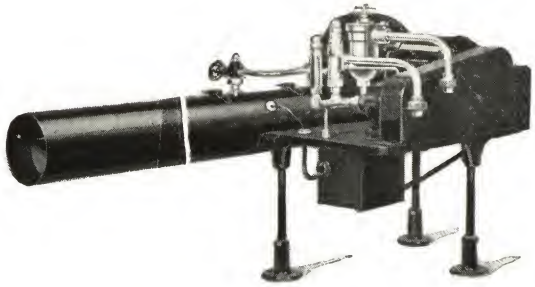
QUIET MAY OIL BURNER — Model F—designed for use when installation space is limited. Capacity, 1 to 2¼ gals. per hour.



QUIET MAY OIL BURNER—Models B and W—Capacity, Model B 1 to 2¼ gals. per hour. Model W 2¼ to 4½ gals. per hour.



QUIET MAY OIL BURNER—Model S—for larger homes. Capacity, 4½ to 10 gals. per hour.



QUIET MAY OIL BURNER—Model C—for commercial installations. Capacity, 10 to 15 gals. per hour.

Write Direct to Factory for Detailed Data

The QUIET MAY OIL FURNACE AND HEAT-AN-AIRE CONDITIONER are of welded steel construction and are complete with Oil Burner. All QUIET MAY products feature the Gerotor Pump and Double Sapphire Jewelled Atomizer.

Write direct to factory for complete descriptive booklet, written especially for architects and engineers.

Architects are invited to submit drawings of new or existing projects for complete engineering service.

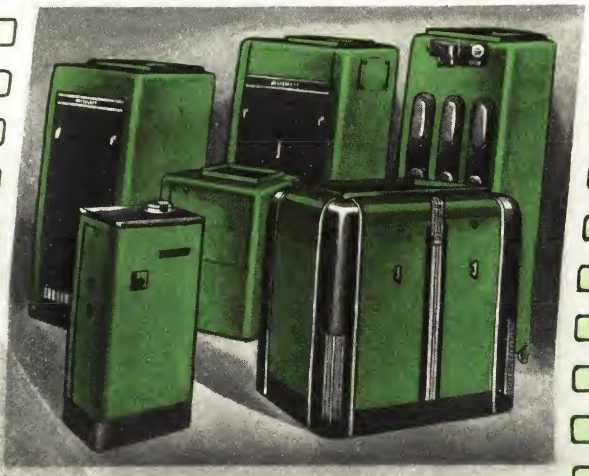
Communicate direct with factory, or nearest authorized QUIET MAY Dealer.

MUELLER

Heating and Air Conditioning

The Most Complete Line in the Industry

WARM AIR FURNACES
STEAM AND HOT WATER BOILERS
AIR CONDITIONING UNITS
[Gas, Oil or Coal-Fired]
REGISTERS AND GRILLES
FURNACE PIPE AND FITTINGS
[Prefabricated and Gravity Types]
HEATING SPECIALTIES AND ACCESSORIES





L. J. MUELLER FURNACE CO.
MILWAUKEE WISCONSIN

MUELLER CLIMATROL GAS-FIRED AIR CONDITIONING FURNACE



In the cut-away view of the unit is shown the fire travel through the end heating section, also the complete assembly of fan, motor, humidifier, filters and controls.

Controlled humidity is automatically supplied by the Mueller spray type humidifier. Where humidistat control is not desired, humidity is supplied by a Mueller automatic humidifier.

Fuel is conserved and heat loss eliminated by the insulated housing.

Controls to suit installation requirements are supplied. Throttling controls, for continuous fan operation while heat is required, with regulated air delivery temperature to suit weather conditions, the ultimate in residence air conditioning, is available.

This unit is available in sizes from two to six sections inclusive, with corresponding fan and filter sizes and humidification capacities. In the table below are listed the A.G.A. input ratings, total B.t.u. load, C.F.M. deliveries, and overall dimensions. Data on sizes larger than six sections on application.

RATINGS AND DIMENSIONS

Unit No.	*A.G.A. input rating B.t.u. per hour	Recom'd Total load B.t.u. per hour	†C.f.m. delivery	Length, in.	Depth, in.	Height, in.
FS-2	90 000	66 000	1 200	48	46	60
FS-3	135 000	99,000	1 800	56	46	60
FS-4	180 000	132.000	2 400	66	46	64
FS-5	225.000	165 000	3 000	83	46	66
FS-6	270 000	198 000	3 600	91	46	66

*A.G.A. Output Rating at Unit, 80% of Input Rating.

†Capacities shown are for delivery against maximum resistance encountered on conventional systems, which vary with size.

Detailed data covering fan performance and motor horsepowers, furnished upon request.

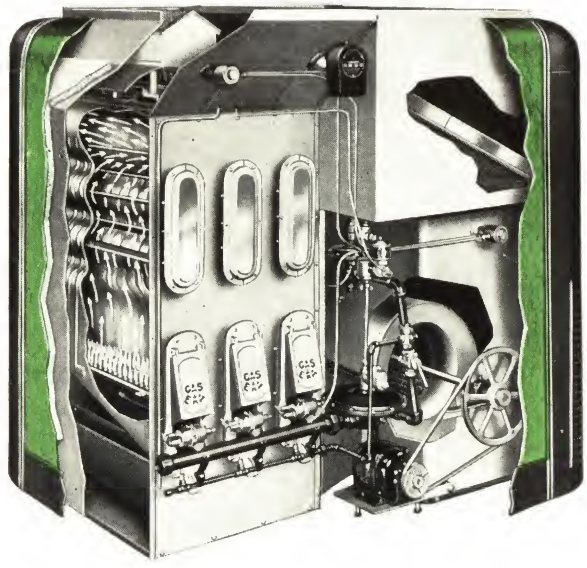
Climatrol provides the satisfying comfort of modern air conditioning, with uniform temperature under exact control within the home at all times.

Enclosed in the handsome, ultra-modern cabinet are the gas-fired heating unit, the blower and motor, automatic humidifier and air filters, together with the necessary controls for completely automatic operation . . . easy access is provided. The inner housing is complete and air tight in itself . . . ideal for temporary heat during period of construction. The outer cabinet may be applied after building operations have ceased.

The heating unit consists of Gas Era Heat-Speeder Steel sections. These sections are constructed of heavy, copper-bearing steel, formed under 500 tons pressure and seam-welded into one-piece, gas-tight units. The corrugated and ribbed design, and arrangement of internal baffles, provide maximum heat transfer to the air within the inner housing, resulting in instant heat response and lower fuel bills. All interior surface is accessible for cleaning.

Each section has individual burner specially designed to coordinate with the combustion chamber in obtaining complete combustion, uniform flame distribution, and quiet operation. Each burner is equipped with safety shut-off.

Positive air circulation is provided by the powerful Mueller fan which draws return air through the filters, then delivers the filtered, humidified, warm air to all rooms. In summer, operation of the fan may provide circulation of cooler basement air. The fan is sturdily and precisely built, providing maximum distribution of the conditioned air, quietly and evenly.



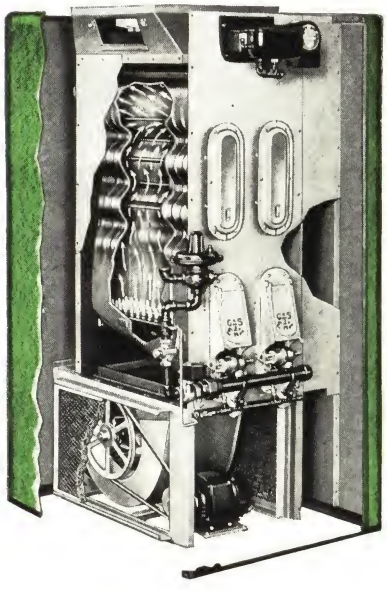
MUELLER CLIMATROL JUNIOR GAS-FIRED AIR CONDITIONING FURNACE

An even flow of filtered, humidified, warm air to every room . . . floors free of drafts . . . clean, fresh atmosphere within the home . . . the economy of walls, drapes, curtains, and upholstery that retain their sparkling cleanliness much longer . . . a clean, livable basement for recreation or hobby purposes . . . these are only a few of the many advantages provided by the Climatrol Junior.

Climatrol Junior is a unit especially designed for the smaller home and offering the combined comforts of gas heat, circulation, air cleaning, and humidity at a price most everyone can afford. Within the attractive, green texture-lacquered cabinet is a complete winter air conditioning unit which includes the heating unit, fan, filters, humidifier and controls for completely automatic operation.

Each Heat-Speeder section, made of copper-bearing steel, formed under 500 tons pressure, and seam-welded into a one-piece, gas-tight unit, contains an individual burner specially designed to coordinate with the combustion chamber in obtaining complete combustion, uniform flame distribution, and quiet operation. Each burner is equipped with safety cut-off. For illustrations and complete description of streamlined burner assembly and Mueller Heat-Speeder sections, see page 4.





Return air encloses the heating unit on three sides, eliminating radiation heat loss and insuring a cool outer cabinet. Return air pressure is equalized, so that no matter where return air is taken in, the distribution within the unit is equalized, assuring even distribution over the entire unit.

Climatrol Junior secures balanced distribution of warmed, humidified, clean air to every room, providing as much heat as desired, and only when desired. The return air is drawn through the filters, forced over the surfaces of the Heat-Speeder sections, humidified, and then distributed uniformly to every room. In summer, operation of the fan may provide circulation of cooler air drawn from the basement, improving comfort conditions in the home.

Furnished as optional equipment with the Climatrol Junior, is the patented plenum chamber, illustrated at the right. This plenum permits use of any or all four sides for either return or supply connections. This unique construction provides a flexibility that will take care of any required duct arrangement, either trunk ducts or individual round or rectangular take-off. Where the plenum is not used, return connections may be made at any height above floor level, and on either side, top, or rear. The illustration shows one application wherein the left side is used for return and the adjacent side used for warm air supply.



RATINGS AND DIMENSIONS

Furnace No.	*A.G.A. input rating B.t.u. per hour	Recommended total load B.t.u. per hour	†C.f.m. delivery	Depth, in.	Width, in.	Height	
						With plenum	Without plenum
SP-2	90,000	66,000	1,200	40	31½	87″	68″
SP-3	135,000	99,000	1,800	40	45	87″	68″

*A.G.A. Output Rating at unit, 80% of Input Rating.

†Capacities shown are for delivery against maximum resistance encountered on conventional systems, which vary with size. Detailed data covering fan performance furnished upon request.

MUELLER SERIES "E" GAS ERA STEEL FURNACE



Adjusted to changing weather conditions by the weather itself, the Series "E" Gas Era Steel furnace secures balanced distribution of warmed, humidified, clean air to every room in the home, providing as much heat as desired, and only when desired. In summer, operation of the fan may provide circulation of cooler air drawn from the basement, improving comfort conditions within the home.

The distinct advantages of gas heating—cleanliness, dependability, convenience, and quiet operation are achieved in the Mueller Series "E". After the furnace is started in the Fall, it continues to function automatically, as heat is required, maintaining a healthful, comfortable condition in every room.

Series "E" furnaces are of multiple unit construction, permitting the assembly of the number of sections required for each job. These furnaces may be installed with Climator Fan-Filter unit as forced air systems, or for gravity operation. Climator units are illustrated and described on page 11.

RATINGS AND DIMENSIONS

Furnace No.	A.G.A. input rating B.t.u. per hour	*Total load B.t.u. per hour	Height, in.	Depth, in.	Width, fan casing, in.	Width, gravity casing, in.	Gas valve, in.	Gas press. regulator, in.
E-1-S	45,000	33,000	54	31½	12¾	22¾	¾	¾
E-2-S	90,000	66,000	54	31½	22¾	42¾	¾	¾
E-3-S	135,000	99,000	54	31½	32¾	62¾	¾	¾
E-4-S	180,000	132,000	54	31½	42¾	82¾	1	1
E-5-S	225,000	165,000	54	31½	52¾	102¾	1	1¼
E-6-S	270,000	198,000	54	31½	62¾	122¾	1	1¼
E-7-S	315,000	231,000	54	31½	72¾	142¾	1	1¼
E-8-S	360,000	264,000	54	31½	82¾	162¾	1¼	1¼
E-9-S	405,000	297,000	54	31½	92¾	182¾	1¼	1¼
E-10-S	450,000	330,000	54	31½	102¾	202¾	1¼	1¼

*Net connected load.

E-10 AIR CONDITIONING FURNACE

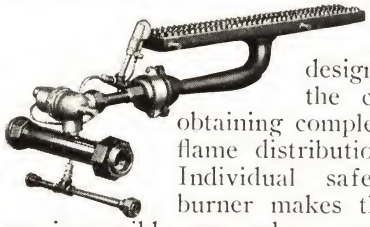
The E-10 Gas-fired Air Conditioning Furnace, shown above, is a compact, highly efficient unit designed for the smaller home. This unit is the same as the Series "E" with the exception that it is available in only two sizes, with a Climator fan-filter unit as an integral part of the assembly. The fan is set flush with the furnace, thereby eliminating the transition.

RATINGS AND DIMENSIONS

Furnace No.	A.G.A.* input rating B.t.u. per hr.	Recommended total load B.t.u. per hr.	**Max. C.f.m. delivery	Number and size of filters	Width	Height	Depth
E-210	90,000	66,000	1400	2 16"x25"	20"	60"	58"
E-310	135,000	99,000	1600	2 16"x25"	30"	60"	58"

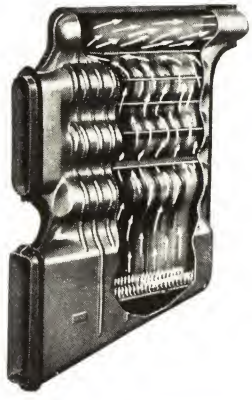
*A.G.A. Output Rating at unit, 80% of Input Rating.
**Capacities shown are for delivery against maximum resistance encountered on conventional systems, which vary with size. Detailed data covering fan performance furnished upon request.

STREAMLINED BURNER ASSEMBLY



The streamlined burner is specially designed to coordinate with the combustion chamber in obtaining complete combustion, uniform flame distribution and quiet operation. Individual safety shut-off on each burner makes the escape of unburned gas impossible, even when manually controlled, in case of power failure.

MUELLER HEAT-SPEEDER SECTIONS



Mueller Heat-Speeder sections are constructed to give longer life, maximum service, instant heat response, low operating cost and no temperature overrun. There are no traps, pockets or diving flues to cause condensation and corrosion, which shorten the life of a furnace.

Heating units consist of half-sections, die-stamped on one of the world's largest presses from copper-bearing sheets, cold-rolled to Mueller specifications. The two halves are electrically seam-welded into a one-piece, gas-tight, air pressure-tested section, forming combustion chamber and ribbed serpentine flues, to secure maximum heating surface. Internal baffles increase the rate of heat absorption.

MUELLERAIRE GAS-FIRED FORCED CIRCULATION HEATER

STYLE "ETR"

Muelleraire is ideal for stores, shops, showrooms, small factories and similar commercial and industrial applications where the unit is to be installed in the space to be heated, also in residences without basements. The unit distributes clean, filtered, humidified warm air to all points in the structure.

Heating units consist of Mueller Heat-Speeder sections. A Mueller Automatic Air Moistener supplies humidity automatically. Fan and motor are located below the heating unit. Return air is drawn at floor level through the filters, is heated and humidified, then discharged through cowl or duct at top of unit. Fan operates only when furnace is in operation.

Muelleraire, shown at right, is furnished in a green texture-lacquered casing, with radiused corners. Units are shipped completely assembled. All that is necessary is to connect gas, water, electricity and vent, and attach cowl or duct. All controls necessary for automatic operation are supplied.



RATINGS AND DIMENSIONS

Size	Input rating B.t.u.	Output rating B.t.u.	*Air delivery C.f.m.	Height, in.	Width, in.	†Depth, in.	Motor hp.
ETR-2	90,000	72,000	1,200	84	19¾	31½	⅙
ETR-3	135,000	108,000	1,800	84	27¾	31½	¼
ETR-4	180,000	144,000	2,400	84	35¾	31½	⅓
ETR-5	225,000	180,000	3,000	84	43¾	31½	⅓

*By changing fan speed, air delivery may be regulated. Capacities shown can be secured against dust resistance .2". On special order, can be arranged for delivery against higher resistance, or greater air capacity.

†Add 10" to depth for vent connection.

MUELLER GAS ERA (all-cast) AIR CONDITIONING FURNACE

For those who prefer a gas furnace with cast iron heating units, the Series CP Gas Era Furnace is the exact answer. It easily meets every requirement for rugged durability, dependability, quiet operation and operating efficiency. It provides all the comforts of winter air conditioning in the home.

The heating sections are of cast-iron construction, built for permanency, without packed or puttied joints. Each section is formed of two half-sections, accurately surface-ground and bolted iron-to-iron, assuring a seal that is tight and permanent. Triangular baffles are inserted horizontally, keeping the products of combustion in close contact with the surface of the ribbed and corrugated castings, and securing maximum heat transfer.

Each section contains a burner so designed that it secures complete combustion, uniform flame distribution, and quiet operation. An individual safety shut-off on each burner makes the escape of unburned gas impossible, even when manually controlled, in case of power failure.

RATINGS AND DIMENSIONS

Furnace No.	*A.G.A. input rating	Total load B.t.u. per hr.	C.f.m.	Height, in.	Width, in.	Depth, in.
CP1-1	65,000	47,500	1,600	66	40½	48
CP2-2	130,000	95,000	1,350	66	50¾	48
CP2-3	130,000	95,000	1,850	66	50¾	48
CP3-5	195,000	142,500	2,350	66	67	48½
CP3-6	195,000	142,500	2,900	66	76	52½
CP4-6	260,000	190,000	2,900	66	86	52½
CP5-6	325,000	237,500	2,900	72½	96	52½
CP5-9	325,000	237,500	4,850	72½	96	57½
CP6-9	390,000	285,000	4,850	78	106	57½
CP6-12	390,000	285,000	6,100	78	116	58½

*A.G.A. output rating at unit, 80% of input rating.



The unit is available in a wide range of sizes with a Climator fan-filter unit of proportionate size to meet the air delivery requirements. Healthful moisture is supplied automatically by the Mueller Automatic Air Moistener regularly supplied.

MUELLER GAS-FIRED UNIT HEATER

Large space heating requirements are easily solved with the Mueller Gas-Fired Unit Heater. Factories, warehouses, auditoriums, skating rinks, hangars, indoor tennis courts, armories, dance pavilions, and similar buildings, usually having no basement, are especially adaptable to heating with Unit Heaters. They are also adaptable for special Industrial applications, such as seed drying, etc.

The heating unit consists of Mueller Heat-Speeder sections, same as in Gas Era Steel Furnaces. Quick, economical heat is assured, with continuous or intermittent operation, as required. No steam piping—therefore no freeze-ups.

DIMENSIONS AND CAPACITIES

With Standard 13-in. Fans

No.	A.G.A. input rating B.t.u.	A.G.A. output rating B.t.u.	Air delivery c.f.m.	Dimensions, excluding manifold			Number of fans and outlets
				Width, in.	Depth, in.	Height, in., excl. cowls, and motor	
U6	270,000	216,000	2,500	51	31½	79	1
U7	315,000	252,000	3,750	59	31½	79	2
U8	360,000	288,000	3,750	67	31½	79	2
U9	405,000	324,000	5,000	75	31½	79	2
U10	450,000	360,000	5,000	83	31½	79	2
U11	495,000	396,000	5,000	91	31½	79	2
U12	540,000	432,000	7,500	99	31½	79	3
U13	585,000	468,000	7,500	107	31½	79	3
U14	630,000	504,000	7,500	115	31½	79	3
U15	675,000	540,000	7,500	123	31½	79	3
U16	720,000	576,000	7,500	131	31½	79	3
U17	765,000	612,000	7,500	139	31½	79	3
U18	810,000	648,000	7,500	147	31½	79	3
U19	855,000	684,000	10,000	155	31½	79	4
U20	900,000	720,000	10,000	163	31½	79	4

Where larger volume of air is to be heated through comparatively small temperature rise, units with same B.t.u. outputs, but 15-in. fans are available—increasing the c.f.m. approximately 50%. Over-all dimensions are slightly larger.



While shown in floor mounted type, suspended type is also available, with necessary modifications in design. Discharge cowls may be any height, and warm air directed in any direction.

MUELLER GAS-FIRED "FLOR-AIRE" FURNACE

The "Designed" Floor Furnace for Smaller Homes

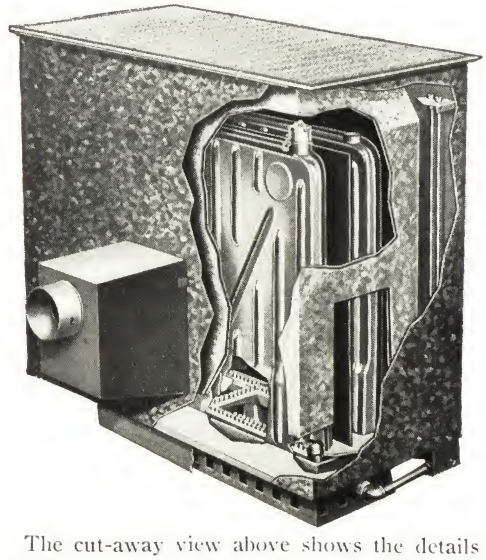
Flor-aire is compact . . . is shipped complete, ready to install . . . is efficient and simple in operation . . . and provides uniform distribution of heat.

The heating units consist of half-sections, die-stamped from copper-bearing steel. The two halves are electrically seam-welded into a one-piece, gas-tight section forming the combustion chamber. The ribbed construction and narrow flue travel results in maximum heating surface and transfer. In this construction, increased heat transfer is effected through efficient utilization of extensive vertical surfaces. Due to the fact that the heat is concentrated on the vertical walls, the heat is not radiated directly onto the register, hence the register face is not unduly warm—as is the case where horizontal heating surfaces are used.

Some of the outstanding Flor-aire features are—interlocking pilot and burner cocks . . . return air completely surrounds the unit, eliminating radiation heat loss and insuring a cool outer casing . . . requires minimum floor area . . . expansion and contraction noises eliminated . . . unit may be lighted without removing floor grille . . . low register temperature, and abundant heat circulation.

The burner is of exclusive Mueller design with raised ports, which result in quiet operation and uniform flame distribution. The burner and pilot cocks are easily opened and closed with special key provided. The pilot is so designed that it may be installed with or without automatic controls. Thermostatic controls and safety shut-off are optional equipment, at slight extra cost.

Unit No.	B.t.u. input per hr.	Overall dimensions			Floor grille overall dimensions,
		Height, in.	Width, in.	Depth, in.	
FA-25	25,000	36	12	36	14x38
FA-50	50,000	36	18	36	20x38
FA-75	75,000	36	24	36	26x38



The cut-away view above shows the details of Flor-aire construction. Note the individual heating sections, and individual burner heads, providing close contact of products of combustion with the heating surface . . . the cool, double-walled inner casing which accelerates return air flow, permitting a greater flow of air over the heating surfaces . . . burner assembly and pilot . . . ribbed construction of the heating units, and the radiant shield located between the units . . . the compact assembly and rigid construction.

MUELLER GAS ERA BOILERS

• SERIES "A" AND "AE"



The Series "A" Gas Era Boiler, as shown at left, is furnished with all controls and diverter enclosed within a graceful, green texture-lacquered cabinet. In the Series "AE" unit, controls and diverter are not enclosed, as shown in the illustration, lower right. They are adaptable to steam, hot water, or vapor heating, or to any system of heating or air conditioning employing radiation, convectors, pipe coils, unit heaters or blast heating surfaces. Also available for automatic hot water supply, either as direct or indirect systems. They are of standard sectional cast iron construction, with narrow, smooth, vertical flues, readily accessible for cleaning, if necessary. Designed to operate with a minimum of excess secondary air, and breeching temperature above 212°, eliminates annoying condensation while maintaining high efficiency.

Series "A" and "AE" Gas Era Boilers are made in sizes to handle the requirements of residences and apartments, and for domestic water supply. Smaller sizes are shipped with sections assembled. The thoroughly insulated cabinet guards against heat loss, assuring economy in operation. Controls and burners are readily accessible for inspection and adjustment.



STEAM, VAPOR, AND HOT WATER RATINGS

Steam or Vapor			Hot Water		
Boiler number (enclosed)	Boiler number (exposed)	A.G.A. rating, sq. ft.	Boiler number (enclosed)	Boiler number (exposed)	A.G.A. rating, sq. ft.
A- 3-S	AE- 3-S	180	A- 3-W	AE- 3-W	290
A- 4-S	AE- 4-S	270	A- 4-W	AE- 4-W	430
A- 5-S	AE- 5-S	360	A- 5-W	AE- 5-W	575
A- 6-S	AE- 6-S	450	A- 6-W	AE- 6-W	720
A- 7-S	AE- 7-S	540	A- 7-W	AE- 7-W	865
A- 9-S	AE- 9-S	720	A- 9-W	AE- 9-W	1,150
A-11-S	AE-11-S	900	A-11-W	AE-11-W	1,440
A-13-S	AE-13-S	1,080	A-13-W	AE-13-W	1,730
A-15-S	AE-15-S	1,260	A-15-W	AE-15-W	2,015

All sizes up to and including A-9 are shipped with sections assembled.
Nos. A-11 to A-15 and AE-11 to AE-15, are shipped in two blocks.



Completely automatic in operation. After the system has been put in use, no further attention is required. The dependability and positive operation of the controls assure perfect operation of the boiler at all times.

SERIES "C"

The Series "C" Gas Era Boiler is particularly adapted to use in large residences and commercial and industrial applications, where heating demands are greater.

Converging and semi-revertible flue construction prevents rapid cooling of boiler when burners are off.

Sections have exceptionally large water-holding capacity, yet water line is only 38½ inches in all sizes. Boiler depth in all sizes is 31¾ inches, and height 49 inches, excluding controls and diverter.

Boiler sections are enclosed in completely insulated casing, finished in green texture-lacquer.

RATINGS AND DIMENSIONS

Boiler No.	A.G.A. ratings, sq. ft.		Over-all width, in. less controls	Boiler No.	A.G.A. ratings, sq. ft.		Over-all width, in. less controls
	Steam	Hot water			Steam	Hot water	
13 S or W	420	670	15	1123 S or W	4620	7370	93
24 S or W	630	1005	19	1225 S or W	5040	8040	101
25 S or W	840	1340	23	1327 S or W	5460	8710	108
36 S or W	1050	1675	27	1429 S or W	5880	9380	116
37 S or W	1260	2010	31	1531 S or W	6300	10050	124
49 S or W	1680	2680	39	1634 S or W	6720	10720	
511 S or W	2100	3350	46	1838 S or W	7560	12060	
613 S or W	2520	4020	54	2042 S or W	8400	13400	
715 S or W	2940	4690	62	2246 S or W	9240	14740	
817 S or W	3360	5360	70	2450 S or W	10080	16080	
919 S or W	3780	6030	77	2654 S or W	10920	17420	
1021 S or W	4200	6700	85	2858 S or W	11760	18760	
				3062 S or W	12600	20100	

Dimensional Prints on Application

MUELLER SERIES "O" OIL-FIRED AIR CONDITIONING FURNACE



Series "O" Unit Provides "Climate-to-Order" in the Home

The Mueller Series "O" Oil-fired air conditioning furnace is the first complete departure from conventional furnace design in a direct-fired, forced air heating and air conditioning plant.

The radiator is the fan scroll. The air passes over heating surface not once, but three times. Velocity and impingement create a rate of heat transfer undreamed of in previous design. The silent fan provides generous volumes of warm air to secure uniform temperatures, and is of sufficient capacity for the addition of complete cooling where desired.

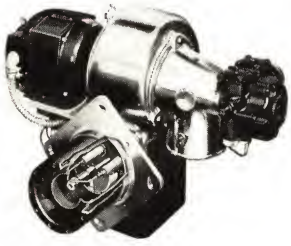
The Series "O" heats, filters, humidifies and circulates the air within the home, thereby completely controlling indoor winter "climatic" conditions, and, if desired, cooling and dehumidification.

The cabinet is completely insulated. Doors at the front provide access to burner, heating unit, fan and humidifier. Filters are serviceable through removable panel at the side.

Positive control of humidity is provided by means of a humidistat. Projecting vanes direct the warm air through the water spray, where humidity is supplied, as required. Copper screen traps entrained moisture.

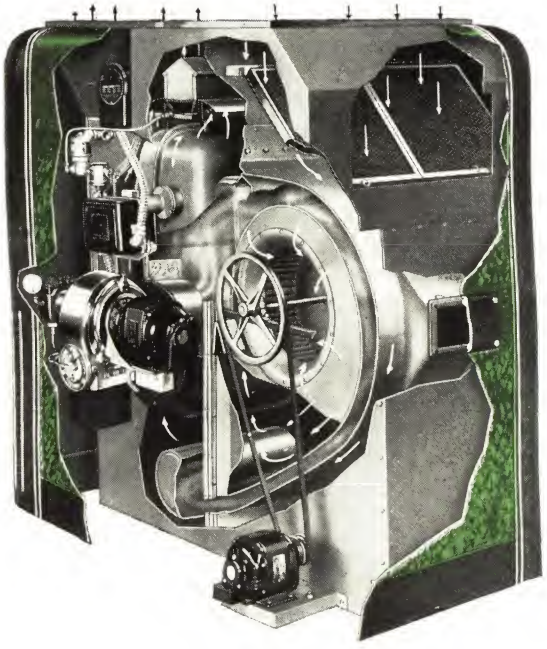
The Series "O" is equipped with pre-cast combustion chamber, "tailor-made" to fit snugly into the combustion unit.

The inner construction and method of operation are shown in the cut-away view below. This design provides an unusual amount of air impingement and heat transfer. Not only does the combustion chamber transmit heat, but the inner and outer walls of the fan scroll, as well, providing not just one heating surface, but three.



The Mueller oil burner, due to its exclusive, scientific design, achieves perfect combustion and secures close to the ultimate in air ratio.

The Mueller oil burner was specifically designed to coordinate with the Series "O" furnace unit in securing the highest degree of economy, smoothness and dependability of operation. Equipped with a high efficiency, high temperature head, the Mueller Oil Burner completely burns the fuel and extracts every particle of heat. The flame generated is intensely hot, yellow-white in color, and seemingly spinning in action, having a shape much like a bowl. The unit starts, runs, and stops so quietly and smoothly, you are not conscious of its operation.



RATINGS AND DIMENSIONS

Furnace No.	B.t.u. capacity at register	*Air delivery, C.f.m. (maximum)	Width, in.	Depth, in.	Height, in.
0-1	110,000	2,500	56	37	60
0-2	165,000	3,750	64	46	60
0-3	225,000	5,000	72	57	60

*Capacities shown are for delivery against maximum resistance encountered on conventional systems, which vary with size. Detailed data covering fan performance and motor horsepowers furnished upon request.

MUELLER SERIES SIXTY OIL-FIRED AIR CONDITIONING FURNACE

The Series Sixty was designed and built with one thought in mind—to offer the thousands of home owners who want the combined comforts of oil heat and air conditioning, a compact, highly efficient, and attractive unit, at a price most everyone can afford.

The Series Sixty is entirely automatic in its operation. The burner operates only when needed to keep the temperature in the home constant and uniform. The unit starts, runs, and stops quietly and smoothly. Any pressure atomizing type oil burner may be used. The Mueller Oil Burner secures the highest degree of economy, smoothness, and dependability of operation.

Maximum heat absorption and transmission to the air within the inner casing is provided by the combustion unit and tubular radiator. The tubes in the radiator provide a bottom-to-top passageway for the air, and assure positive impingement of air over the entire surface of all tubes.

Positive air circulation is provided by the quiet Mueller fan, located below the heating unit. The return air is drawn through the top, down the left side, through the filters, is forced over the heating surfaces, is humidified, and delivered to the distribution system, providing clean, invigorating warmth throughout every room in the home.

The unit is attractive in design, compact in construction, and efficient in operation. A convenient access door to the filters permits easy access for cleaning or replacing. During summer months, removal of access door permits cool, filtered basement air to be circulated through the home. Close-off plates seal the interior and assure only clean, filtered air for summer ventilation.



- **Attractive in appearance**
- **Economical, automatic operation**
- **Efficient, dependable performance**
- **Quiet, uniform heat distribution**
- **Compact, highly efficient design**
- **Insulated outer cabinet**
- **Filtered, humidified, circulated warm air, distributed uniformly to all rooms**



A cut-away showing the fire travel and inner construction of the Series Sixty Oil-fired Air Conditioning Unit.

The Series Sixty has sufficient air delivery capacity to provide complete cooling and dehumidification during summer months by the addition of coils for circulation of either water or refrigerants.

Some of the outstanding features of the Series Sixty are . . . die-stamped and seam-welded combustion chamber unit . . . multi-blade fan . . . rubber-cushioned, cradle-mounted motor, equipped with integral overload switch, and variable speed drive . . . relay operated in conjunction with room thermostat to control oil burner operation . . . radiator with series of tubes providing considerably increased heating surface . . . texture-lacquered, insulated cabinet.

RATINGS AND DIMENSIONS

Furnace No.	B.t.u. capacity at register	*Air delivery C.f.m. (maximum)	Width, in.	Depth, in.	Height, in.	Filters	
						Number	Size
61	110,000	1,800	48	46	65	3	16x25
62	165,000	2,500	57	53¼	69¼	4	16x25

*Capacities shown are for delivery against maximum resistance encountered on conventional systems, which vary with size. Detailed data covering fan performance and motor horsepowers furnished upon request.



In installations employing refrigerating and dehumidifying equipment, the cooling coils are installed above the washer chamber.

CLIMATOR II
AIR CONDITIONING UNIT

In the illustration at the left is shown the assembly of the Climator II fan, air washer, and filter, for winter air conditioning. In this type installation the filter holder is mounted above the fan. In year round applications, where refrigerating equipment is employed, the filter holder is mounted above the air washer.

The Climator II fan is specially designed to deliver, in silence, a constant flow of air in adequate volume, against the highest resistances encountered in complete air conditioning installations. Fan speeds may be varied to secure desired air volume and compensate for differences in air resistance.

During winter, the spray type air washer supplies controlled humidity. The water is atomized into an extremely fine mist. The spray nozzles are away from the heat zone, eliminating danger of clogging due to lime. Operation of the washer is controlled by the solenoid valve regularly supplied, operating in conjunction with the humidistat.

Climator II fans, air washers and filters are available in four matched sizes. Washer and filter units should be selected in sizes corresponding to the fan.

CLIMATOR II SIZES AND CAPACITIES

Unit No.	Fan wheel diameter, in.	C.f.m. capacities	G.p.h. washer consumption 30 lb. pressure	Approximate overall dimensions of assembled fan, washer, filters	
				Standard type	Special cooling type
18	18	1200-2200	27	38x56x45	38x 84x53
22	22	2200-4400	36	50x62x55	50x 90x55
24	24	4400-5500	54	62x65x60	62x 94x56
27	27	5500-8600	72	70x71x78	70x100x68

Complete rating tables furnished on request.



Illustration above shows the eliminator plates, removed from the front of washer chamber. Note two nozzles which atomize water into an extremely fine mist.

CLIMATOR III
AIR CONDITIONING UNIT

The Climator III combination unit meets the increasing demand for a complete all-in-one air conditioner which may be installed in conjunction with any warm air furnace in new homes, stores, etc., or added to existing gravity furnace installations. It is made in one size only, suitable in capacity for handling the requirements of the average size building.

The unit consists of a blower type fan, air washer and filters, completely enclosed in a single compact housing. A 13⅛ in. double width, double inlet fan is employed. In the washer chamber, two nozzles spray water in a fine mist in the path of the air moved by the fan. Water supply is controlled by an electric solenoid valve, so connected that washer cannot operate unless fan is running. Removable eliminator plates trap entrained moisture. Complete unit measures 37 in. wide, 36 in. deep, and 42 in. high.



CLIMATOR III CAPACITIES

Fan R.p.m.	Cubic Feet Per Minute			
	⅛" S. P.	3/16" S. P.	¼" S. P.	5/16" S. P.
400	1125	550	....	...
425	1325	775	....	...
450	1525	950	575	...
475	1700	1225	800	375
500	1875	1425	1000	600
525	2000	1650	1175	800

Note: Capacities shown include allowance for filter and washer resistance.

CLIMATOR FAN-FILTER UNITS

"A Size for Every Home"

Large or small buildings, homes, schools, auditoriums, theatres, factories . . . all can enjoy the comforts and pleasures of clean, filtered, warm air uniformly distributed. Old or new warm air furnaces can be converted into modern forced circulation units, at but little cost, and with resultant better efficiency.



Any Warm Air Heating System Can Be Modernized with a Climator Fan-Filter Unit—Provides Better, Cleaner, Healthier Heating



Climator units are of sturdy construction. All metal-to-metal contact is eliminated. The motor base and fan rest on individual three-point rubber suspensions. The accurately spaced, die-stamped fan blades are time-welded to the centerplate by a machine specially designed by Mueller engineers, assuring greatest possible accuracy.

Other outstanding features of Climator units are: Filters of ample area, which may be cleaned or replaced; light, but sturdy shaft and bearings; rubber-cushioned, cradle-mounted motor, equipped with integral overload switch; adjustable speed sheave and silent "V" belt drive . . . full-floating, three-point fan suspension with adjustable legs . . . rubber moulding completely isolates all moving parts and possible vibration . . . fan blades designed for quiet operation, with maximum air delivery . . . convenient access door to filters and interior . . . all sizes up to the 21 inch can be carried through any standard door without dismantling; the larger sizes are readily dismountable, if necessary.

DIMENSIONS AND CAPACITIES

Unit No.	Height, in.	Width, in.	Depth, in.	Maximum c.f.m. capacities for quiet operation					
				⅛ in. S. P.	¼ in. S. P.	⅜ in. S. P.	½ in. S. P.	¾ in. S. P.	1 in. S. P.
10-S-16	27	28½	26½	1,600	1,000	....	....	....	....
11-S-16	29	27	25¾	1,300	1,125	....	....	....	....
13A-S-16	34	27	26½	1,350	1,350	950	....	....	....
13A-R-16	35⅝	28	26¾	1,350	1,350	950	....	....	....
13B-S-14	34	31	26¾	1,850	1,850	1,150	....	....	....
13B-R-14	38	32	26¾	1,850	1,850	1,150	....	....	....
15-R-13	45	46	26¾	2,500	2,500	1,750	....	....	....
15-R-12	45	46	26¾	2,500	2,500	2,500	2,350	....	....
18-R-12	45	58	26¾	3,600	3,600	1,850	....	....	....
18-R-34	45	58	26¾	3,600	3,600	3,600	3,450	....	....
18-R-11	45	58	26¾	3,600	3,600	3,600	3,450	....	....
21-R-34	57	70	33	4,850	4,850	4,850	4,300	3,450	3,100
21-R-11	57	70	33	4,850	4,850	4,850	4,850	4,250	3,800
21-R-32	57	70	33	4,900	4,900	4,900	4,900	4,900	4,350
24-R-34	62	72	38	6,300	6,100	5,300	4,600	3,450	....
24-R-11	62	72	38	6,300	6,300	6,250	5,550	4,500	....
24-R-32	62	72	38	6,300	6,300	6,300	6,300	6,100	5,400
24-R-21	62	72	38	6,300	6,300	6,300	6,300	6,300	5,650
*221-32	35⅞	101	31½						
*221-21	35⅞	101	31½						
*221-31	35⅞	101	31½	See note for capacities					
*224-32	41	114⅝	36						
*224-21	41	114⅝	36						
*224-31	41	114⅝	36						

*Twin Fan dimensions are for fans only, less housing. Housing and filters made to specifications.

Note: The Twin Fans have double the c.f.m. and hp. values for single fans of corresponding wheel diameter.

Explanation of numbering: First number indicates wheel diameter. "S" indicates housing with square upright corners and radiused top, and top access door. "R" indicates housing with all corners radiused, and access doors on opposite sides. Last number indicates motor horsepower, i.e. 16 means ⅙ hp., 34 means ¾ hp., and 32 means 1½ hp.

Where desired, Climator units may be equipped with 2-speed motors. Where 2-speed motor is used, a 2-speed fan control, securing adjustable "off", low, and high speed operation, is supplied. 2-speed motors are equipped with integral overload, same as single speed motors.





MUELLER FULL FRONT FURNACE

Forced Air and Gravity Styles

The Mueller Series "P" Fan-Filter-Furnace Unit is a compact attractive unit that provides clean, healthful, comfortable conditions in the home during the winter months.

Radiators are of one-piece construction, with clean-out and smoke-pipe extensions cast as integral parts of the unit. The radiator projects through the shield and the clean-out opening is closed with a heavy, cast-iron, tight-fitting cover.

Firepots and the upper portion of the combustion chamber are heavily ribbed. The grate is of flat, revolving duplex type, with dump center, assuring the heat of the fire being concentrated around the edge of the grate in contact with the firepots.

The firedoor is surface ground and is hinged directly to the feed mouth which extends through the shield. A slide at the top of the firedoor admits air over the firebed improving combustion, resulting in maximum heat utilization.

A minimum amount of floor space is required, due to the fan-filter unit being set flush against the furnace casing. Interchangeable panels permit placing the fan at either side or rear as may be most convenient. The fan size is not limited to the furnace size.

This same furnace, less fan-filter unit, and with round galvanized casing, is available where gravity operation is desired.

MUELLER ETERNO FURNACE

Guaranteed for Twenty Years

Built of "Lifetime Metal", the Mueller Eterno Furnace gives the homeowner a new assurance, a new protection—a furnace of such perfect construction that after its installation the owner receives the written guarantee of the L. J. Mueller Furnace Co. against the burning out of any part or parts of the furnace over a period of twenty years of ordinary service. The Eterno furnace will easily withstand the most severe usage to which any furnace would be subjected in heating the home.

In design, the Eterno Furnace is the same as the Full Front Furnace as described above. It is available in both single door and double door styles, with ratings and dimensions as listed for the Full Front Furnace. These furnaces may be installed with round galvanized casings, or with square, fan-type casings, finished in green texture lacquer. When installed as a forced circulation system, a Mueller Climator fan-filter unit is used in combination with the Eterno Furnace same as the Series "P" unit shown above.



The above cut-away view shows the interior construction of the furnace and fan-filter unit.



Mueller ETERNO Furnace

DIMENSIONS AND CAPACITIES

	*Furnace No.	Sq. in. pipe capacity	B.t.u. capacity gravity †	Firepot diameter, in.	Grate diameter, in.	Diameter, round casing ††	Floor to center of smoke pipe
Single Firedoor	F-36	337	45832	18	15	37	41½
	F-40	453	61608	20	18	41	41½
	F-44	570	77520	22	21	44	45
	F-48-C	673	91528	24	23	48	46
	F-54-B	755	102680	27	24	54	46
	**390	975	132600	30	28	58	57½
Double Firedoor	G-36	347	47192	18	15	37	47½
	G-40	466	63376	20	18	41	47½
	G-44	585	79560	22	21	44	52
	G-48-C	690	93840	24	23	48	53
	G-54-B	774	105264	27	24	54	53
	**890	1000	136000	30	28	58	65

*For Eterno Furnaces, add letter "E" to corresponding Full Front No., i.e., FE-36, etc. For Series "P" units, add letter "P", i.e., FP-36, FPE-36, etc.

**Supplied with crank shaker and triangular grates only, three-quarter size bolted-on shields, and smooth firepot and feed sections.

†For forced air operation, B.t.u. outputs are 50% greater than gravity ratings shown.

††Series "P" dimensions furnished upon request.

MUELLER STEEL FURNACE



In the Mueller Steel Fan-Filter-Furnace unit is incorporated every feature that makes for durability, dependability, and economy of operation. Whether solid fuel or oil is burned, the same holds true.

The heater body is made of 7-gauge, flange quality steel. Heads are of 3-gauge, radiators and bottoms of 12-gauge. The slanting front pouch is of 3-gauge. Side wings are extensions of heater body, not riveted on. Every riveted joint is sealed by a heavy fillet weld, making practically a one-piece body, eliminating possibility of leakage of smoke, gas or dust into the air travel. A heavy, suspended casting protects the head from the radiant heat of the fire.

The heavy cast-iron collar which connects the heater body and radiator is made in two parts which fit together with a wide, overlapping joint, preventing escape of smoke or gas into the casing.

The cast-iron front is attached directly to the broad flange of the front pouch. Asbestos gaskets inserted between flanges and furnace front eliminate possibility of the escape of products of combustion into the casing.

The fan-filter unit is set flush against the furnace casing, eliminating the transition, and conserving necessary space. The fan size is not limited to the furnace size.



HAS MANY OUTSTANDING FEATURES

1. Heater body of 7-gauge, flange quality steel.
2. Air-tight connecting collar between heater body and radiator.
3. Radiator with deflecting baffle to direct products of combustion.
4. Inner casing completely enclosing heater unit.
5. Return air inlet.
6. Two access doors—opposite sides—11-S-16 fan has top access.
7. Oil-impregnated, split steel wire filters, in metal holders.
8. Fan scroll—three-point rubber suspension.
9. Cradle mounted motor, equipped with integral overload switch.
10. Fan blades designed for quiet operation, with maximum air delivery.
11. Rubber completely isolates all moving parts and possible vibration.
12. Hot blast firedoor admits pre-heated air to facilitate combustion.
13. Deep and roomy ashpit.
14. Green, texture-lacquered housing.

The distinct points of construction mentioned previously apply both to the Series "P" (forced circulation), and the round-cased furnace shown at the right, which may be installed for gravity operation, or with a Mueller Climator fan-filter unit for a forced circulation system.

The firepot is formed of highest quality heavy fire brick molded to conform to the exact size of the heater body and built higher at the back to protect the drum at that point. Grates are duplex, dump-center style, operated by upright hand shaker. The dump-center section is operated by crank shaker when it is desired to dump fire.



DIMENSIONS AND CAPACITIES

*Furnace No.	Sq. in. pipe capacity	† B.t.u. capacity gravity	Drum diameter, in.	Grate diameter, in.	Height, furnace only	Floor to center of smoke pipe	‡ Round casing diameter
220	440	59840	20	16½	53	41	45
222	511	69496	22	18½	54	41½	47
224	585	79560	24	20½	56	43½	50
227	740	100640	27	23½	58	45½	55
230	885	120360	30	26½	60	47½	58
234	1090	148240	34	30½	63	49½	62
234-G	1175	159800	34	30½	63	49½	Sq. only

*For Series "P" units, add letter "P" to No., i.e., P-220, etc.
†For fan operation, B.t.u. capacities are increased 50%.
‡Series "P" dimensions furnished upon request.

MUELLER DOUBLE RADIATOR FURNACE



SERIES "SA" STOKER-FIRED

The Series "SA" Double Radiator Stoker-fired Furnace is undoubtedly the most outstanding, designed stoker furnace. Its many exclusive features make it the most desirable and practical furnace for stoker-firing. Consider these features:

Clinker Chute and Receptacle—The clinker chute is a permanent part of the furnace and connects with a galvanized clinker can, which is kept tightly closed by a sliding cover. When removing clinkers, they are simply lifted and dropped down the chute to the can. The can is open to the combustion chamber. No smoke odor goes into the house, but is carried back into the furnace and up the chimney.

Zone of Extra Heating Capacity—Due to the particular design of the Double Radiator Furnace, it has double the prime heating surface of any other furnace of equal grate area. Two large circular radiators and twenty vertical pipes constitute the Zone of Extra Heating Capacity. Heat radiating from the retort is absorbed by the vast amount of exposed surface.

No Fly Ash Accumulation—Because all surfaces in the Double Radiator and radiating pipes are vertical, it is self-cleaning—no fly ash accumulation.

The Series "SA" includes a Climator Fan-Filter unit, and provides clean, filtered warm air uniformly distributed to each and every room. This unit does not include a stoker, and is designed for use with any type stoker desired by the homeowner.

The stoker and fan are interchangeable on either side of the unit, and where necessary the stoker may be placed at the rear, with the fan on either side.

The unit is attractive in appearance, with a mar-proof/texture-lacquered finish, and the cabinet is completely insulated.

Unit No.	Capacity B.t.u. per hr.	¼" S.P. c.f.m.	Height, in.	Width, in.	Depth, in.
SA100-1	100,000	900	68	63¾	38
SA100-2	100,000	1,300	68	64¾	38
SA100-3	100,000	1,650	68	64¾	38
SA175-3	175,000	1,650	70	71¾	45
SA175-4	175,000	2,350	70	67¼	45
SA175-5	175,000	2,500	70	67¼	45
SA175-6	175,000	2,900	70	70½	45
SA175-7	175,000	3,600	70	70½	45
SA175-8	175,000	3,600	70	70½	45

"A" SERIES (Standard Style)

The Standard Style Double Radiator Furnace has the same furnace construction as the "SA", with the exception that it has a regulation shield for hand-fired operation, and is regularly equipped with texture-lacquered square casing, with round inner fan casing. May also be furnished with regulation round, galvanized iron double casing and hood. Triangular, duplex grates are regularly supplied with this furnace.



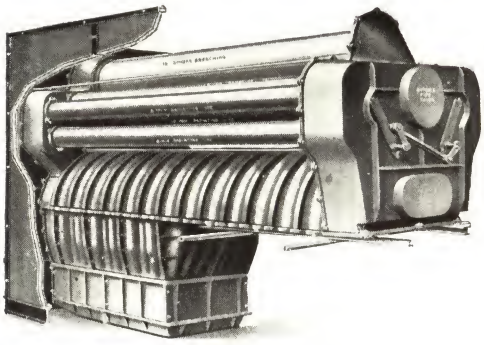
DIMENSIONS AND CAPACITIES

Furnace No.	Sq. in. pipe capacity	†B.t.u. capacity gravity	Firepot diameter, in.	Grate diameter, in.	‡Diameter round casing	Floor to center of smoke pipe
*A-40	472	64,192	20	18	40	48½
A-44	618	84,048	22	19	46	53
A-48	741	100,776	24	22	48	53
A-52	875	119,000	26	24	52	58
A-54	935	127,160	27	24	58	62
A-60	1,152	156,672	30	28	60	62
**266	1,345	182,920	33	30	66	66

*Made with single radiator and ten radiating pipes.
**Has large single fire door. All other sizes have double fire door.
†For forced air operation, B.t.u. capacities may be increased 50%.
‡Also available with Series "P" square, texture-lacquered casing and Climator fan. Complete data on request.

MUELLER HORIZONTAL TUBULAR FURNACE

Nos. 93, 94, 95



The above view, taken from the rear, shows the deeply corrugated heater body sections, heater tubes, as well as the corrugated firebox, resulting in increased heating surface, maximum heat and minimum fuel cost.

This type Mueller Furnace is designed to handle commercial and industrial heating and ventilating requirements of larger buildings, such as schools, churches, factories, theatres, garages, and the like. These furnaces are designed for forced air systems, and where air conditioning is employed, are used in combination with fans, air washers and filters.

The design of the furnace, and the baffling of air flow within the casing is such that air must impinge upon every square inch of surface, resulting in maximum heat with minimum fuel cost.

The Heater body sections are made of heavy cast iron, deeply corrugated, and connected and sealed by cup joints to allow for expansion and contraction. Roller bearing rails eliminate stresses and expansion noises. The firebox is of corrugated castings, and is provided with heavy, cast perforated liners. Between the liners and sides of the firebox is an air space through which air is admitted from the ashpit, facilitating complete and smokeless combustion.

Grates are of rocking and dumping type, arranged in two sections, each section operated by individual upright shaker. Heater tubes are made of $\frac{3}{16}$" lapwelded, wrought well casing. They are connected to front and rear receivers with gaskets and glands, providing for expansion and contraction of heater body and tubes independently. Direct draft dampers in rear receiver are operated by lever located over fire door.

These furnaces may be installed in brick setting, or equipped with heavy steel casing. Casings are insulated by an adequate thickness of material having high heat resistivity. They are substantially re-enforced, are neat and attractive, and are easily installed. Casings are built to order, and dimensions, openings and connections to exactly fit requirements are supplied.

DIMENSIONS AND CAPACITIES

Furnace No.	B.t.u. capacity per hour	Grate area, sq. ft.	Heating surface, sq. ft.	Size of Firebox, in.	Length, heater only, in.
93	1,188,000	10	419	42x74	110
94	1,290,000	10	455	42x74	130
95	1,390,000	10	491	42x74	150

Total width of furnace only is 72 in. and height 96 in.—warm air plenum and tempered air plenum chambers may add to this dimension.

Nos. 80-A and 90-A

This type Horizontal Tubular Furnace is particularly adapted to large residences, suburban and rural schools, churches, dance halls, etc., where the heating load is less than would require type shown above. Although designed primarily for use with forced air, with or without washers, filters, etc., these furnaces may be installed for gravity operation where conditions are such that a gravity system will serve the purpose.

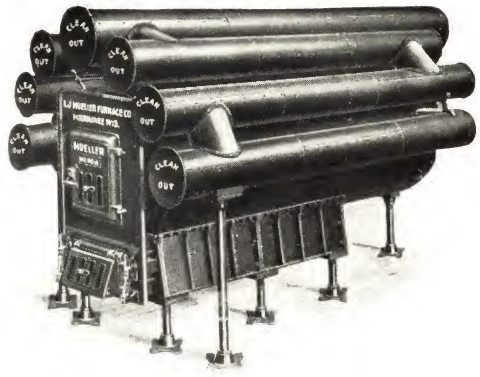
The heater body presents a vast area of prime surface exposed to radiant heat. In addition, seven full-length tubes provide long fire travel and enormous secondary surface. The body of this furnace is formed of 10-gauge boiler plate, with welded seams. Front and rear heads are cast iron. The upper two-thirds of body is lined with deeply corrugated, cast iron sections.

The firebox is formed of heavy, cast sections, extending 18" above the grate line. Cast iron bridgewall forms end of firebox. Ample provision is made for expansion and contraction. Grates are of rocking and dumping type, and are arranged in two sections, each operated by upright shaker. The seven tubes, or flues, which provide flues for fire travel, are made of heavy sheet steel. The three tubes on each side are 9" in diameter, the collection flue at top is 12" diameter. Cast covers are provided on flue extensions carried through casing.

The unusually long travel of the products of combustion, which in the No. 90-A amounts to over 50 feet, assures maximum heat extraction, resulting in efficient, economical operation. Direct draft damper, for quick starting and re-fueling, is operated by lever located at front of unit, above fire door.

The heavy steel casings regularly supplied are thoroughly insulated. Since casings are built to order for each job, dimensions, openings and connections to exactly fit the requirements are supplied. These furnaces may also be installed for brick setting, if desired.

These furnaces are adapted for use with coal, oil or gas, and give satisfactory, dependable service with any fuel.



DIMENSIONS AND CAPACITIES

Furnace No.	B.t.u. capacity per hour		Grate area, sq. ft.	Heating surface, sq. ft.	Length of body, in.
	Gravity	Forced air			
80-A	375,000	550,000	6.53	194	69
90-A	500,000	750,000	9.2	244	92

Total width of furnace only is 67 in., both sizes, and height 73 in.—air mixing chambers may add to height.









MUELLER . . . The Finest in Heating and Air Conditioning Equipment

Installations in thousands of homes, theatres, schools, churches, stores, industrial plants and public buildings substantiate the Mueller claim for not only the most complete line in the industry, but the finest. Whatever the heating requirement, Mueller can fill it.

Not only does Mueller manufacture a complete line of heating and air conditioning equipment, but a complete line of gravity and pre-fabricated pipe and fittings, registers and grilles, as well.

Among some of the outstanding Mueller installations are Walt Disney Studios, and other studios, sound-stages and theatres in and around the Film Capital . . . the famous Brown Derby, of Hollywood . . . The Pig'n Whistle, San Francisco, Cal. . . . General Motors Assembly Plant, Los Angeles, Cal. . . . U. S. Gypsum Co., Chicago, Ill. . . . Homestake Mine, Lead, Mont. . . . California Fruit Exchange, Los Angeles, Cal. . . . Chrysler Motor Assembly plant, Los Angeles, Cal. . . . 124th Field Artillery Armory, Chicago, Ill. . . . and many United States Air Bases and Forts are also completely Mueller-heated.

A few of the many group housing projects with which Mueller equipment is strongly identified (some of which are illustrated here), are such well known developments and housing projects as:

J. C. Nichols Co., Kansas City, Mo.
U. S. Housing Project, Greendale, Wis.
Algonquin Ridge, St. Louis, Mo.
Jacobsen Lbr. Co., Menominee Falls, Wis.
Axton Realty Co., Milwaukee, Wis.
A. R. Peterson, Arlington Hgts., Ill.
Koppers Coal Co., Kopperston, W. Va.
Wm. Joern & Sons, La Grange, Ill.
Pilgrim Homes, Milwaukee, Wis.
Bon-Air Builders, Niles Center, Ill.
C. W. Johnson, Evanston, Ill.
Aluminum Prod. Corp., La Grange, Ill.

L. J. MUELLER FURNACE CO.

General Offices, MILWAUKEE, WIS.

ST. LOUIS - - 4246 Forest Park Blvd.
OMAHA - - - - - 1718 Cass St.
MEMPHIS - - - 1128 Sterrick Bldg.
BALTIMORE - - 123 Market Place
PHILADELPHIA - Delaware and Tasker
KANSAS CITY - - - - - - - 3337 Highland Ave.
MINNEAPOLIS - 1618 Harmon Place
PITTSBURGH - - - 45 So. 20th St.
SALT LAKE CITY - 980 Atkin Ave.
LOS ANGELES - 129 So. Hayworth Ave.
DALLAS - - - 138 W. Suffolk St.



SECTION 26

CONTINUED ⟶

RESEARCH CORPORATION

(AIR CONDITIONING DIVISION)
Chrysler Building
NEW YORK, N. Y.
CHICAGO OFFICE, ILL., 59 East Van Buren Street
PLANT AND LABORATORY, BOUND BROOK, N. Y.

PRODUCTS

The Research Corporation System of Air Conditioning featuring *Chemical Dehumidification.*

Coey Multi-stage Cooling Towers.

Other products include Cottrell Electrical Precipitation Processes, Multiclone Dust Collectors, Impax Separators, Cottrell Royster Deodorizers, Royster Stoves for High Temperature Heat Exchange, etc.

ENGINEERING SERVICE

Research Corporation offers to architects, engineers, building owners and operators, chain store organizations, etc. the services of its Engineering Staff to assist them in arriving at the most effective solution of problems involving atmospheric water cooling, year 'round humidity and temperature control, air purification, etc., whether for comfort or processing requirements. Past results have demonstrated the economy and efficiency of properly planned equipment, and the experience of our engineers is available to those who have types of problems in the solution of which our equipment can be effectively used.

RESEARCH CORPORATION SYSTEM OF AIR CONDITIONING, FEATURING CHEMICAL DEHUMIDIFICATION AND EVAPORATIVE COOLING

(Patented and Patents Pending)

The Research Corporation System of Air Conditioning *simultaneously* maintains desired temperature and humidity conditions under entirely *separate control.* Humidity control is accomplished in a unit called a "Calorider" by the use of a hygroscopic salt solution which is sprayed on to an extended-surface cooling coil over which the air passes. During removal of moisture by absorption into the solution, the heat of condensation is thus simultaneously taken up by cooling water circulating through the coil.

In order to hold the salt solution at the proper concentration for the desired equilibrium humidity conditions, a *concentrator* is provided in which approximately one-fifth of the circulating solution from the Calorider is sprayed downward through a heating zone counter to a flow of air drawn upward through the *concentrator* and exhausted to the atmosphere.

Cooling is accomplished by water coils and water used may be either well water, city water or recirculated water passed through an evaporative cooler, depending on circumstances. City water can generally be used for small jobs.

Among the many advantages of this system is the fact that in either comfort or industrial applications independent control of temperature and humidity can be obtained at low cost, because low pressure or waste steam can be utilized for the brine concentration.

The load on the system varies directly with the variation of outside air conditions from those desired. With the all-year controls provided, the equipment is adapted for automatic reversal from cooling and dehumidifying to heating and humidifying, as conditions may require. In the latter case moisture is absorbed by the air from the brine, and water is automatically added to maintain concentration. Heat is provided by tempering coils.

Advantages of Research Corporation System of Air Conditioning

(1) Usually costs no more to install, and cuts operating costs 50% to 80%.

(2) Cooling water at 70° F. can furnish conditioned air with a dew-point as low as 30° F.

(3) Maintenance is simple, cheap and infrequent. No reciprocating machinery—no gas to leak. The only moving parts are fans, pumps and their motors.

(4) Minimum noise and vibration—limited to that of the main air supply blower.

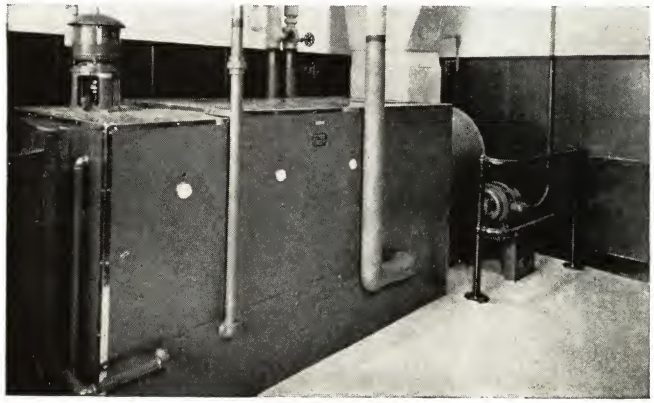
(5) Fully automatic control, all year 'round if desired; relative humidity may be held ± 3% at any point between 15% and 50%.

(6) Equipment available in single units up to 18,000 c.f.m.

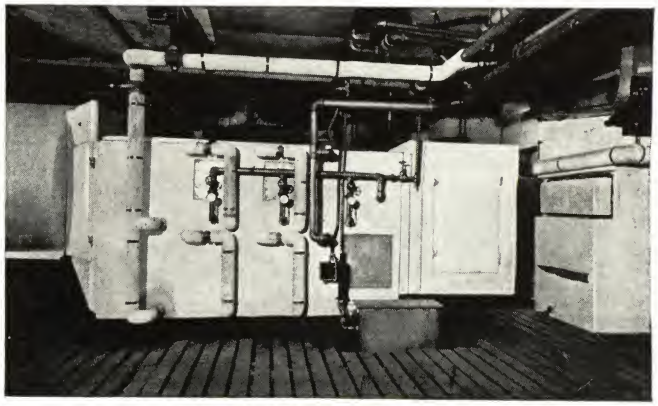
This System Has Two Distinct Functions

(1) The control of temperature, humidity and air purity for human comfort and health at extremely low operating cost.

(2) The control of humidity and air purity for industrial applications, including the drying and purification of various gases.



3,000 C.F.M. Unit



12,000 C.F.M. Unit

COEY MULTI-STAGE COOLING TOWERS

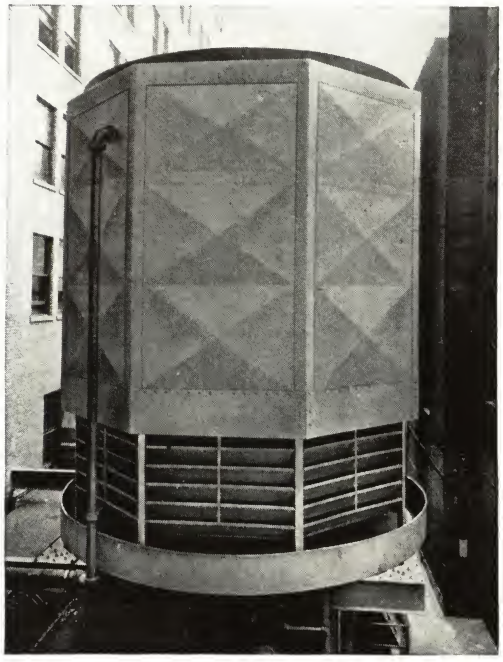
(Patented and Patents Pending)

Provides Controlled Cooling, Minimum Noise Level, Sprayless Operation, Architectural Harmony

Because of its compactness, light weight, spray-free and quiet operation, the Coey Multi-stage Cooling Tower is especially well suited for roof and basement installations in congested areas; moreover, the highly efficient cooling provided by the *multistage* principle makes this unit desirable for installation anywhere.

The standard Coey Multi-stage Cooling Tower is constructed of a copper-bearing steel shell, nickel iron supporting castings, Red Gulf cypress wood baffles, a non-overloading reverse blade centrifugal fan rotor, and the Coey patented spray eliminator of copper bearing steel or aluminum.

The advanced design of the Coey Multi-stage Cooling Tower, incorporating as it does, an internally mounted non-overloading centrifugal fan, makes it possible to combine the best features of induced draft and forced draft cooling towers in one unit, resulting in three-pass, countercurrent air flow, and preventing any possibility of ice formation on fan rotor during winter operation. No spray nozzles or internal piping are used.



Standard No. 150 Coey Multi-stage Cooling Tower, 1500 G.P.M. Provides 65% of the Heat Release for the Air Conditioning of the 10 Story Building of the Potomac Electric Power Co., Washington, D. C.

NEW MODEL "R"

In order to make available a cooling tower incorporating the above features at a lower cost than that of the standard model, the new Model R Coey Cooling Tower has recently been placed on the market.

This tower, designed and built in accordance with RESEARCH CORPORATION high standards, uses a structural steel frame, in place of nickel iron castings, and a round self-supporting shell, resulting in a reduced cost, without the sacrifice of operating efficiency.

Model R Coey Cooling Towers can be furnished in shop assembled units with capacities up to 250 g.p.m. and in larger sizes up to 1500 g.p.m. for field erection.



No. 20 R Coey M. S. Cooling Tower 225 G.P.M. on the 17th Floor of the Seamans Bank for Savings Bldg., 72 Wall Street, New York. Provides heat release for the air conditioning system of the building

CAPACITIES, SIZES AND OTHER DATA ON COEY MULTI-STAGE COOLING TOWERS

Model No.	Water flow g.p.m.	Mechanical refrigeration, tons	Steam jet refrigeration, tons	Steam condensing at 27" vac., 115°, lbs. per hour	Diesel jacket cooling brake h.p.	Diameter	Height below beams	Height above beams	Operating weights, lbs.	Standard motor, h.p.
10	Minimum 70	23	12	1125	1200	5'- 0"	1'- 0"	9'- 0"	4500	2.0
or	Nominal 100	to	to				4' to 6'			
10-A	Maximum 130	45	17							
	Minimum 160	52	20							
20-R	Nominal 225	to	to	2500	2800	8'- 5"	4' to 6'	11'- 5"	9000	5.0
	Maximum 275	92	40							
35	Minimum 260	87	45	4200	4500	10'-10'	4' to 6'	14'- 9"	17000	7.5
or	Nominal 375	to	to			11'- 3"		14'- 2"	15500	
35-R	Maximum 480	160	65							
50	Minimum 385	130	65	6200	6500	11'- 9"	4' to 6'	17'- 8"	23000	10.0
or	Nominal 550	to	to			13'- 3"		16'- 9"	21500	
50-R	Maximum 700	235	95							
85	Minimum 595	200	100	9550	9800	14'- 6"	3' to 6'	19'- 2"	35000	15.0
or	Nominal 850	to	to			15'- 0"		18'- 8"	30000	
85-R	Maximum 1100	375	140							
110	Minimum 770	255	130	12400	13000	16'- 9"	4' to 6'	21'- 0"	49000	20.0
or	Nominal 1100	to	to			17'- 9"		21'- 7"	43000	
110-R	Maximum 1400	465	185							
150	Minimum 980	325	165	15700	17000	19'- 0"	4' to 6'	24'- 5"	63000	25.0
or	Nominal 1400	to	to			20'- 0"		22'-10'	55000	
150-R	Maximum 1700	565	235							

The mechanical refrigeration and steam jet refrigeration figures are based on water flows ranging from minimum to maximum, the temperature ranges being 10°F. for the former and 15°F for the latter.

The Steam Condensing data is based on *Nominal* flow and a 25° Cooling range; 112° to 87° at 70° Wet Bulb.

Diesel Jacket Cooling is a special application; write us giving horsepower and all engine nameplate data, and we will send full details.

MEMORANDA

JANITROL

GAS-FIRED



WINTER AIR CONDITIONERS • GRAVITY HEATERS • UNIT HEATERS

SURFACE COMBUSTION CORPORATION • TOLEDO, OHIO

JANITROL "CF" GAS-FIRED

THE DELUXE OF THE

A COMPLETE LINE FOR EVERY REQUIREMENT

Janitrol manufactures a full line of gas-fired winter air conditioners and furnaces. Correct sizes and types are available for any style of home. The CF Series, now to be described, is the de luxe of the entire Janitrol line.



For use in exceptionally low basements, the CF units are also available without the air bonnets. Those without the bonnets, as pictured below, carry the designation "Type A." Those with the bonnets, as pictured above, carry the designation "Type B," "Type C," "Type D," according to the controls furnished. See "Standard Equipment" on page three.

DESIGN FEATURES

HEATER . . . Cast iron with multiplicity of embedded copper rods for conduction of heat to exterior of heater. Exposed end of each rod is equipped with a helical copper fin thus exposing a large effective heating surface to the air to be heated.

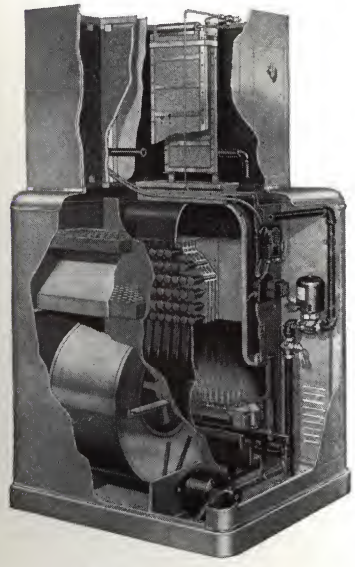
CABINET . . . High grade furniture steel. Finished in opalescent blue with chromium trim and fittings. No bolts, screws or nuts mar the exterior. Casing encloses all controls.

BURNER . . . Janitrol multi-inspirator type consisting of a series of individual burners with multi-port heads of high-temperature refractory material. Each head burns with short, sharp flame.

BLOWER . . . Multi-blade centrifugal type with felt vibration insulation between blower outlet and casing partition. Rubber mounted to base of unit to prevent vibration.

MOTOR . . . Mounted on aligned base with a single thumb screw adjustment for proper belt tension. V belt drive.

FILTERS . . . Replaceable type composed of strands of spun glass coated with special adhesive.



Sectional View CF Conditioner. Type D.

HUMIDIFIER . . . See "Standard Equipment" on page three. Types A and B use cast iron evaporating pans with copper float tank. Types C and D use refractory plate type of humidifiers.

BACK DRAFT DEVICE . . . Special Janitrol design. Simple and extremely effective.

CONTROLS . . . See "Standard Equipment" at bottom of page three.

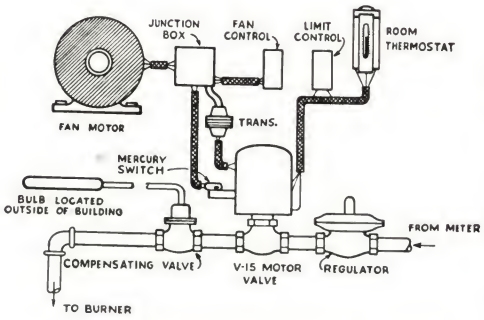


CF Conditioner Types A and B

Engineering Cooperation Available From Many Branch Offices . . . See Page 12

WINTER AIR CONDITIONER

JANITROL LINE



COMPENSATING CONTROL SYSTEM

JANITROL CONTROL SYSTEMS

(1) JANITROL COMPENSATING CONTROL SYSTEM (Furnished with Type D)—This system is designed to regulate the heat supplied to the house directly in proportion to the heat losses of the house by controlling both the amount of gas burned and the volume of air delivered. Thus, heat is supplied only *at the required rate* resulting in constant, uniform temperature and much longer periods of blower operation.

When heat is required, thermostat opens V-15 motor valve admitting gas to burner. The amount of gas admitted to burner is regulated by the compensating valve. This valve is actuated by the *outside* temperature by means of a temperature bulb mounted outside the house. When V-15 gas valve opens, a mercury switch, on valve arm, starts the two-speed blower motor at low speed, (1140 r.p.m.). At low speed, blower delivers approximately 50% of maximum volume. Blower continues to operate at low speed as long as air temperature in unit is below 175° F. If outside temperature is mild, gas input to burner will be low and heating cycle may be completed with fan operating at low speed.

When outside temperature is low and gas input is higher, air temperature in unit eventually will reach 175° F. At this temperature, blower motor automatically switches to high speed, (1725 r.p.m.), increasing air delivery to maximum. This continues until air temperature in unit drops to 125° F., when blower motor switches back to low speed. When weather is extremely cold, blower may operate at high speed until heating cycle is completed. When room temperature reaches thermostat setting, thermostat closes V-15 gas valve and blower motor stops.

(2) CUSTOMARY SYSTEM (Furnished with Types A, B and C)—Thermostat opens V-15 gas valve when heat is required. When air in unit reaches a predetermined temperature, an automatic switch starts single speed blower motor. When room temperature reaches thermostat setting, thermostat closes V-15 gas valve. Blower motor operates until air temperature in unit reaches predetermined minimum.

ENGINEERING DATA

Catalog No.	Btu Input per Hour	*Btu Output At Register	†Approx. C.F.M. Delivered At Register	GAS CAPACITY Cu. Ft. per Hour At Various Btu			BLOWER DATA			
				550	800	1000	Diam. of Wheel	Width of Wheel	No. of Wheels	R.P.M. At ½" Static
CF 90-37	90,000	64,800	900	164	113	90	14"	7"	1	580
CF120-37	120,000	86,400	1200	218	150	120	14"	10"	1	570
CF150-37	150,000	108,000	1500	273	188	150	14"	14"	1	570
CF180-37	180,000	129,600	1800	328	225	180	14"	7"	2	590
CF240-37	240,000	172,800	2400	436	300	240	14"	10"	2	610

*Allows for 10% heat loss from warm air ducts between bonnet and register. This is normal loss for average installations. Longer than average ducts, type of duct covering, duct exposure, whether or not basement is heated, etc., should be considered and Conditioner sized accordingly.

†It is assumed that approximately 75% of Btu input rating will be delivered and, consequently, C.F.M. shown will be approximately the volume of air passing through duct system and is volume on which the duct system should be designed. The approximate C.F.M. is based on air temperature between 140° and 150° F.

DIMENSIONS IN INCHES

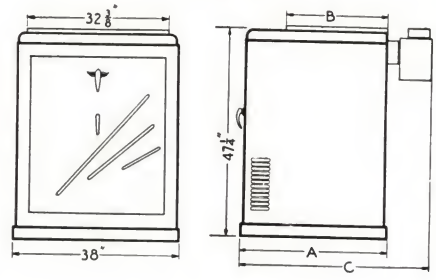
Catalog No.	DIMENSIONS				Flue Diam.	*Gas Conn.	H.P.	MOTOR DATA			
								Types A, B & C		Type D	
	A	B	C	D				Type Motor	R.P.M.	Type Motor	R.P.M.
CF 90-37	33½	23⅜	43¾	23½	5	¾	⅙	S.P.	1725	CAP.	1725-1140
CF120-37	38	27⅞	48¼	28	5	1	¼	S.P.	1725	CAP.	1725-1140
CF150-37	43¾	33⅝	55	33¾	6	1	⅓	CAP.	1725	CAP.	1725-1140
CF180-37	48¼	38⅛	59½	38¼	6	1¼	⅓	CAP.	1725	CAP.	1725-1140
CF240-37	57¾	47⅝	70	47¾	7	1¼	†½	CAP.	1725	CAP.	1725-1140

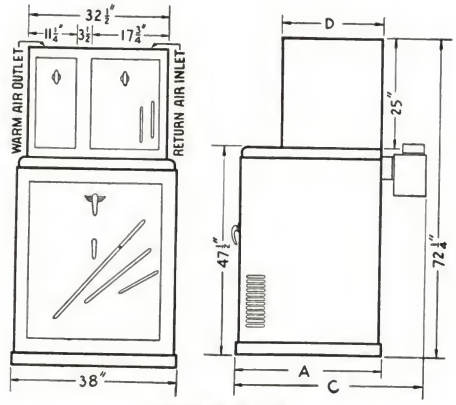
*Size of manifold connection—not size of gas supply line.

S.P.—Split phase type motor. CAP.—Capacitor type motor.

†All types CF240-37 Conditioners supplied with 220 V.-60 cyc.-1 phase-½ h.p. motor. The standard 3-wire service, normally available, affords 110-220 volt service. Control circuit operates on 110 volt-60 cycle current.

TYPE A





TYPES B, C & D

STANDARD EQUIPMENT

All "CF" Conditioners are available in four different types based on equipment furnished.

Type A—Includes insulated cabinet, without bonnet; one-piece cabinet base; cast iron heat exchanger with extended copper rod and fin heating surfaces; multi-inspirator burner; automatic pilot and fittings; draft diverter; V15A electric motor gas valve, transformer and wire; T11A Acratherm thermostat with 30 ft. of triplex wire; combination blower and temperature limit control, rubber insulated blower assembly, resilient base motor with adjustable base and adjustable pulley; renewable filters; main line shut-off cock; adjustable gas pressure regulator; cast iron evaporating pan, copper float tank, pipe strap valve, 10 ft. copper tubing and fittings. A summer switch may be installed to control the blower for summer operation.

Type B—In addition to Type A equipment, the Type B includes bonnet with access doors; bonnet lined with sound-deadening material.

Type C—Includes all Types A and B equipment plus the Janitrol refractory plate type humidifier, low voltage solenoid water valve with transformer, pressure gauge, water pressure regulator, strap valve, 10 ft. copper tubing and fittings. Humidity control obtained by adding a humidistat.

Type D—Includes all Type C equipment and the Janitrol Compensating Control System in place of the customary controls. The Janitrol Compensating Control System includes a two-speed motor (1140-1725 R.P.M.), a two-contact fan control, limit control, V15C motor valve, outside temperature bulb with 25 ft. of capillary tubing and bellows-operated compensating valve. Not available for 25 cycle.

Engineering Cooperation Available From Many Branch Offices . . . See Page 12

JANITROL "CA" GAS-FIRED

A MODERN UNIT AT MODERATE PRICE

The Janitrol CA Conditioner is designed especially for installation in the medium class home where modern winter air conditioning is desired but economy is necessary. Made in a complete range of sizes from 60,000 Btu hourly input capacity to 240,000 Btu hourly input capacity, it incorporates much of the equipment furnished with the CF series. Fully automatic in operation, the CA Conditioner fulfills the requirements of true winter air conditioning by mechanically circulating filtered, warmed, humidified air in every room.

Here, we believe, is the greatest medium-priced value we have ever been able to offer—a unit so obviously better that it will satisfy those who want all of the features of winter air conditioning but who do not want to invest in de luxe equipment.



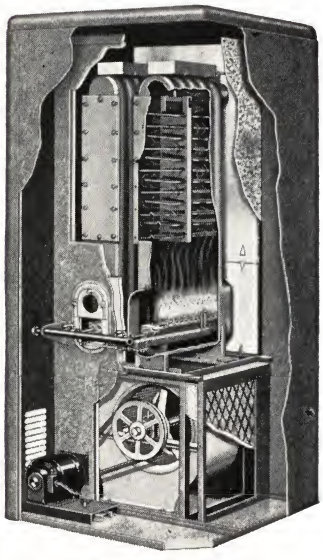
Series CA Conditioner

DESIGN FEATURES

HEATER . . . twin heaters are rigidly mounted directly above the blower to afford extreme compactness and provide large heating capacity in minimum space. Heaters are constructed of heavy steel plate, corrugated *vertically*. In addition to providing ample heating surface, these corrugations serve to make the heaters strong and rigid. Being vertical, the corrugations are streamlined with the upward flow of the air providing full contact with the air over the entire area of the heaters. This assures maximum heat transfer and high efficiency in operation.

CABINET . . . High grade furniture steel finished in tapestry blue crinkle. Chromium hardware. No bolts, nuts or screws mar the appearance of the unit as all joints are of the slip-seal type and are air-tight. All control equipment, piping and elecric connections are concealed inside the casing, yet are easily available through large access doors.

BURNER . . . exclusive multi-inspirator type consisting of a multiplicity of individual primary air mixers each producing a short, sharp flame. Individual multi-port burner heads make possible this type flame without flashback even when the gas input is reduced. Burner design is such that the gas pipes in which the orifices are drilled do not contact the individual burner tubes; consequently, the tubes remain relatively cool and retain full capacity after hours of continuous operation. Burners ignite quietly, operate quietly and shut off quietly.



Sectional view CA Conditioner

BLOWER . . . centrifugal, multi-blade type mounted to the casing base with rubber grommets. This method of mounting, together with felt insulation around the discharge opening, eliminates vibration and assures extremely quiet blower operation.

MOTOR . . . Mounted on aligned base, V belt drive. Belt adjustment with single thumb screw.

FILTER . . . replaceable, spun glass type with adhesive coating, removes dust, dirt and pollen before air enters blower.

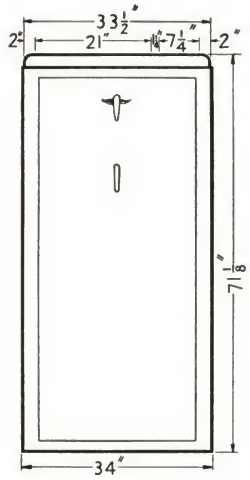
HUMIDIFIER . . . pan type with large pan-humidifier mounted on top of each heater. The water is heated and its evaporation thereby accelerated. V-shaped interior of pan permits regulation of water level and thus provides a means to control humidity. A copper water supply tank is mounted on the rear of the casing. In this tank a ball-float opens and closes a water valve to maintain the water in the pans at the desired level.

BACK DRAFT DEVICE . . . Special Janitrol design. Simple and extremely effective.

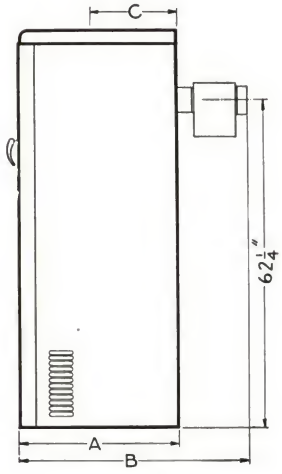
CONTROLS . . . See "Standard Equipment" on page five. All controls are completely housed in the conditioner casing.

Engineering Cooperation Available From Many Branch Offices . . . See Page 12

WINTER AIR CONDITIONER



Front View



Side View

ENGINEERING DATA

Model No.	Btu Input per Hour	*Btu Output At Register	†Approx. C.F.M. Delivered At Register	Gas Capacity Cu. Ft. per Hour At Various Btu			BLOWER DATA			
				550	800	1000	Dia. of Wheel	Width of Wheel	No. of Wheels	R.P.M. At ⅛" Static
CA 60-37	60,000	43,200	600	109	75	60	14"	7"	1	525
CA 90-37	90,000	64,800	900	164	113	90	14"	7"	1	550
CA120-37	120,000	86,400	1200	218	150	120	14"	10"	1	550
CA150-37	150,000	108,000	1500	273	188	150	14"	14"	1	550
CA180-37	180,000	129,600	1800	328	225	180	14"	7"	2	550
CA240-37	240,000	172,800	2400	436	300	240	14"	10"	2	550

Note: Symbols refer to explanatory notes under first table on page 3.

STANDARD EQUIPMENT

CA Conditioners are available with three different types of controls. WITH STANDARD CONTROLS—Includes insulated cabinet; cabinet base with integral motor mounting; two heavy steel plate corrugated heat exchangers; multi-inspirator burners; main line shut-off cock; adjustable gas pressure regulator; automatic pilots with fittings; draft diverter; electric solenoid gas valve, relay, BX conduit and fittings; T11A Acratherm thermostat with 30 ft. of triplex wire; limit control; rubber mounted blower assembly, resilient base motor; replaceable filters; evaporating pans, copper float tank, pipe strap valve, and 10 ft. copper tubing and fittings. A fan control (No 6031) may be installed but is not supplied as standard equipment.

WITH TYPE V-5 CONTROLS—Equipped the same as conditioners with standard controls except that a V15A motor gas valve and an L101A combination limit and fan control (SC part No. 6325) are substituted for the standard solenoid gas valve, relay and limit control.

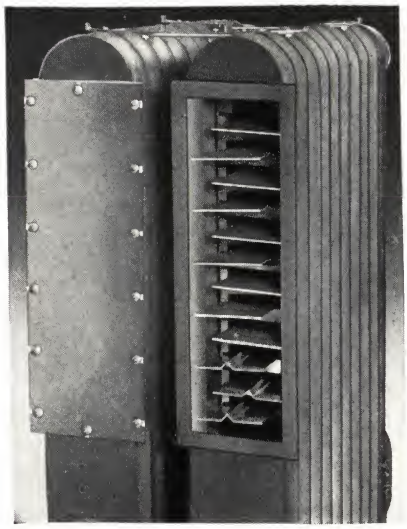
WITH TYPE V-7 CONTROLS—Equipped the same as conditioners with standard controls except that a V15C motor gas valve and an L101A combination limit and fan control (SC Part No. 6325) are substituted for the standard solenoid gas valve, relay and limit control.

A summer blower switch may be installed to control the blower for summer operation on all three types.

DIMENSIONS IN INCHES

Catalog No.	DIMENSIONS		PLENUM CHAMBER				Flue Dia.	*Gas Conn.	MOTOR DATA		
	A	B	Warm Air		Return Air				H.P.	Type	R.P.M.
			Width	Depth-C	Width	Depth-C					
CA 60-37	28⅝	40⅝	21	15½	7¼	15½	4	¾	⅙	S.P.	1725
CA 90-37	33⅝	47	21	20½	7¼	20½	5	¾	⅙	S.P.	1725
CA120-37	39⅛	52½	21	26	7¼	26	5	¾	¼	S.P.	1725
CA150-37	43⅞	58⅝	21	30¾	7¼	30¾	6	1	¼	S.P.	1725
CA180-37	51⅞	66⅝	21	38¼	7¼	38¾	6	1¼	⅓	CAP.	1725
CA240-37	62¾	78⅞	21	49⅜	7¼	49⅜	7	1¼	⅓	CAP.	1725

*This is the size of the manifold connection—not the size of the gas supply line.
S.P.—Split phase type motor. CAP.—Capacitor type motor.



Twin Type Heater "CA" Conditioner

HOW AIR IS CONDITIONED

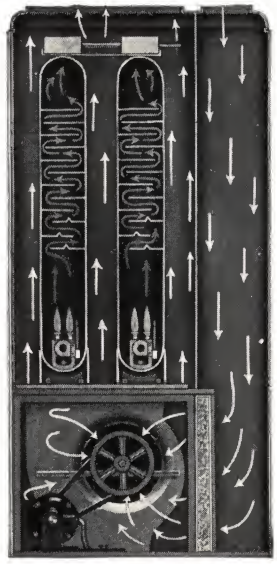
Air from the return ducts is introduced into the unit either at top, or through side or bottom. First it passes through the filter where it is cleaned; thence through the blower which discharges it upward over the vertically corrugated heaters where it is quickly warmed. Humidifiers are located on top the heaters so that all air must flow over them. The conditioned air is then conveyed through the warm air ducts into the rooms.

HOW HEAT IS TRANSFERRED

The hot gases of combustion, rising through the interior of the heater, are directed by the interior baffles. These baffles are staggered to force the gases through a long and extended passage —both vertical and horizontal —during which the heat is surrendered to the heater surfaces from whence it is picked up by the air stream.

CONTROLLED OPERATION

With standard controls, when the thermostat calls for heat the relay is closed and the solenoid valve opens the main gas supply to the burner. At the same time, the blower is started and circulation of the heated air begins. When the thermostat is satisfied, both the gas supply and blower stop automatically. A heat actuated blower control switch is furnished with V-5 and V-7 controls for delayed starting of blower.



JANITROL

"BC" LOW PRICED WINTER AIR CONDITIONERS



ESSENTIALS WITHOUT FRILLS

HEAT EXCHANGER . . . Twin heat exchangers. Made of heavy steel plate. Corrugated vertically for increased heating surface . . . for strength . . . and to compensate for temperature expansion.

CABINET . . . Furniture steel finished in baked crinkle tapestry blue. Chromium plated fittings.

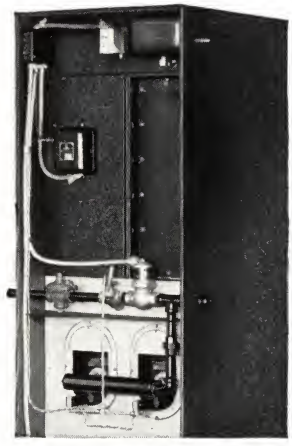
BURNERS . . . Gray cast iron. Raised ports. Venturi type mixers with adjustable air shutters.

BLOWER . . . Centrifugal, multi-blade type with special mounting for quiet operation.

MOTOR . . . Resilient base motor. Automatic belt tightener. V-belt drive.

BACK DRAFT DEVICE . . . Special Janitrol design. Simple and extremely effective.

CONTROLS . . . All controls housed inside of cabinet. For types of controls furnished see "Standard Equipment" below.



STANDARD EQUIPMENT

With Standard Controls—Venturi type mixers with adjustable air shutters, Janitrol automatic pilot, pilot cock with fittings, pilot wire, 30 ft. of thermostat wire, main line shut-off cock, junction box, blower assembly, automatic belt tightener, V belt, adjustable gas pressure regulator, electric solenoid gas valve, relay, T11A Acratherm, and limit control.

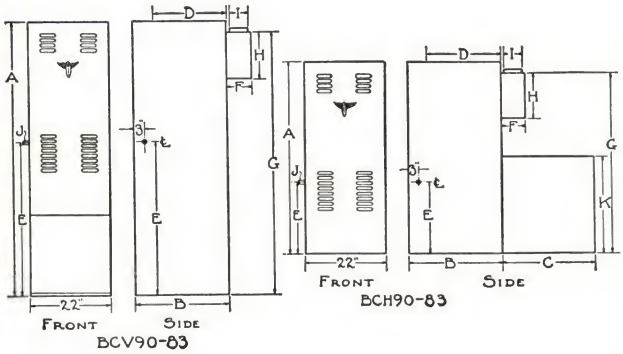
With Type V16 Controls—Equipped the same as Conditioners with standard controls except that a V16A solenoid gas valve and transformer and an L101-A combination limit and fan control are substituted for the standard solenoid gas valve, relay, and limit control.

With Type V5 Controls—A V15A motor gas valve and an L101-A combination fan and limit control are substituted in place of the standard controls, consisting of a high voltage solenoid valve, relay, and limit control.

ACCESSORIES

The following accessories are available as additions: Humidifier assembly—Part No. 9703 includes evaporating pan—one for each combustion chamber, copper float tank, water pipe strap valve, and 10 ft. copper tubing with fittings.

Filters—The BCH90-83 requires two filters (size 16x20) which can be installed in holding clips in filter units. The BCV90-83 requires one filter (size 20x20) to be installed in the return air duct. Return air ducts may be connected on either side or at the rear. Connection may also be brought up to the bottom of the unit.



ENGINEERING DATA AND DIMENSIONS IN INCHES

Model No.	Code	Btu Input Per Hour	*Btu Output At Register	Approx. C.F.M. Delivered At Register	Temp. Rise	†Blower Data		Motor Data			Approx. Shipping Weight
						Dia. of Wheel	R.P.M. At .15" Static	H.P.	Type	R.P.M.	
BCV90-83	Baretta	90,000	64,800	970	75°	10½	650	⅙	S.P.	1725	650 lbs.
BCH90-83	Barff										

*The "Hourly Btu output at heat register" capacities allow for a 10% heat loss from the warm air ducts between the bonnet and the register. This is the normal loss for the average installation. Longer than average ducts, type of duct covering, duct exposure, whether or not basement is heated, etc., should be considered and the conditioner sized accordingly.

†Blowers are sized so that the approximate C.F.M. required will be delivered against the resistance of the duct system, in addition to static pressure created by resistance of filters, blowers, heat exchangers, etc.

DIMENSIONS—INCHES

Model No.	A	B	C	D	E	F	G	H	I	*J	K
BCV90-83	74	25½	..	20	41½	6	71	12½	5	¾	..
BCH90-83	52	25½	25	20	19½	6	49	12½	5	¾	26

*This is the size of the manifold connection—not the size of the gas supply line.

Engineering Cooperation Available From Many Branch Offices . . . See Page 12

JANITROL

"GC" GAS-FIRED GRAVITY HEATERS

For the Modest New Home and for Improved Heating in the Old

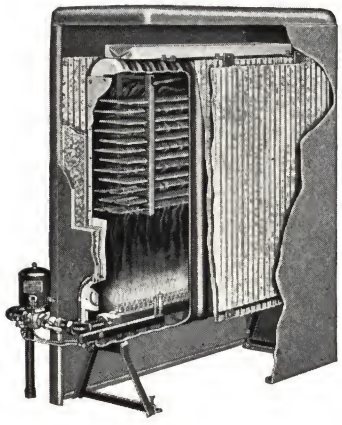


HEAT EXCHANGER . . . Made of heavy steel plate, corrugated vertically. Double, corrugated metal inner liners, attached to the heat exchangers, provide a secondary heating surface.

CABINET . . . Made of furniture steel. Finished in tapestry blue baked enamel.

BURNER . . . Multi-inspirator type. Same as furnished on CF and CA Janitrol Conditioners.

HUMIDIFIER . . . Evaporating pan, with copper float tank. Simple in operation and effective.



BACK DRAFT DEVICE . . . Special Janitrol design. Simple and extremely effective.

CONTROLS . . . For list of controls furnished, see "Standard Equipment" below.

STANDARD EQUIPMENT

Main line shut-off cock; adjustable gas pressure regulator; automatic pilot with fittings; draft diverter; V15A motor gas valve with transformer and 25 ft. transformer wire; T11A Acratherm thermostat with 30 ft. triplex wire; evaporating pan, copper float tank, pipe strap valve and 10 ft. copper tubing with fittings.

Model 2GC120-37 consists of two individual GC120-37 units supplied with only one electric motor gas valve one pressure regulator and one water pipe strap valve.

ENGINEERING DATA AND DIMENSIONS IN INCHES

Catalog No.	Rating Btu per Hour		Sq. In. Pipe Area		GAS CAPACITY Cu. Ft. per Hour			DIMENSIONS			
	Input	*Available At Register	†First Floor Rooms	‡Second Floor Rooms	550 Btu	800 Btu	1000 Btu	A	B	Flue Diam.	§Gas Conn.
GC 75-37	75,000	51,000	390	300	136	94	75	31¾	50¼	4	¾
GC 90-37	90,000	61,200	470	360	164	113	90	39¾	58¼	5	¾
GC120-37	120,000	81,500	625	480	218	150	120	50⅜	68⅞	6	¾
GC150-37	150,000	102,000	780	600	272	188	150	31¾	49	2-4	1
GC180-37	180,000	122,400	940	720	328	226	180	39¾	57	2-5	1
2GC120-37	240,000	163,000	1250	960	436	300	240	50⅜	68⅞	2-6	1¼

*Hourly Btu Available at Register allows for 15% heat loss from warm air ducts between bonnet and register. This is normal loss for average gravity installation. Longer than average ducts, type of duct covering, duct exposure, whether the basement is heated, etc., should be considered and heater sized accordingly.

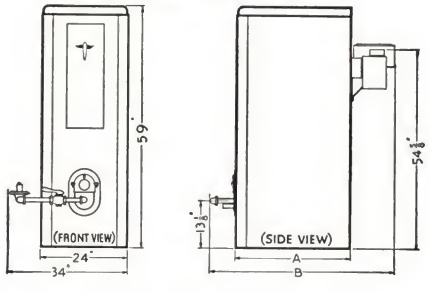
†Leader pipe areas shown in this column are based on delivering 130 Btu per sq. in. of pipe area.

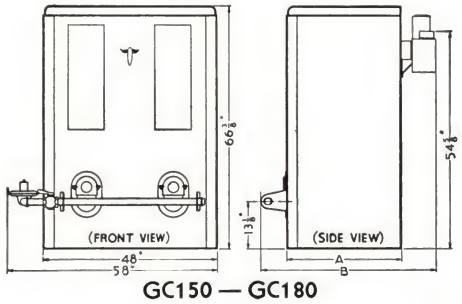
‡Leader pipe areas shown in this column are based on delivering 170 Btu per sq. in. of pipe area.

To select proper size unit for a two-story house: divide second floor warm air pipe area required by .75 and add to first floor warm air pipe area required. Select Gravity Heater on basis of area from column "First Floor Rooms."

§This is the size of the manifold connection—not the size of the gas supply line.

GC75 — GC90 — GC120





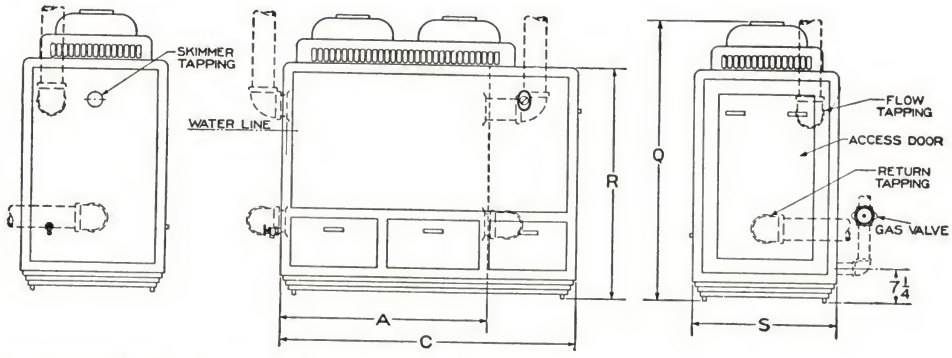
GC150 — GC180

Engineering Cooperation Available From Many Branch Offices . . . See Page 12

JANITROL GAS-FIRED BOILERS

The Janitrol gas boiler combines an unusually attractive appearance with the latest features of modern gas boiler design . . . cast iron sections . . . cast iron flue top . . . chromium plated dome . . . chromium base . . . asbestos air-cell insulation . . . steam separating baffles . . . etc., etc. For detailed information on the complete Janitrol boiler line, including larger and smaller sizes than listed, write us for the complete 24 page specification booklet, Form SW-331-J.





ENGINEERING DATA AND DIMENSIONS IN INCHES

* Boiler No.	Available Btu Per Hour (Output)	Certified A.G.A. Rating Sq. Ft.		†Bonded Load C.I. Radiation Sq. Ft.		Gas Consumption Cubic Feet Per Hour		Floor to Top of Flue Outlet Q	Floor to Top of Boiler Cover R	Width of Boiler A	Overall Width C	Flue to Chimney	Depth of Boiler Cover S
		Steam	Water	Steam	Water	1000 Btu Gas	500 Btu Gas						
SERIES 3													
3–3	72,000	300	480	195	314	90	180	57¾	41½	14¾	32¾	6	25
4–3	108,000	450	720	293	470	135	270	51¾	41½	18¾	36¾	6	25
5–3	144,000	600	960	392	628	180	360	51¾	41½	22¾	40¾	7	25
6–3	180,000	750	1200	491	800	225	450	51¾	41½	26¾	44¾	8	25
7–3	216,000	900	1440	588	941	270	540	51¾	41½	30¾	48¾	9	25
8–3	252,000	1050	1680	690	1104	315	630	51¾	41½	34¾	52¾	9	25
9–3	288,000	1200	1920	792	1267	360	720	51¾	41½	38¾	56¾	9	25
SERIES 4													
4–4	135,000	560	900	367	590	169	338	58⅜	48⅛	18¾	36¾	7	25
6–4	225,000	940	1500	614	1004	281	562	58⅜	48⅛	26¾	44¾	8	25
7–4	270,000	1130	1800	747	1215	337	674	58⅜	48⅛	30¾	48¾	8	25
8–4	315,000	1310	2100	870	1435	394	788	58⅜	48⅛	34¾	52¾	9	25
9–4	360,000	1500	2400	1004	1662	450	900	58⅜	48⅛	38¾	56¾	9	25

*Insert S for Steam and W for Water when specifying boiler size. Thus: 7–S–4 or 7–W–4, etc.

†The Bonded Direct Cast Iron Radiation Loads (Bonded Loads) shown below are for convenience in selecting the boiler size. These ratings include an allowance for starting up or peak loads; also, an allowance for normal piping. This makes it unnecessary to add anything for either starting up or piping loads, unless the piping load is excessive.

WATER HEATER



The Thrift Water Heater is of the "Constant demand" type . . . that is, at the time of installation, the gas input can be set to conform to the hot water requirements of that particular family. Consequently the gas usage cannot go above a predetermined figure. Due to this feature, the Thrift is particularly well adapted for use where monthly operating cost is an important factor. The Thrift is made in three tank sizes . . . 30, 45, and 60 gallons. All tanks are made of heavy gauge copper bearing steel with ample insulation.

An efficiency feature of the Thrift is the method of applying heat to the water. A long U-shaped tube in which combustion takes place, rises from the burner to the top of the tank, then back down to the bottom . . . this tube being entirely surrounded by the water which is to be heated. Detailed specification sheets will be sent upon request.

CIRCULATING HEATER

Marketed under the trade name Janitrolaire, the Janitrol Forced Air Circulating Heater is the solution of the heating problem in many small low cost homes and for modernizing existing small homes. It is made in two capacities, 50,000 and 85,000 Btu input. The cabinet is furniture steel, finished in mahogany with ebony trim by the Di-Noc process. The 18", six-blade, aluminum fan is exceedingly quiet in operation. The central grille, shown in the illustration, is adjustable and can be rotated so that the warmed air can be sent in any desired direction. A pan type humidifier is furnished. The unit is equipped with an ionizer to freshen and revitalize the air and to free it from ordinary household odors such as stale tobacco smoke and cooking odors. Detailed specification sheets furnished upon request.



Engineering Cooperation Available From Many Branch Offices . . . See Page 12

KATHABAR

INDUSTRIAL AND COMMERCIAL AIR CONDITIONING EQUIPMENT



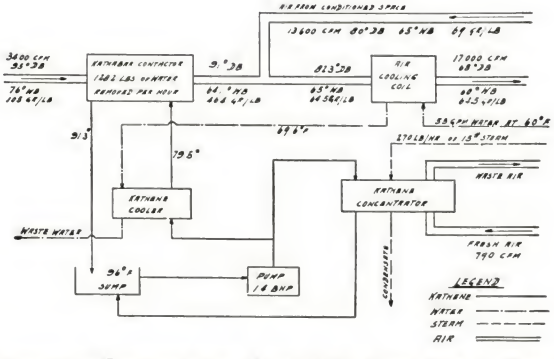
KATHABAR

Surface Combustion Corporation has been developing the KATHABAR system of air conditioning for a number of years. Many very large outstanding installations are in operation in both the comfort and the industrial field. Engineering data from these installations is very interesting and is available upon request.

SIMPLIFIED HUMIDITY REGULATION

Kathabar Air Conditioning equipment employs, as the dehumidifying agent, a lithium chloride solution called *Kathene*. The principle utilized is the difference in the vapor pressure between the air to be conditioned and the Kathene over which the air is passed. When the vapor pressure of the Kathene is lower than that of the air the Kathene absorbs moisture and the action is one of dehumidification. When the vapor pressure of the Kathene is higher than the air, the air absorbs moisture from the Kathene, thus humidifying the air. The vapor pressure of the Kathene is controlled by regulation of its temperature.

During the past three years Kathabar dehumidification equipment has been incorporated in many commercial and industrial air conditioning installations. Of particular advantage with the Kathabar system is the wide range of dehumidification which can be obtained under extremely accurate control. Of further significance is Kathene's permanency, requiring no replenishment nor replacement.



These Units Are Designed for Two Major Applications:

1. Year-'round Comfort Conditioning in large buildings

2. Humidity and Temperature Control for Industrial Processes

Now, the manufacturer of Kathabar offers a series of standard units for complete, year 'round air conditioning. Under fully automatic control, these units circulate, clean, wash and deodorize the air. During summer they dehumidify and cool the air and in winter they humidify and heat. One of the outstanding features of Kathabar air conditioning is the deodorizing and germicidal properties of Kathene.

STANDARD KATHABAR UNITS

Unit No.	Capacity C.F.M.	Overall Dimensions (ducts not included)		
		Width	Depth	Height
5	500-1600*	120"	36"	76"
10	1600-3200*	129"	53"	82"

For Larger Air Volumes, Multiple-Cell Banks are Available.
*Maximum capacities for Industrial Use.

OPERATION

Accompanying is a diagram of Kathabar's typical dehumidification and cooling cycle. 2500 CFM of outside air enter the unit at 80° F. (dry bulb) and at 80% relative humidity. The *contactor*, extracts 53% of the moisture reducing the relative humidity to 31%. The dehumidified air is then mixed with 18,500 CFM of return air from the rooms. The entire 21,000 CFM are then passed through the water-cooled *after-cooler* and emerge for distribution to rooms at 65° F. This permits maintaining rooms at 80° F. and 45% relative humidity. Dehumidification and cooling are accomplished with 100 gallons per minute of 56° F. water and 245 lbs. of steam per hour, indicative of Kathabar's economical operation.

In addition to these standard units, Kathabar equipment is available for any special application either for comfort purposes or for industrial processing. Complete information can be obtained by writing Kathabar Division, Surface Combustion Corporation, Toledo, Ohio.

Engineering Cooperation Available From Many Branch Offices . . . See Page 12

JANITROL GAS-

FOR COMMERCIAL AND INDUSTRIAL HEATING

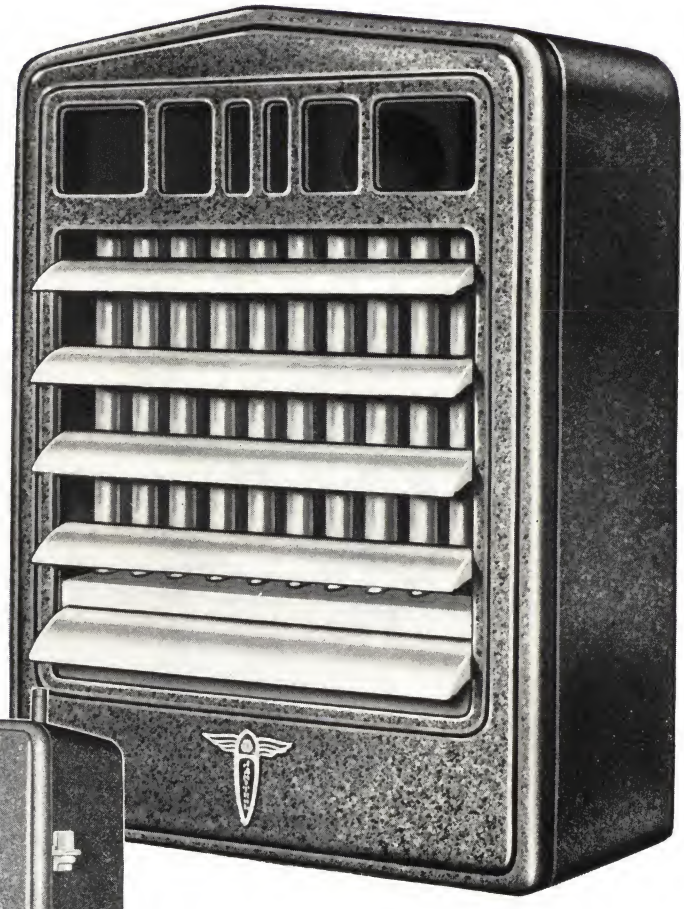
The Janitrol Gas-Fired Unit Heater is an independent, self-contained, automatic unit which generates heat by the burning of gas. No central heating plant or boiler is needed, no water is used, no firing attention is necessary and no fuel storage space is required.

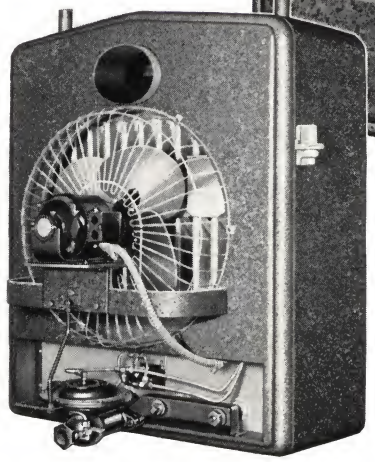
The heaters are suspended from overhead with underside of heater about 8 feet from the floor. In this location, no obstruction is offered to the passage of people and no valuable floor space is occupied.

From its overhead location, the heater, by fan circulation of warm air, distributes heat where it is needed, and provides constant, uniform temperature. Circulation of the air also overcomes stratification and with it, high uneconomical ceiling temperatures.

Rapid response quickly brings up temperature when sudden blasts of cold air from opened doors chill the interior. Reduced temperatures, overnight and week-ends, afford economy of operation yet the automatic, thermostatic control of the heaters safeguards against freeze-ups.

For complete heating; for supplementary heating when existing heating capacity is insufficient; for replacement of worn out heating systems; for building expansion; for specific zone or spot heating; for periodic heating; for these and any commercial or industrial heating requirements, Janitrol Gas-Fired Unit Heaters provide a simple, effective method to obtain completely satisfactory results.

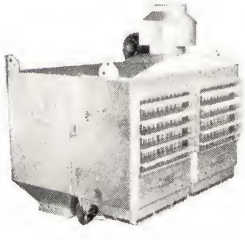




SERIES U AND SERIES C

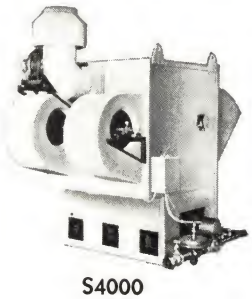
Series U and Series C each comprise seven models ranging identically in input from 45,000 to 200,000 Btu hourly input. Units of the same capacity in both series are exactly the same throughout with the exception of the metal used in the combustion chamber, and heat exchangers or radiators. In Series U heaters, the metal is chrome alloy steel; in Series C, ingot iron is used. Series U and Series C heaters are approved by the American Gas Association and listed by Underwriters' Laboratories as standard for general use. For installations in garages, airplane hangars, etc., specify Series UG or Series CG. Example: UG85-37 or CG85-37.

LARGE CAPACITY, HEAVY DUTY UNITS



400-36 Twin Type

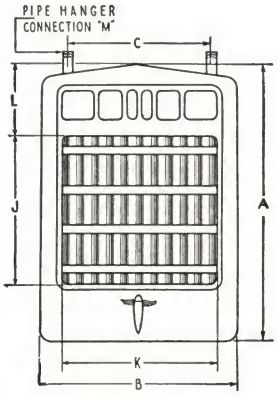
The 400-36 TWIN TYPE (left) and the S4000 (right) are both designed for large volume heating such as exposition halls, warehouses, factory buildings, etc. Both units are rated at 400,000 Btu input per hour. Capacities and other data are given in table at top of next page. Both units are equipped with squirrel cage type fan which permits the use of duct work for heat distribution. The 400-36 type is furnished with four suspension lugs. The S4000 may be suspended or set on platform or floor. Both units finished in heat resisting aluminum paint. Complete details furnished on application.



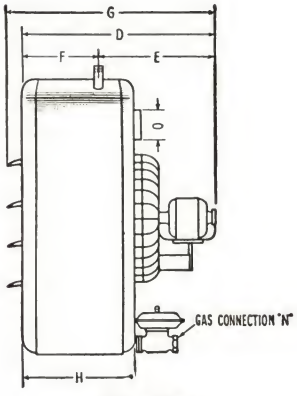
S4000

Engineering Cooperation Available From Many Branch Offices . . . See Page 12

FIRED UNIT HEATERS



Front View



Side View

CAPACITIES OF STANDARD SERIES U AND SERIES C

Catalog No.		INPUT			OUTPUT Unit Vented		OUTPUT Unvented Btu per Hr.	Air Deliv. C.F.M.	Air Vel. At Heater Outlet ft./min.	Motor Size H.P.	Fan Speed R.P.M.
			Cu.F. Gas per Hour								
Series U	Series C	Btu per Hr.	550 Btu	1000 Btu	*Btu per Hr.	*Sq. Ft. Steam Rad. Equivalent					
U 45-37	C 45-37	45,000	82	45	37,350	156	40,500	750	595	1/25	1525
U 60-37	C 60-37	60,000	109	60	49,800	207	54,000	955	580	1/25	1525
U 85-37	C 85-37	85,000	155	85	70,550	294	76,500	1450	615	1/12	1140
U100-37	C100-37	100,000	182	100	83,000	345	90,000	1750	605	1/12	1140
U125-37	C125-37	125,000	227	125	103,750	432	112,500	2095	610	1/12	1140
U125-37	C125-37	125,000	227	125	103,750	432	112,500	2095	610	1/12	860
U160-37	C160-37	160,000	291	160	132,800	553	144,000	2615	890	1/4	1125
U160-37	C160-37	160,000	291	160	132,800	553	144,000	2300	790	1/8	860
U200-37	C200-37	200,000	364	200	166,000	690	180,000	2955	850	1/4	1125
U200-37	C200-37	200,000	364	200	166,000	690	180,000	2495	720	1/8	860
400-36 Twin Type		400,000	728	400	332,000	1380	360,000	5000	820	1	770
S4000		400,000	728	400	332,000	1380	360,000	5000	800	1	780

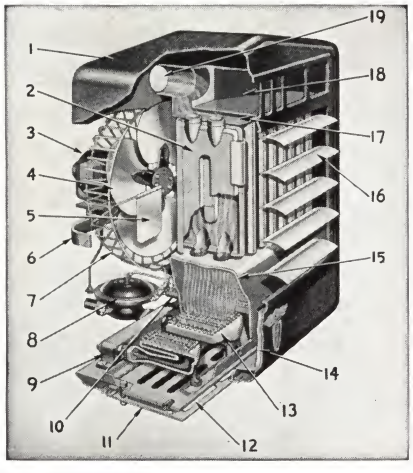
*Output based on effective heating of vented unit and when unit is located in room being heated.

DIMENSIONS—INCHES

Catalog No.		A	B	*C	D	E	F	G	H	J	K	L	M	N	**O
Series U	Series C														
U 45-37	C 45-37	29	18⅝	11⅞	25⅜	14⅞	10½	27⅛	15¼	14	13	7½	1	¾	4
U 60-37	C 60-37	29	22⅝	15⅞	25⅜	14⅞	10½	27⅛	15¼	14	17	7¾	1	¾	5
U 85-37	C 85-37	36½	22⅝	15⅞	26	15½	10½	27¾	15¼	20	17	9¼	1	1	6
U100-37	C100-37	36¾	26⅝	19⅞	26	15½	10½	27¾	15¼	20	21	9½	1	1	6
U125-37	C125-37	37	30⅝	23⅞	27¼	17¼	10	29	15¼	20	25	9¾	1	1	6
U160-37	C160-37	36¾	26⅝	19⅞	37¾	22⅞	14⅞	39½	23¾	20	21	9½	1¼	1¼	7
U200-37	C200-37	37	30⅝	23⅞	37¾	22⅞	14⅞	39½	23¾	20	25	9¾	1¼	1¼	8

*These dimensions subject to variations of plus or minus ⅛".
**Flue opening is oval shaped. This is size of round flue pipe which can be formed to fit over flue opening collar.

CONSTRUCTION FEATURES — SERIES U AND C



1. Casing of heavy gauge sheet steel stampings finished in blue crinkle baked enamel.
2. Seam welded heat exchanger tubes or radiators. Center baffle divides hot rising gases into two streams resulting in better heat transfer.
3. Resilient mounted, split phase, fan duty motor. No radio interference.
4. Aluminum alloy fan of new and revolutionary shape, pitch and weight to operate with extreme quietness.
5. Sail actuated by air motion of fan opens and closes main gas valve as fan starts and stops.
6. Sturdy motor support attached to unit to overcome vibration.
7. Fan guard in two sections for easy removal.
8. Gas actuated automatic control valve opens gas supply to burners when pilot flame is burning and fan is turning, closes gas supply when fan stops or pilot flame fails.
9. Cast iron manifold distributes gas to brass burner orifices mounted in manifold.
10. Bimetal thermal pilot assembly. Pilot flame must be burning before automatic gas valve supplying burners can open.
11. Bottom removable for easy access to burners.
12. All air for combustion taken through these ports.
13. Cast iron burners with cast raised ports accurately machined to gas specifications.
14. Insulation between combustion chamber and casing.
15. Combustion chamber housing burners; ample height to prevent flame impingement.
16. Adjustable horizontal louvres to direct warm air from heater. Vertical or combination vertical and horizontal available for special installations.
17. Collecting chamber into which burned gases empty from vertical radiators.
18. Built-in draft diverter prevents back drafts reaching combustion chamber.
19. Flue connection for flue pipe to chimney or stack.

Units are furnished with adjustable gas pressure regulator, main gas line hand valve and safety device to prevent overheating—not shown.

Engineering Cooperation Available From Many Branch Offices . . . See Page 12

THE WORLD'S LARGEST MANUFACTURER OF INDUSTRIAL HEAT TREATING EQUIPMENT PRODUCES JANITROL

Surface Combustion Corporation has devoted thirty years to the development and production of gas-fired equipment for industrial heat treating processes and for space heating purposes, domestic, commercial and industrial. It developed the first automatic conversion burner for the burning of gas in household furnaces and boilers. The widely known Columbus and Heatmaster warm air house heating equipment were products of Surface Combustion.

With its three modern factories, its research facilities and laboratory equipment, and its engineering personnel, Surface Combustion Corporation is well qualified to design, manufacture and furnish equipment that gives lasting satisfaction to all concerned.

ENGINEERING AND SALES SERVICE IN MOST PRINCIPAL CITIES

The services of Janitrol engineers, trained experts in heating and air conditioning, are readily available to all architects, engineers, builders and heating contractors desiring assistance. Layouts, specifications, supervision of installations and servicing of equipment all are furnished from branch offices located to render close, competent, continuous cooperation, everywhere. Whenever you have an air conditioning or gas heating problem, phone, wire or write the nearest Surface Combustion office. A trained sales engineer is always at your service.

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BIRMINGHAM
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DETROIT
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SURFACE COMBUSTION CORPORATION • TOLEDO, OHIO

Form No. S P 224

Manufacturers of

JANITROL GAS-FIRED PRODUCTS

THE WATERMAN-WATERBURY COMPANY

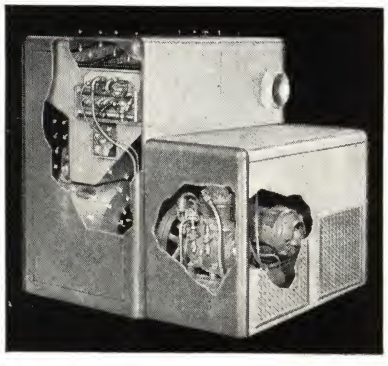
Manufacturers of The Waterbury Complete Line of Winter Air Conditioners and Gravity Warm Air Furnaces for Homes

Oil-Burning Gas-Burning Stoker-Fired Hand-Fired

1159 Jackson St., N. E., MINNEAPOLIS, MINN.



COMFORTROL OIL-O-MATIC—SMALL HOME MODEL



A correctly engineered, conditioned-air heating unit at lower cost . . . for homes requiring up to 100,000 B.t.u.'s per hour at registers, for heating.

Series 1010-12 COMFORTROL with OIL-O-MATIC Oil Burner and Minneapolis-Honeywell controls; Series 1610-12 with Waterbury W3 Oil Burner; Series 910-12 without burner or controls for use with any good gun-type burner; Series 1110-12 with Waterbury Gas Burner. All of these models available with WATERBURY Air Washer Unit, at moderate extra cost; also with cooling coil for Summer Cooling with water 55 degrees or colder, or with compressor for cooling (see illustration at left).

WATERBURY factory engineering service available to architects without charge. WATERBURY factory representatives and dealers are conveniently located; their training and experience are at your service.

COMFORTROL WINTER AIR CONDITIONERS—FOR LARGER HOMES

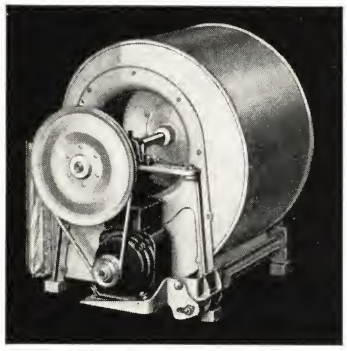
Each is a complete single unit, engineered to properly coordinate all the elements essential to efficient, economical heating and healthful winter air conditioning. In actual home service for several seasons, and under varied conditions, COMFORTROL has established outstanding records.

Only proved standard units are used in these Conditioned-Air Heating Systems . . . "Dustop" Air Filters, perfected Waterbury-built COMFORTROL Blowers, new-type COMFORTROL Controlled Humidifiers and Waterbury permanently gas-tight seamless steel furnace bodies.

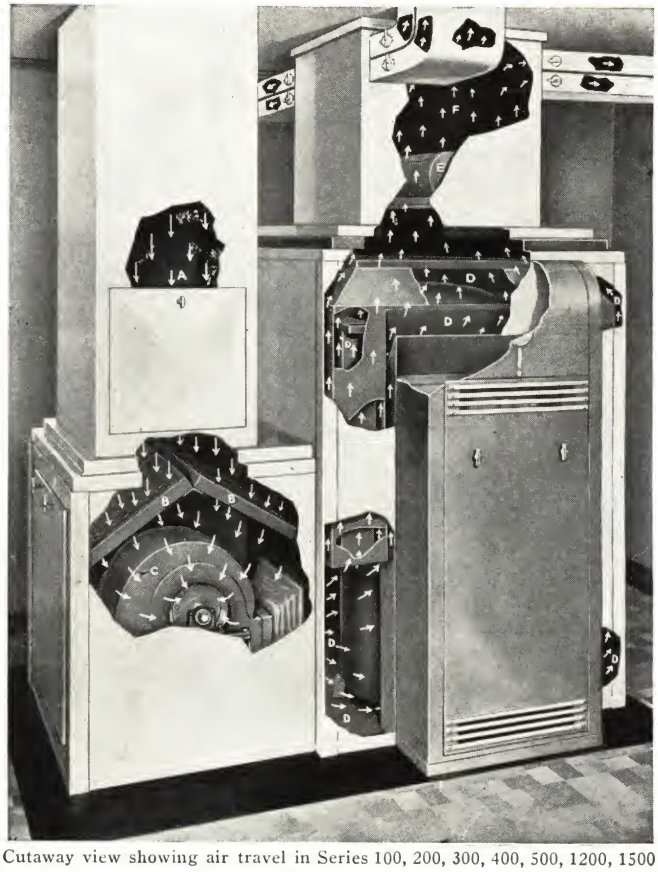
Cooling units may be easily added if desired.

The diagram illustration at right shows the air travel down through the return air duct (A)—through the air filters (B)—through the blower (C)—then around the extensize heating chambers (D)—then up through the humidifier (E)—and plenum chamber (F). The COMFORTROL Mixing Orifice, combined with an adequate plenum chamber, assures equalized pressure and temperature at each of the various duct outlets. A Cool Outer Casing is assured by air circulation between the inner and outer casing.

All the above winter air conditioning features are incorporated in each of the oil burning and stoker-fired models listed below.



Precision-built Comfortrol Blower
Typical of the superb quality used throughout all Waterbury Products



Cutaway view showing air travel in Series 100, 200, 300, 400, 500, 1200, 1500

COMFORTROL OIL-O-MATIC NO. 200 SERIES

Standard equipment includes Williams Oil-O-Matic Burner (either K3 Low Pressure or lower-cost HP3 High Pressure Models), Minneapolis-Honeywell Controls, Draft Governor, Two-tone green-enameled casing with burner hood, crown and top for furnace and blower casing.

Comfortrol 100 Series—Oil-burning Air Conditioner without oil burner or controls, for use with any good oil burner, otherwise same as 200 series.

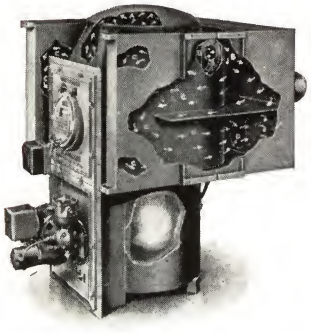
Seamless Oil-O-Matic No. 500 Series—Has Williams HP3 Oil Burner, flat top galvanized casing with collar for each warm air and return air pipe. Furnished with or without burner hood. Otherwise same as COMFORTROL Oil-O-Matic No. 200 series.

Seamless 600 Series—Oil Burning Air Conditioner without oil burner or controls, for use with any good oil burner, otherwise same as 500 series.

Waterbury Comfortrol—1200 Series—Equipped with WATERBURY Oil Burner W3, flange mounted, Minneapolis-Honeywell Controls, Draft Governor, two-tone green enameled casing with burner hood and crown top.

Waterbury Seamless—1500 Series—Same as 1200 series above except for lower-priced galvanized casing with or without burner hood.

WATERBURY SEAMLESS OIL-BURNING FURNACE



Long Fire Travel Forced by Large Radiator in Waterbury Oil Furnace

Furnished with all Oil-Burning air conditioners listed above; assures *clean* heat; specially designed with large combustion chamber and extra large radiator for the most efficient, economical and safe utilization of oil as a fuel. The perfected WATERBURY one-piece welded seamless steel furnace body entirely eliminates the nuisance and danger of smoke, soot, dust, gas and fumes in the home. The head, the bottom, the filler plates, and the radiator are all welded. The furnace sets up off the floor to permit circulation of air under the unit, thus even the bottom of the furnace is heating surface.

COMFORTROL STOKER AIR CONDITIONER

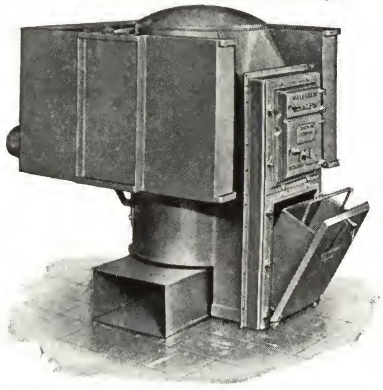
300 Series—For use with any good stoker, includes Seamless Stoker Furnace with radiator and removable clinker receptacle, fire brick for firepot with furnace cement for bottom, stoker casing under furnace, two-tone green enameled casing with front hood.

Seamless Stoker Air Conditioner—400 Series—Same as above, except it has galvanized instead of enameled outer casing, is without front hood and has flat top with collar instead of crown.

WATERBURY SEAMLESS STOKER FURNACE

Furnished with all Stoker Air Conditioners listed above. This unit is specially engineered for use with any standard coal stoker and introduces important improvements in furnace design for stoker operation. Stoker mounted under furnace body . . . to the rear or at either side of furnace. Note air-tight casing for stoker mechanism. Long fire travel radiator, vertical baffle plates; handy clean out openings in back.

Removable Clinker Receptacle located just inside and under the front door—an appreciated feature that does away with the need for handling hot clinkers and eliminates smoke, fumes and dirt in the basement. Large double door provides easy access to fire.



Licensed under Burch Patent No. 2,035,297

Write for Full Information

In the complete WATERBURY line of Winter Air Conditioners and gravity Warm Air Furnaces there is a unit to meet the individual requirements, personal preferences or cost limitations of any home owner or builder. Our complete catalog is a valuable reference guide . . . write for it.

AIR CONDITIONER SPECIFICATIONS
WATERBURY COMFORTROL — WATERBURY SEAMLESS

Size	Capacity gal. oil per hour	Btu per hour capacity at register	Width not including bnr. hood	Width Burner hood (Note A)	Length overall	Height overall*	Blower size	Motor H.P. (x)	Size return air connection	Size W. A. Outlet	Number of filters	Size each filter	Approximate Shipping Weight	
													Series 1200	Series 1500
1610-12	1	100,000	32″	16″	56″	55″	112	¼	15 x 28	15 x 28	2	16x25	1200 lbs.	
1610-12W	1	100,000	32″	16″	56″	55″	112	¼	15 x 28	15 x 28	2	16x25	1275 lbs.	
1215-12 or 1515-12	1½	142,763	44″	10″	74″	64½″	112	¼	19¾ x 34¼	27½ x 27½	4	16x20	1450 lbs.	1275 lbs.
1215-15 or 1515-15	1½	142,763	44″	10″	74″	64½″	15	⅓	19¾ x 34¼	27½ x 27½	4	16x20	1500 lbs.	1325 lbs.
1220-15 or 1520-15	2	190,350	48″	10″	81″	64½″	15	⅓	26 x 38¼	31½ x 31½	4	16x20	1625 lbs.	1450 lbs.
1220-18 or 1520-18	2	190,350	48″	10″	81″	64½″	18	½	26 x 38¼	31½ x 31½	4	16x20	1725 lbs.	1550 lbs.
1225-18 or 1525-18	2½	237,938	52″	10″	85″	64½″	18	½	27½ x 42	35½ x 35½	4	2–16x20 2–16x25	1850 lbs.	1675 lbs.
1225-21 or 1525-21	2½	237,938	52″	10″	90″	64½″	21	¾	31¾ x 42	35½ x 35½	4	2–16-20 2–16x25	1900 lbs.	1725 lbs.
1230-21 or 1530-21	3	285,525	56″	10″	94″	70½″	21	¾	31¾ x 46	39½ x 39½	4	16x25	2200 lbs.	2000 lbs.

*In figuring height of warm air plenum chamber above COMFORTROL Air Conditioner, add 2 in. for depth of slip. In Seamless Air Conditioner, pipe connection extends above top of air conditioner. Comfortrol Humidifier is installed in plenum chamber over warm air connection in 1200 and 1500 Series.

(x) Standard motor equipment: single phase, 60 cycle ¼ h.p. motors are split phase wired for 110 volts only. All motors larger than ¼ h.p. are capacitor type and are wired either for 110 V. or 220 V. A.C. application. Extra charge for D.C. motors, Odd Cycle Motors or for Motors that do not meet the above specifications.

Note A—Does not apply to Series 1500 and 1600 WATERBURY Air Conditioners unless ordered with Burner Hood.

STANDARD EQUIPMENT—WATERBURY COMFORTROL—1600 SERIES

WATERBURY W3 Oil Burner flange mounted. Minneapolis-Honeywell T11-A Acratherm Thermostat, R116A Protectorelay, L401-A combination Airstat and Furnacestat.

Thermo-drip Humidifier with thermo-valve and copper tubing. "Dustop" Filters.

Seamless 1600 Series oil burning furnace. Pre-cast combustion chamber.

Two-tone green enameled casing, chromium trim, for furnace, blower, humidifier and filters. Burner hood, extra.

Comfortrol blower No. 112 complete with top mounted motor and overload switch.

1610-12W includes Comfortrol AIR WASHER instead of Thermodrip Humidifier.

STANDARD EQUIPMENT—WATERBURY COMFORTROL—1200 SERIES

WATERBURY W3 Oil Burner, flange mounted. Minneapolis-Honeywell Controls. Seamless Oil Furnace with radiator. Draft governor. COMFORTROL Blower with motor and overload switch. COMFORTROL Humidifier. "Dustop" Filters. Two-tone green Enameled Casing with Burner Hood.

STANDARD EQUIPMENT—WATERBURY SEAMLESS—1500 SERIES

Same as WATERBURY 1200 SERIES except outer casing is galvanized instead of enameled, has flat top instead of crown and is furnished without burner hood unless specified, at extra cost (SERIES 1515-12 H, etc.).

COMFORTROL OIL-O-MATIC — SEAMLESS OIL-O-MATIC

1000 Series Comfortrol Oil-O-Matic Air Conditioner—One size 1010-12. Same specifications and same equipment as listed above for WATERBURY COMFORTROL 1600 Series, *except* that it is furnished with Williams Oil-O-Matic HP3 or K150, instead of WATERBURY Oil Burner.

200 Series Comfortrol Oil-O-Matic Air Conditioner—7 sizes: 215-12, 215-15, 220-18, 225-18, 225-21, 230-21. Same specifications and equipment as WATERBURY COMFORTROL 1200 SERIES, except for Oil-O-Matic K3 or HP Oil Burner instead of WATERBURY Oil Burner.

500 Series Seamless Oil-O-Matic Air Conditioner—7 sizes: 515-12, 515-15, 520-15, 520-18, 525-18, 525-21, 530-21. Same specifications and equipment as 200 SERIES, except outer casing is galvanized instead of enameled, flat top instead of crown and is furnished without burner hood unless specified, at extra cost (SERIES 515-12 H, etc.). Williams HP3 Oil Burner standard equipment on 500 Series; K3 Burner optional at extra cost.

COMFORTROL OIL-BURNING — SEAMLESS OIL-BURNING

Series 100 Comfortrol Oil-Burning Air Conditioners—7 sizes: 115-12, 115-15, 120-15, 120-18, 125-18, 125-21, 130-21. Same specifications and equipment as 200 and 1200 SERIES, *except* without Oil Burner or Controls, for use with any good gun-type oil burner.

Series 600 Seamless Oil-Burning Air Conditioners—7 sizes: 615-12, 615-15, 620-15, 620-18, 625-18, 625-21, 630-21. Same specifications and equipment as 500 and 1500 SERIES, *less* oil burner and controls, for use with any good gun-type oil burner.

COMFORTROL STOKER, 300 SERIES — SEAMLESS STOKER, 400 SERIES

Size	Max. fuel consumpt. recomnd. per hour	B.t.u. per hour max. capacity at register	Width, less hood, in.	Length over all, in.	Height over all, in.	Blower size	Motor hp.	Resistance (S.P.) at maximum rated c.f.m.	Size return air connection in.	Size WA outlet in.	Filters		Approximate Shipping Weight 300 or 400 Series
											Number	Size each, in.	
320-12 or 420-12	20	161,000	48	81	65	112	¼	.065	26 x38¼	31½x31½	4	16x20	1550
320-15 or 420-15	20	161,000	48	81	65	15	⅓	.065	26 x38¼	31½x31½	4	16x20	1600
325-18 or 425-18	30	242,000	52	85	65	18	½	.077	27½x42	35½x35½	4	2–16x20 2–16x25	1750
325-21 or 425-21	30	242,000	52	85	65	21	¾	.077	31¾x42	35½x35½	4	2–16x20 2–16x25	1850
330-21 to 430-21	40	322,000	56	94	71	21	¾	.09	31¾x46	39½x39½	4	16x25	2000

STANDARD EQUIPMENT—SERIES 300 (320-12 to 330-21)

Comfortrol Stoker Air Conditioner—Comfortrol Blower with Motor. Comfortrol Humidifier. "Dustop" Filters. Seamless Stoker Furnace with radiator and removable clinker receptacle. Fire brick for firepot with furnace cement for bottom. Stoker casing under furnace. Enameled casing with front hood in two-tone green.

STANDARD EQUIPMENT—SERIES 400 (420-12 to 430-21)

Seamless Stoker Air Conditioner—Same as for COMFORTROL STOKER AIR CONDITIONER 300 SERIES, except galvanized (instead of enameled) casing is furnished, without front hood, and with flat top with collar instead of crown.

SPECIFICATIONS OF COMFORTROL BLOWERS

Blower size	Motor h.p.	Wheel dia.	Standard motor pulley r.p.m. range	Special motor pulley r.p.m. range	C.F.M. range using required pulley	R.P.M. range required to attain minimum to maximum C.F.M. rating at statics as listed below:			
						⅛″ (.125 SP)	¼″ (.25 SP)	⅜″ (.375 SP)	½″ (.50 SP)
12—112	¼	13″	367 to 507	507 to 682	645 to 1677	294 to 450	427 to 507	530 to 562	610 to 617
15	⅓	14⅝″	306 to 423	423 to 568	922 to 2397	249 to 379	365 to 435	453 to 483	524 to 528
18	½	17⅞″	306 to 423	423 to 568	1232 to 3204	214 to 327	311 to 368	385 to 408	443 to 449
21	¾	19½″	262 to 362	362 to 488	1450 to 3770	196 to 300	285 to 338	353 to 374	407 to 412

Note—Standard motor pulley 2.1 to 2.9. Special motor pulley 3.1 to 4.1. For detailed capacity ratings, required brake horse power and r.p.m., see Comfortrol Blower folder.

It is advisable to select blower on basis of low speed rating. This gives a safety factor or additional capacity for cooling—approximately 50%.

All blowers are shipped with adjustable variable speed motor pulley set for medium speed. Speed is increased by loosening the set screw on motor pulley and turning the outer half of the sheave closer to the inner half, thus increasing the pitch diameter of the pulley. The speed must be adjusted to suit the job after installation.

THE TRANE COMPANY

Serves Heating and Air Conditioning from Over 70 Offices

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SAN FRANCISCO, CALIF.
SEATTLE, WASH.
SIOUX CITY, IOWA
SOUTH BEND, IND.
SPOKANE, WASH.
ST. LOUIS, MO.
ST. PAUL, MINN.
SYRACUSE, N. Y.
TOLEDO, OHIO
WASHINGTON, D. C.
WESTCHESTER, N. Y.
WILKES-BARRE, PA.
WILMINGTON, DEL.
ZANESVILLE, OHIO

IN CANADA: Trane Company of Canada, Ltd., Mowat & King Streets, W., TORONTO, ONTARIO (11 BRANCHES)

THE TRANE COMPANY manufactures a complete line of heating, cooling and air conditioning equipment. Trane Products have been developed with the primary purpose of aiding the architect, the engineer and the contractor in specifying and building working systems. With close cooperation between manufacturer, architect, engineer and contractor, the ultimate consumer is assured the greatest benefits.

TRANE AIR

Since 1885 Trane engineers have devoted their entire efforts in developing heating, cooling and air conditioning products for application by architects and engineers. Because of the wide range of products available an architect or engineer can select products of one manufacturer, thus providing Undivided Responsibility for architect and consumer.

Non-Ferrous Convectors



A Trane Non-Ferrous Convector, Floor Cabinet Type FK with Freeflo Grilles.

The Trane Non-Ferrous Convector — modern successor to the cast iron radiator—provides instant, even heat to any room space. The greater responsiveness of non-ferrous metals compared to cast iron means more instantaneous heat and greater fuel saving. Graceful lines assure attractiveness. Basic construction eliminates cracks and crevices, thereby promoting cleanliness. Consultants have won praise from the customer for the foresight in selecting this modern heating device.

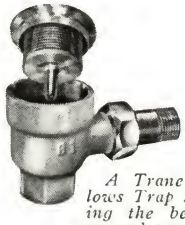
Constructed in several hundred sizes and all required types, the Trane Convector may be placed on the floor, partially or totally concealed in the wall, or hung completely exposed on the wall. Certain types are particularly suited for low cost housing projects. This heating unit operates successfully on all types of steam and hot water systems. See Sales Bulletin 110, Data Bulletin 205.

Unit Ventilators

The Trane Unit Ventilator is designed to meet all state and local requirements for heating and ventilation. Special damper arrangements prevent draft in this quiet draw-through unit which incorporates the important no draft Trane Heating Coil. Manufactured in a variety of sizes to meet all requirements. See Sales Bulletin S340 and Data Bulletin D340.

Heating Specialties

The wide variety of Trane Heating Specialties makes it possible to select the exact product needed. Trane



A Trane Bellows Trap showing the bellows member removed.

Heating Specialties are constructed for long life, thereby creating definite savings. Trane Traps have been tested by the U. S. Bureau of Standards. Trane Heating Specialties are especially recommended for use with other Trane Products because they are made together for service together. Yet Trane Heating Specialties will increase the efficiency of any steam system.

The Trane Heating Specialty Line consists of Low, Medium, and High Pressure Bellows Traps; Thermostatic Drip Traps; Quick and Float Vents; Vent Traps; Hermetic, Packless and Bellows Angle Valves; High and Low Pressure Float Traps; Direct Return Traps; Inverted Bucket Traps; Dirt Strainers; and Damper Regulators. See Bulletin 260.

Gas Equipment

Trane Gas Equipment consists of Unit Heaters and Winter Air Conditioners, packed with exclusive features. The Unit Heater is an entirely automatic unit, light in weight, one of the speediest heat makers ever developed. Can be used with natural or manufactured gas. The Winter Air Conditioners are completely factory assembled for duct or free delivery of air. Humidity, heating, air cleansing, and circulation obtained. May be equipped for summer cooling. See Bulletin S320 and S320-1.

The Trane Air Conditioning Manual

A comprehensive handbook covering the fundamentals of the science of air conditioning. Especially prepared in an unbiased manner for the engineer and architect. Chapter headings—Heat; Comfort; Heat Gains; Properties of Air and the Psychrometric Chart; Calculations for the Conditioned Air Supply; Refrigeration for Air Conditioning; Water for Air Conditioning. Price: $5.00.

Air Conditioning Equipment

Climate Changers—The complete year around air conditioner for the home, apartment and small building. Used with hot water or steam for heating and with any standard medium for cooling. Humidity is provided with positive atomizing spray type equipment. Air circulation by quiet operating squirrel cage fans. Dehumidification is accomplished by the cooling coil. Available in twelve sizes from 650 to 4780 cfm in horizontal or vertical models. See Sales Bulletin S303 and Data Bulletin D303.

Commercial Air Conditioners—Built for commercial application but with the same basic features as the Climate Changer except for higher fan speeds. A wide range of sizes and capacities ranging from 3,000 to 12,000 cfm is available in floor and suspended models. See Sales Bulletin 235 and Data Bulletin V234.

De Luxe Air Conditioners—For use where attractive appearance must be combined with all the functions of year around air conditioning. There are two distinct types of DeLuxe Air Conditioners—the Floor Type and the Hotel and Office Models. The DeLuxe Floor Type Unit is a vertical unit of compact design and rounded corners, available in six cabinet sizes and cfm ratings from 250 to 990. The Hotel and Office Unit is a horizontal unit for ceiling suspension. It is essentially a summer air conditioner but hot water heating is possible if water is used for cooling. Air cleansing available. See Data Bulletins V271 and V241.



An illustration of Trane Air Conditioners, a Trane Climate Changer of the large horizontal type.

Other Air Conditioning Equipment Includes:

1. The Trane Evaporative Condenser to condense refrigerants in any compressor system. See Sales Bulletin 42 and Data Bulletin D42.
2. The Trane Air Washer for humidification for the average commercial heating and ventilating system.
3. The Trane Type X Propeller Comfort Cooler, an inexpensive quiet propeller fan draw-through unit. Primarily intended for service with water as the cooling medium. Bulletin V285.
4. The Trane Product Cooler a compact unit used with a refrigeration system provides proper temperatures for product storage. Bulletin V25.
5. Railroad Air Conditioning Equipment includes the Trane Electro Mechanical System for car installation and subcooler and railroad evaporative condensers to make other systems function more effectively. Bulletin V258.
6. Trane Bus Air Conditioning Equipment includes a unit complete with Evaporative Condenser, Compressor and Gas Engine Assembly and a cooling unit containing coils and blowers.

Unit Heaters

The Trane line of Unit Heaters offers the most complete range commercially available. It includes both blower and propeller, draw through and blow through models for use with or without ducts. Completely described in Bulletin S327.

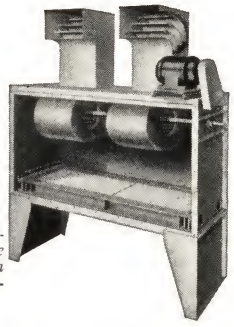
Projection Unit Heaters—A propeller type unit heater of the draw through type. It taps the usually wasted reservoir of heat at the ceiling, projecting it down to the living zone. Designed for high or low close ceiling mounting, it may be used at heights from ten to sixty feet. Available in single or multiple fan units in six fan sizes. See Data Bulletin D327-3.



A Trane Projection Unit Heater.



A Trane Propeller Type Unit Heater.



A Trane Torridor Blower Type Unit Heater with the front panel removed.

Propeller Type Unit Heaters—A conventional unit heater for all types of commercial and industrial heating. Available in 60 sizes for steam pressures up to 150 pounds or positive circulation hot water systems at 160° or higher. Incorporates such refinements as "Cradle Coil" to eliminate strain caused by expansion, and "Floor Line Spread" to direct heat to the floor line. See Data Bulletin D327-1.

Torridor Blower Type Unit Heaters—A blower type draw through heater for large space heating with a minimum of units. Especially desirable for duct work application. Available in belt or direct driven, standard or by-pass control units, floor, ceiling and wall types, and 96 sizes. See Data Bulletin D327-2.

Heating and Cooling Coils

There is a Trane Extended Surface Coil to meet all heating or cooling applications commercial or industrial.

Trane has a distinct coil design for each of seven different coil applications listed below.



Type E Coil for heating and cooling.

1. **Type E** Blast Coils for heating and cooling using low and high pressure steam, hot or cold water. Especially designed for duct installations.
2. **Type C** though similar to Type E is not encased. Side channels are provided for structural strength. Headers of both Coils are close grained cast iron to which the tubes are joined mechanically using a boiler tube type of joint. Manufactured in one and two row sections and many sizes.
3. **Type S** for cooling with clean chilled water. Available in single row serpentine where water quantities are limited and double row serpentine where ample water supply is available. In 2, 3, 4 and 6 row depths and a multitude of sizes.
4. **Type R** for cooling with chilled water where it may be necessary to clean tubes from time to time. In 4, 6 and 8 row depths and a variety of sizes.
5. **Direct Expansion Coils** for cooling with standard refrigerants. Differs only in header construction in which a vertical bronze distributor meters refrigerant equally to all tubes, 2, 3, 4 and 6 row depths and many sizes.
6. **Welded Header Coils** for service where high steam pressures up to 250 lbs. are encountered. Particularly advantageous for drying applications. Headers of heavy tubular copper securely welded to coil tubes. Two-row depths and a variety of sizes.
7. **Booster Coils** for booster type heating, ventilating and air conditioning where a central system is used.

Sales Bulletin S330; Data Bulletin D330-1, Blast Coils; D330-2 Water Cooling Coils; D330-3 Welded Header Coils; D330-4 Direct Expansion Coils.

Miscellaneous Equipment

Includes Condensation and Circulating and Booster Pump Temperature Control Valves to maintain set temperatures on convectors or radiators, and Washer and Atomizing Target Type Spray Nozzles.

YORK—AIR CONDITIONING DIVISION

YORK ICE MACHINERY CORPORATION

GENERAL OFFICES
YORK, PA.

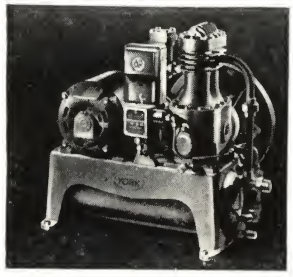
For York Refrigeration and Cold Storage Doors, see File Index

York Air Conditioning, central or unit systems, are built in capacities and types to meet every requirement—from the smallest to the largest installation using any source of energy. York Air Conditioning and York experience are available through conveniently located direct factory branches as well as through qualified dealers. They will be glad to co-operate with you in arriving at the correct solution of your air conditioning problem on a basis of sound engineering and correct installation.

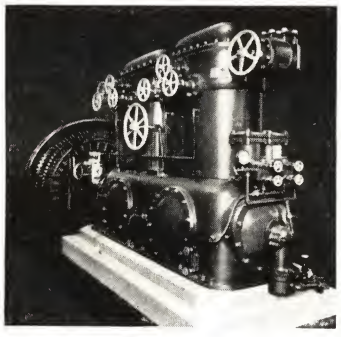
York Condensing and Water Cooling Systems Air, Economizer and Water Cooled

From ¼ to 1,000 hp. in single units, York Condensing Systems, designed for use with Freon-12 as the refrigerant have been universally accepted by architects and consulting engineers for installations throughout the world. Sizes up to 2 hp. condensers may be air cooled. Above 2 hp. the York Economizer is used where economically justified by water costs or restrictions. Water cooled condensers of the shell and tube type are furnished for use with city water, well or cooling tower water.

York Condensing Systems can be used with a multiplicity of evaporators: Direct expansion, air cooling surface, air dehumidifiers with coils or with water coolers for the indirect method of refrigeration.



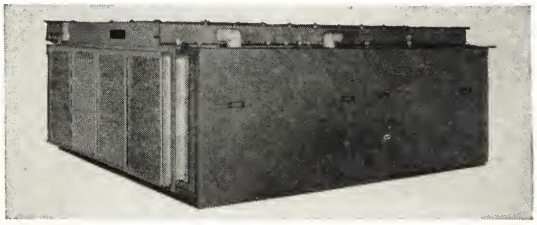
For upper floor installations specially designed counter-balanced machines are available.





With a background of Freon-12 installations totaling more than 85,000 tons refrigerating capacity York Air Conditioning experience is unsurpassed in the industry.

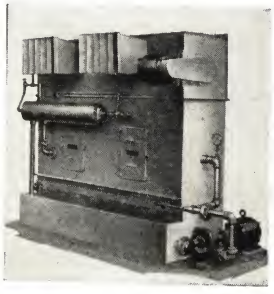
York Air Conditioners—Horizontal and Vertical Models





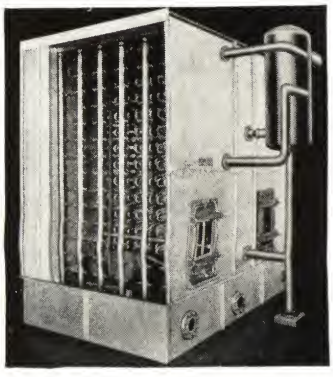
York Unit Air Conditioners, designed in capacities up to 35 tons, are suitable for horizontal or vertical installation, with or without ducts. York Air Conditioners can be furnished for a wide variety of applications, including all, or some of the functions of complete year 'round air conditioning, summer cooling and dehumidification, winter heating and humidification, year 'round circulation, filtering and ventilation. In all cases a definite supply of outside air can be introduced under the positive pressure of the supply fan of the conditioner.

York Air Conditioner—Industrial Spray Type



Among some of the applications to which York Spray Type Air Conditioners are adaptable are meat chill rooms, fruit cooling and storage rooms, textile and printing plants, bakery fermentation rooms, experimental rooms and other spaces requiring accurate control of temperature and relative humidity. Since their greatest field of application is in the low temperature field, where brine spray is required to keep the refrigerant coils defrosted, corrosive problems in connection with spray type air conditioners are particularly acute. In the York unit longer life has been insured by welded tank steel casings hot dipped galvanized, stainless steel eliminators, fan wheels and scrolls—cadmium plated fan shaft.

York Standard Dehumidifiers With or Without Coils



York Air Dehumidifiers have been developed to obtain unusually efficient performance when compared with conventional air washer design —accomplished by a refined system of water distribution, and an improved inlet deflector and eliminator arrangement. Can be furnished in all sizes and capacities; 7 ft. standard length, with and without cooling coils, depending upon requirements. When evaporator coil surface is included in the spray chamber of an air dehumidifier, the usual water cooler furnished with the refrigeration system can be eliminated, thus greatly reducing the space requirements of the system. Both types of air dehumidifiers are regularly furnished as a part of central station air conditioning systems, being so arranged with fans, heating equipment, automatic controls, air distributing ductwork, and accessories, to provide any or all of the functions of true year 'round air conditioning.

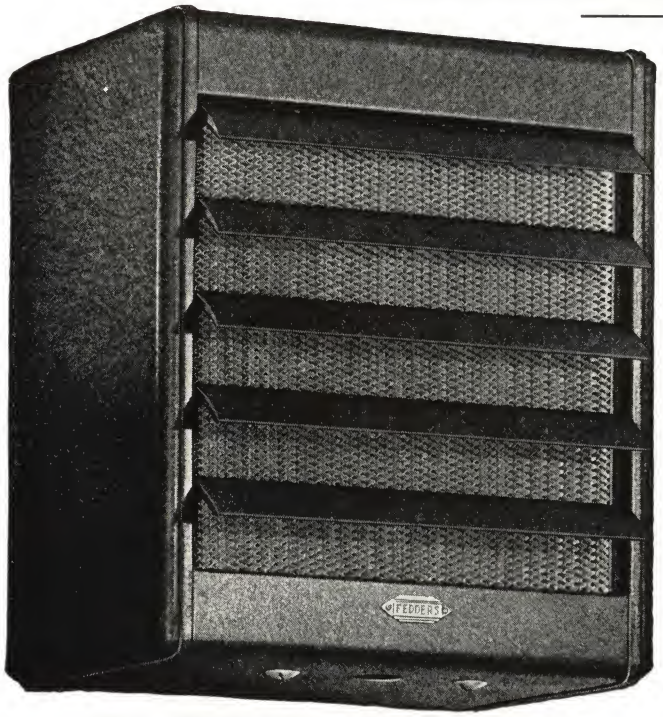
York maintains on instant call, expert engineers in every important center of demand. York ALONE *gives you this service.*

FEDDERS MANUFACTURING COMPANY

Manufacturers of Unit Heaters, Air Conditioners, Unit Coolers, Blast Heating and Cooling Coils, Refrigeration Valves and Equipment

57 Tonawanda Street, BUFFALO, N. Y.

BRANCHES AND REPRESENTATIVES IN ALL PRINCIPAL CITIES



Patents 1,970,105; 2,025,426. Other Patents Pending

FEDDERS UNIT HEATERS

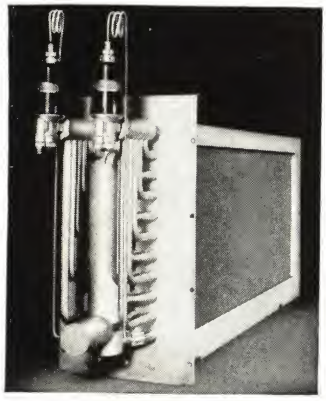
Built in a Complete Line for Commercial and Industrial Use

Handsome monopiece steel cabinets, quieter operation, rugged heating elements, rubber mounted motor and fan assemblies and a complete range of sizes with single, two and three-speed, standard and explosion-proof motors provide the correct answer to exacting commercial and industrial heating requirements. Capacities range from 75 to 1200 EDR as listed below.

Model.....	3023	3141	3143	3181	3183	3211	3261	3273	3353	3311	3374	3372	3451
EDR.....	75	100	125	150	175	200	225	250	275	300	325	350	375
Model.....	3411	3421	3563	3564	3662	3653	3663	3772	3776	3862	3873	3972	
EDR...	400	450	500	550	600	650	700	800	900	1000	1100	1200	

FEDDERS COILS FOR AIR CONDITIONING

Complete lines of all-copper cooling and heating coils, factory engineered and manifolded for correct distribution of cooling or heating medium. Engineered and catalogued on a package basis. Write for Bulletins 91 for direct expansion, and 105 for water type coils.



Patents Pending

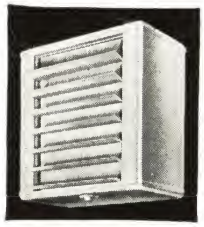


Fedders High Capacity 20-ton Thermostatic Expansion Valve

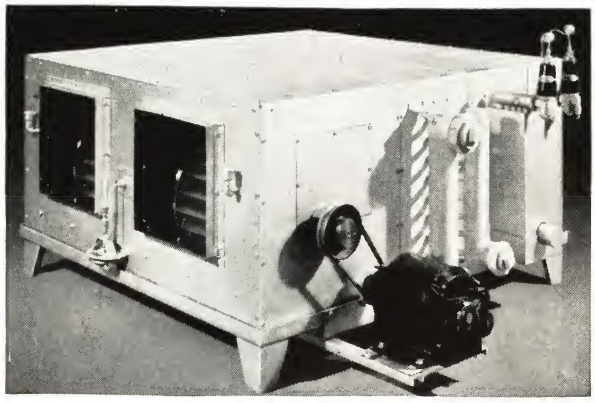
Patents 1,974,631; 1,987,948; 2,011,379

FEDDERS UNIT COOLERS

Series 73 Unit Coolers are built for comfort cooling and commercial refrigeration. Handsome non-rusting cabinets, all-copper cooling element, complete with motor, fan and Fedders Thermostatic Expansion Valve. Write for Bulletin covering single and twin models.



Patents Pending



FEDDERS ALL-SEASON AIR CONDITIONING UNITS FOR COOLING AND HEATING

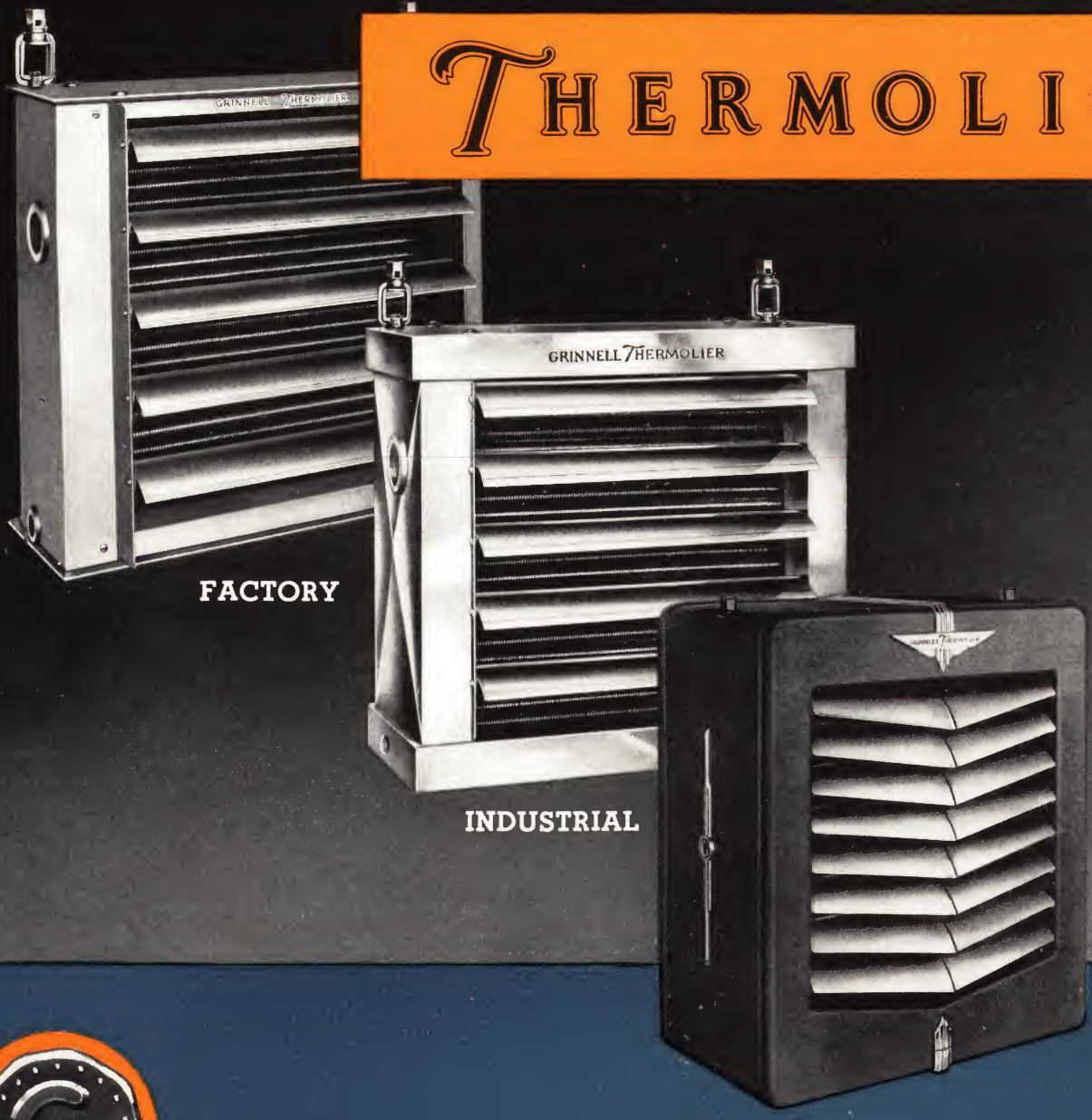
A complete line of All-Season Unit Air Conditioners complete with any combination of cooling and heating coils, humidifiers, filters and blowers, ready to connect to refrigerant, cold water, steam or hot water supply, cooling capacities from ¾ ton up; high capacity units made in two convenient sections. Available for floor or suspended installations. Write for Bulletin AC-201-A.

CAPACITIES—BASIC RATINGS

Model No.....	191-HL	321-HL	522-HL	723-HL	1152-HL	1582-HL	1812-HL
Tons refrigeration.....	¾–2	1½–4	2½–7	3½–10	5–15	7–18	9–25
EDR.....	200	375	650	950	1400	1850	2200
C.f.m. of Standard air.....	600	1200	2000	3000	4400	6000	6800

GRINNELL

THERMOLIER



FACTORY

INDUSTRIAL

DE LUXE

FOUNDED 1850

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THERMOLIER

Reg. U. S. Pat. Off.

THE GRINNELL UNIT HEATER with 14 POINTS of SUPERIORITY

THIS CATALOG seeks to outline the salient features of Thermolier, the Grinnell Unit Heater. It also includes data necessary for selecting the types and sizes for various classes of installations. These data are supplemented by diagrams of wiring and piping connections, as well as lists of accessories.

The unit method of heating can be economically and efficiently utilized in its wide range of applications through the use of Thermolier—the Grinnell Unit Heater which has structural features backed by over 50 years of varied heating experience and designed to meet the most rigid requirements in the heating field.

CATALOG 4 Condensed • 1938

Complete Catalog 4 on Request

GRINNELL COMPANY INC.

EXECUTIVE OFFICES

PROVIDENCE • RHODE ISLAND

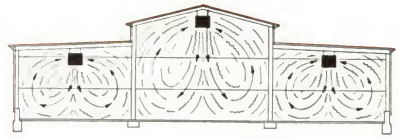
For Sales Offices, Branches and Plants, See Inside Back Cover

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THERMOLIER

UNIT HEATING SYSTEMS MEET THE REQUIREMENTS FOR COMFORT and ECONOMY



With a Thermolier System, all of the heat is effectively utilized by proper distribution throughout the entire working or occupancy area.

1. UNIFORMITY OF DISTRIBUTION

Proper distribution of heat requires a uniform blanketing of the working or occupancy areas in keeping with the economical utilization of the heat generated. Forced convection should distribute this generated heat uniformly and with the minimum of energy.

The Thermolier System fulfills these basic requirements. It efficiently maintains uniform, comfortable temperatures at the points of occupancy. Cold spots are eliminated. All of the generated heat is effectively utilized. Thus a maximum amount of heat is obtained with a minimum amount of energy and this efficient usage of generated heat results in substantial operating economies.

2. ADAPTABILITY

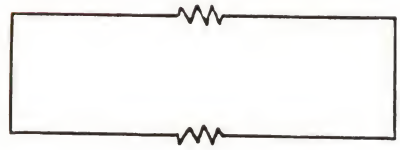
The flexibility of the Grinnell Thermolier System is a decided advantage. The system can be adapted to existing buildings as readily as to new construction. The simplicity of the piping—together with the method of hanging heaters from the ceiling, supporting them on columns, or suspending them from beams—offers no interference to arrangements of operating machinery or equipment.

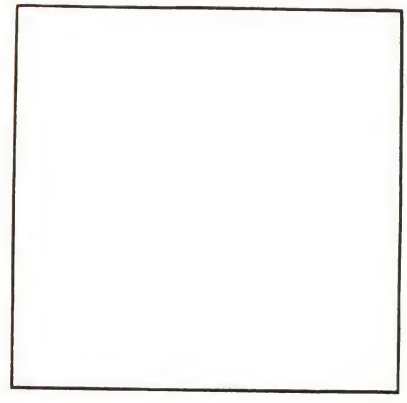
Thermoliers are so readily installed that they are practically portable. This feature allows changes in their location at any time to meet future requirements.

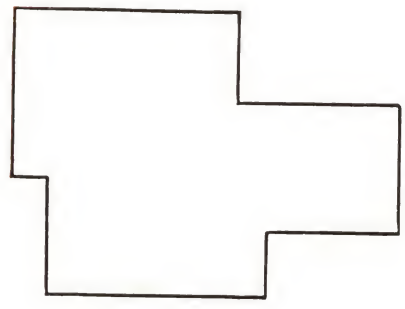
With a Thermolier System, the piping can be fitted to meet any condition. Since the units are generally placed as high as practical, the supply and return piping is also well up out of the way. This feature is of prime importance in new buildings and is of greater importance in existing buildings, because it allows present antiquated, unsightly, and unsatisfactory heating systems to be revamped and modernized at exceedingly small cost.

3. ECONOMY IN FIRST COST

A Grinnell Thermolier System assures substantial economies in first cost. These savings are obvious when it is realized that one Thermolier, weighing less than 200 pounds has the equivalent heating capacity of more than two tons of cast iron radiation or pipe coils. This in itself represents a saving of nearly one-half in the cost of radiating elements. Additional savings are made in the cost of installation of these heating surfaces for they require a proportionately less amount of pipe, fittings and accessories to obtain the utmost in heating efficiency.



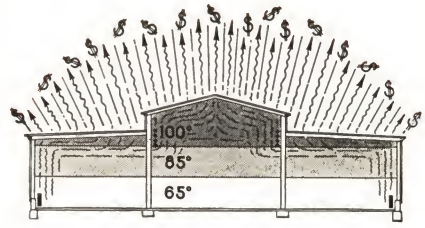




The wide range of sizes of Thermolier permits the judicious selection of just the right units to efficiently and economically heat all types of room areas.

4. ECONOMY OF OPERATION

The operating economy of a Thermolier System is best demonstrated by the fact that heat is turned on or off merely by throwing a switch manually—or, more exactly, by a simple automatic control governed by room temperature. This automatic control can be set for the temperature desired and that temperature will be evenly maintained inside regardless of any changes in temperature outside. Consequently, heat is only furnished when and where it is needed and no heat is wasted. Substantial savings in fuel are the result.



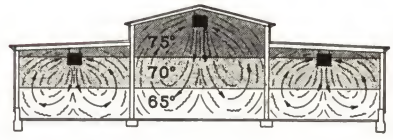
With an old fashioned heating system, lazy heat rises to the ceiling and fuel dollars fly out the roof.

Examples of Savings

There are many instances where the installation of Thermolier has greatly reduced heating costs. One well known plant—after modernizing its heating system with Thermoliers—reported a saving of 29% in steam consumption.

A Railway and Dock Shop replaced their old system with Thermoliers and effected a reduction of 75 tons of coal per season—a saving of 35%.

One of the largest manufacturers in the country, operating more than 50 separate plants, has Grinnell Thermoliers in all of its newer buildings and has also found it economical to install them in many of its older plants. This concern reports overall savings of 30%. In one factory alone, where Thermoliers are installed in conjunction with the famous Grinnell Duotherm Automatic Control System, savings are estimated at $50.00 a day. In a still more recent installation, this same manufacturer reports a savings of $5500.00 per year.



With a Thermolier System, live heat is forced downward, even temperatures maintained, and fuel costs are reduced.

Apply These Figures to Your Own Heating Situation and Discover How Much Money Is Flying Out the Roof

92°	AVERAGE "OVERHEAD" TEMPERATURE MAKING FOR HEAT LOSS	THERMOLIERS CUT AVERAGE "OVERHEAD" TEMPERATURE 20 DEGREES — 72°
45°	AVERAGE OUTSIDE TEMPERATURE DURING HEATING SEASON	45°
47°	HEAT DIFFERENTIAL—(NOTE 20° LESS WITH THERMOLIERS)	27°
x 5000	AVERAGE NUMBER OF HOURS PER HEATING SEASON	x 5000
235,000	DEGREE—HOURS PER HEATING SEASON (42% LESS WITH THERMOLIERS)	135,000

SUMMARY

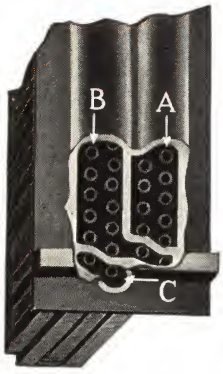
65% — 65% OF TOTAL HEAT LOSS IS OVERHEAD

42% — 42% LESS OVERHEAD HEAT LOSS WITH THERMOLIERS (See last panel above)

27% — THERMOLIER SAVING IN TOTAL FUEL THRU LOWERING THE OVERHEAD HEAT LOSS ALONE

THERMOLIER has these 14 POINTS OF SUPERIORITY

1 INTERNAL COOLING LEG ASSURES CONTINUOUS REMOVAL OF CONDENSATION (Exclusive with Thermolier)



Due to the exceptional construction of the header in Thermolier, steam circulation and the removal of condensation in this unit are distinctly different than is usual in unit heaters. This most unique feature is so simple, practical and valuable that engineers and contractors alike are quick to realize its importance.

Steam is delivered into Chamber "A" of the header and circulates from there through the pitched U tubes, carrying its condensation with it into Chamber "B." By partitioning off the lower tube or tubes at the bottom of the Steam Supply Chamber "A" these tubes carry all condensation from Chamber "B" into Drain Chamber "C." In passage of this condensation through these tubes, the air from the fan is rapidly carrying off heat just as it does in the rest of the unit. The result is that these two bottom tubes form an efficient internal cooling leg, integral with the unit.

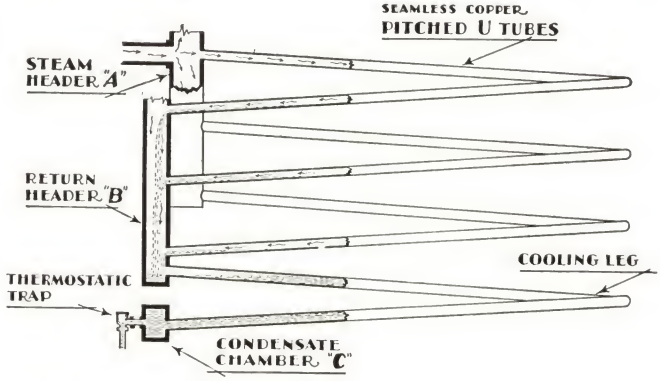
The actual cooling effect of this construction is equal to a run of more than 100 feet of the ordinary, exterior cooling leg piping.

THERMOSTATIC TRAPS OPERATE PERFECTLY WITH THERMOLIER

The Internal Cooling Leg in Thermolier makes it practical to use a thermostatic trap—the simplest of all traps—with every size and model. During operation of the unit, the internal cooling leg keeps such a trap partially or fully open at all times. As the number of openings and closings of the trap is greatly reduced, being only a fraction of those required in normal use under other conditions, the life of the thermostatic trap or valve is greatly prolonged.

The use of such a valve or trap lowers installation costs, not only because the trap is less expensive than other types but because the piping connections are less complicated. In addition to the above advantages, a much neater and compact installation is assured. Thermolier, operating under such conditions will maintain its full efficiency indefinitely.

As the internal cooling leg acts, to a certain extent, as a vacuum condenser, drawing steam through and discharging condensation with air continually, the unit does not "air bind." Another important feature is the fact that the heating element, draining continually instead of intermittently, is not subjected to frequent changes in temperature. The life of the entire unit is, therefore, greatly prolonged because of the internal cooling leg and its various contributing advantages.



2 EVERY TUBE AN EXPANSION BEND

Every tube in Thermolier is of the "U" or hairpin type to allow for variation in contraction and expansion of the various tubes made into a single header at one end. While this method of construction is expensive because it increases the cost of symmetrically housing the unit, experience with hundreds of thousands of these tubes built into Thermolier has shown it is the most effective and practical means of compensating for varying expansion strains. It also adds greatly to the absolute dependability of the unit over long periods of time.



At left are shown one each of the various tubes used in the assembly of the heating units in the various models of Thermolier. All tubes are of the same construction, the only difference being in their length and diameter.

3 SIMPLE PIPING CONNECTIONS

The internal cooling leg in Thermolier permits the connection of a thermostatic trap directly to the return outlet opening. The condensation coming from the unit is cool enough so that the thermostatic trap will operate continuously even when the unit is working at maximum capacity for indefinite periods. This feature, combined with the fact that both the supply and return connections are at the same end of the unit, makes for compactness, neatness and economy in the piping connections.



4 FACTORY PACKED FOR EASY INSTALLATION

The ease with which Thermoliers can be installed without marring or soiling is, in a great measure, due to the unique manner in which they are packed before leaving the factory.

All Industrial and Factory Type units are first enclosed in a heavy paper bag to protect their finish during installation. The larger sizes are also packed in a rugged wood frame with removable couplings to facilitate handling and hoisting into position without damage. De Luxe Type units are felt padded.

The instruction sheet packed with each unit shows it can be quickly suspended with the Grinnell Adjustable Swivel Couplings (described in Point 11) and the piping connections made. If new construction or remodeling is in progress, the bag can be left in place to protect the neat appearance of the unit until it is ready for operation.

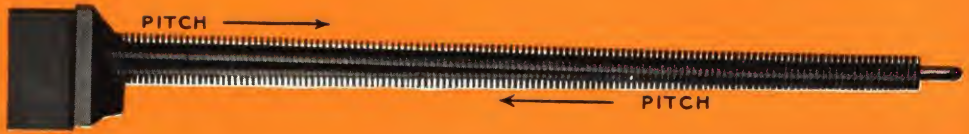


5 POSITIVE BUILT-IN DRAINAGE

Below is an individual section cut out of a complete Thermolier heating element to show the pitch of each tube is definitely built-in and assured. This pronounced pitch provides positive and complete drainage of condensation from each individual tube, thus increasing heating efficiency and doing away with the possibility of noisy and destructive water hammer on account of accumulated condensation.

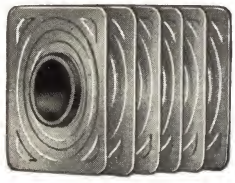
At the right is shown the assembly of the complete heating element. The pitched finned tubes are built into the header at the further end. The pitch is permanently maintained at the "U" end by the strong spring clips which clamp each bend into definite alignment and at the same time allows for contraction and expansion strains.





6 SUPERIOR HEATING ELEMENT INSURES LONG LIFE

The steam container in the heating element of Thermolier is made of seamless copper tubing, which has a great factor of safety in strength as against any practical operating conditions. Stamped square brass or copper fins, slightly corrugated for stiffness, are attached uniformly to this tubing by automatic machinery. Square fins provide 24% more radiating surface than round fins occupying the same space. This accounts in no small degree for the large amount of heat obtained from the small frontal area of Thermolier.



No solder whatever is used for strength in Thermolier assembly. The deep, tight fitting collars on the fins provide ample support and large metal contacts for rapid heat transfer from tubes to fins. Collars also provide uniform spacing. The final immersion of the tube and fin assembly in a solder bath is only for the purpose of establishing a permanent metal bond between fins and tubes and is not a strength factor.

7 TUBE TO HEADER CONSTRUCTION IS LEAK PROOF

Years of experience with the method used in expanding the copper tubes into the cast iron header prove it insures the best possible type of a joint. More than a half million of these expanded joints in Thermoliers are in actual service and, with not a single failure under the operating conditions for which they are intended, their record stands as positive proof of this statement.

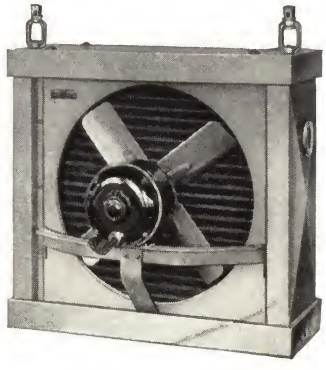
This method of header construction has been almost exclusively used for many years in the construction of condensers, heat exchangers and other important apparatus for power plant and process work. Obviously, therefore, with this construction the steam pressures which the heating element of Thermolier will withstand are limited only by the weight of the cast iron header. The standard unit is built for 125 lbs. working steam pressure and can be used with complete confidence in the safety and durability for such pressures.



8 MOTOR AND FANS MEET SPECIFIC THERMOLIER REQUIREMENTS

The motors on Thermoliers are not standard stock size motors, but are built to exacting specifications to assure highest operating efficiency with the minimum of electrical input. They are fully enclosed to keep out dirt and moisture. The care exercised in producing these special motors assures long service with a definite saving in power cost.

The fans have aluminum blades with a special steel hub, and are made to very exacting specifications and tolerance—to assure perfect balance, minimizing vibration and noise. They are attached to the motor shaft by a specially developed locking device which has absolutely eliminated the possibility of their coming loose. The mounting for motor and fan is a heavy angle iron bracket, reinforced by a sturdy, supporting brace.



9 HEAVY FRAME GIVES GREATER RIGIDITY

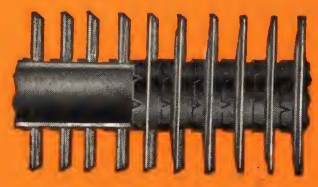
Realizing that the frame is the backbone of the completed assembly, a design in which strength was the fundamental consideration was adopted for Thermolier. The heavy hanger rods extend through and become an integral part of the completed frame.

Special attention is directed to the form of the frame, which is so made that the outside copper or Ducoed steel housing covers and protects it closely and tightly from moisture and other corrosive agencies.



10 TUBE DESIGN MINIMIZES DIRT COLLECTION

The heating element in Thermolier is especially designed to reduce the possibility of dirt collection to an absolute minimum. There is absolutely no flat horizontal heating surface in the unit. This minimizing of the possibility of dirt collection is important because the deposit of dirt particles on flat surfaces tends in time to seriously decrease the efficiency of such a heating element even if it does not eventually seriously interfere with the air flow through the unit. Of the total heating surface, 89% is provided in vertical fins and the remaining 11% of the heating surface consists of the round, horizontal tubes. It is obvious that this type of construction offers no place for dirt or dust to rest or accumulate.

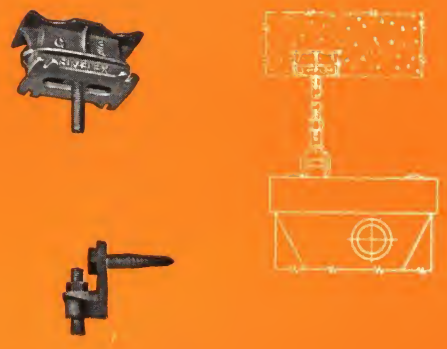


11 ADJUSTABLE HANGERS FACILITATE ERECTION

The Grinnell "Adjustable Swivel Coupling" was especially developed to provide a standard method of hanging Thermoliers. This hanger, when screwed on, is an integral part of each unit. The swivel is loose in the socket and is self-locking so that once the hanger rods are adjusted, they are automatically locked in position. This allows vibration from building or machinery to be taken up in the hanger and not transmitted to the unit.

Several methods by which Thermolier, with its Adjustable Swivel Couplings may readily be attached to various types of building construction, are indicated here.

The full line of adjustable hangers which may be utilized in connection with this special Swivel Coupling is shown in Grinnell Hanger Catalog 8. This Catalog will be sent upon request.





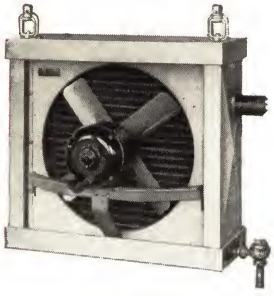


12 THERMOLIER IS AVAILABLE IN

Thermolier is available in three types—Industrial, Factory and De Luxe—and each has its individual features of design to simplify selection for specific installation requirements. The heating element and entire internal construction of all three types are identical. Their housings differ to meet appearance factors.

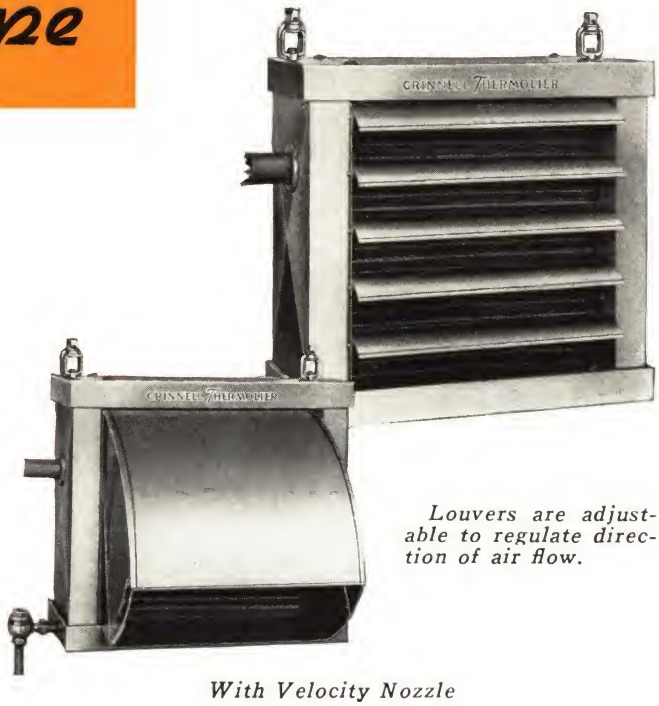
Industrial Type

Thermolier, Industrial Type, with its corrosion-resisting housing of polished copper, or chrome plate, is generally recommended for installations in commercial buildings, manufacturing plants, factory offices, stores, etc., where a neat, attractive appearance is desired. It is particularly adaptable to areas where high humidities are encountered.



Rear View

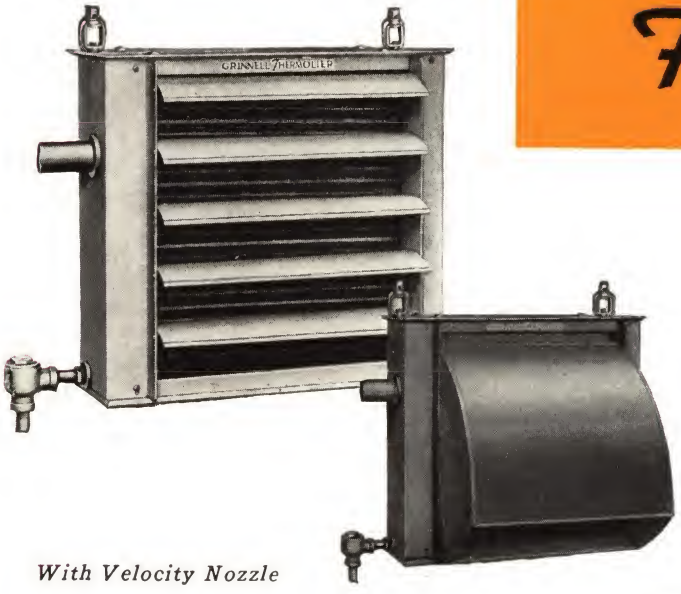
Where a more concentrated flow of heat is required in a specified area, a Velocity Nozzle of the same finish can be furnished at slight additional cost.



Louvers are adjustable to regulate direction of air flow.

With Velocity Nozzle

Factory Type



With Velocity Nozzle

Where appearance is not of primary importance, Thermolier, Factory Type, is available with a rugged steel housing, finished in gray Duco. It is adaptable where a substantial but not elaborately finished unit is desired and is less likely to be marred during handling or after installation.

Velocity Nozzles can also be furnished for these units at slight additional cost and are of the same finish as the housing.

3 ATTRACTIVE and SERVICEABLE TYPES

De Luxe Type

THERMOLIER, De Luxe Type, meets the growing demand for a "decorative" unit heater to harmonize with the appointments in offices, specialty shops, stores, restaurants and numerous other occupancies where appearance is of paramount importance. Its modern, streamlined housing combines a finish of crackle slate gray and non-reflecting satin chrome which lends itself to any color motif, yet remains a background part of the decorative scheme.

Due to the entirely new and unique design of De Luxe Type Thermolier, both the inlet and outlet connections are at the REAR of the unit. Recessed within the housing, they are practically concealed. This distinctive De Luxe feature eliminates unsightly piping connections from view on either side as well as from the front of the unit. Thermolier De Luxe Type, therefore, is not only neat looking and compact in itself, but its appearance is further enhanced after installation.



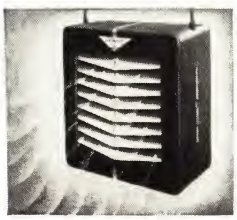
Rear View

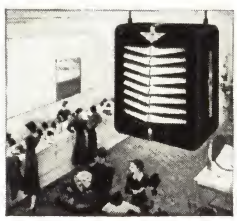


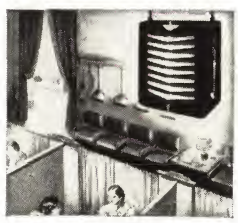
Side View

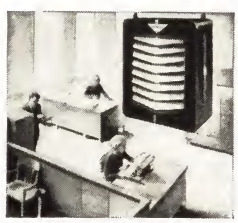
The new De Luxe louver design gives a wider, angular spread of heat, a feature of particular importance in the types of rooms for which this unit is best suited.

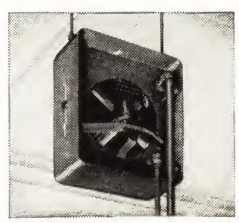
A few of the many occupancies to which this neat looking, compact unit is adapted are illustrated below.











13 DIRECTED AIR STREAM PROVIDES WIDE RANGE OF APPLICATIONS



Adjustable louvers permit setting for most effective direction of air flow.



Where extremely high velocities are required, the Velocity Nozzle is recommended. Adaptable only to Factory and Industrial Types.



The entirely new louver design with the De Luxe Type gives wider, angular spread of heat for greater effective area of coverage with the same efficient downward delivery.

Adjustable Louvers

The adjustable louvers, furnished with every Thermolier, provide a means of directing the heated air in any forward and downward direction. They can be adjusted independently of each other; their angles of direction control the air velocity at the exit of the unit.

As shown by the sketches at the left, practically any requirement or condition can be met with these louvers. Furthermore, they not only remain set in the position placed, but can be easily changed at any time by merely raising or lowering them.

Velocity Nozzles

Where conditions indicate the advisability of mounting units higher than the average of ordinary building construction, Thermoliers can be equipped with Velocity Nozzles to assure sufficient velocity to drive the heated air down to the working level.

These Nozzles are adjustable for medium to maximum velocity of discharge. Although they are not furnished as standard equipment, they can be obtained at a slight additional cost for either the Industrial or Factory Type units in the same finish as the housings.

Horizontal Spread

Although there is a certain amount of horizontal spread to the heated air as it leaves the louvers on the Industrial and Factory Type Thermoliers, this spread is decidedly more pronounced in the De Luxe Type unit. Its entirely new louver design gives a wider, angular spread of heat for a greater effective area of coverage—with the same efficient downward delivery. This feature is of particular importance in the types of rooms to which the De Luxe Type is best suited.

Mounting Heights

Natural laws are constantly at work to keep the warmest air near the ceiling or roof of any room and these laws are dependent upon many factors other than the ceiling height. It naturally follows, therefore, that there is no general rule that can be used to dictate the air velocity required from a unit heater to drive this air downward.

As one of the duties of Thermoliers is to draw this warm air from the ceiling, reheat it, and force it downward into the working or occupancy area, these units are usually mounted as close to the ceiling or roof as is practicable. Air velocity requirements, from the lowest to the highest, are effectively obtained through the regularly furnished louvers or velocity nozzles. They provide an adjustable means of meeting every condition encountered.

14 30 SIZES TO MEET EVERY REQUIREMENT

The complete line of Thermoliers comprises a wide range of 30 sizes from which just the right unit or units for any space or condition can be readily selected. Thousands of installations throughout the country attest their efficiency and dependable performance. In some instances, a single unit is utilized to correct an unsatisfactory heating condition in an isolated section of a building. In others, several hundred units are employed to heat an entire plant.

While this type of heating is comparatively simple to lay out, there are certain methods of placing Thermoliers with regard to exposures, drafts and working conditions which greatly influence the efficiency and comfort obtained from them. Engineering advice or further information on Thermoliers is available for the asking through any of our strategically located offices in principal cities. These offices are listed on the inside back cover and will gladly place over 50 years of varied heating experience at your disposal.

Selection Recommendations

1. Size of Units

To efficiently and economically heat any specified room area, it is imperative that a unit or units of sufficient capacity be selected to maintain a uniform distribution of heat throughout the area, regardless of outside temperatures. The Capacity Tables on the following pages contain engineering data to determine just the right size units for any space or condition.

2. Type of Units

The Type of Unit selected is usually governed by the class of occupancy in which it is to be installed. In general, the Factory Type is recommended for industrial applications, the Industrial Type for commercial installations, and the De Luxe Type for merchandising establishments or occupancies where the utmost in attractive appearance is desired.

3. Application of Units

The primary purpose of unit heaters is to assure comfort in heating—to furnish heat just when and where it is wanted, and to maintain a comfortable inside temperature regardless of weather changes. Thermolier not only meets this requirement efficiently but does so with the minimum expenditure in operating cost. These units are also applicable to conditions involving special heating requirements or for drying purposes. In such instances, other than ordinary engineering advice is recommended and it is suggested that those concerned consult us.

Operation with Hot Water

Thermolier is well designed for use in forced hot water heating systems because the length of the tubes in its U-Tube construction assures a uniform circulation of water. Capacity Tables for Hot Water are not shown in this Catalog but are available upon request.

Index to Models

Model Number	Square Feet Nominal E.D.R.	Page
20	146	12
20L	112	12
25	169	13
25L	128	13
30	199	14
30L	147	14
40	289	15
40L	222	15
45	339	16
45L	261	16
50	378	17
50L	280	17
60	437	18
60L	324	18
65	540	19
65L	459	19
70	592	20
70L	490	20
80	686	21
80L	580	21
90	788	22
90L	632	22
100	975	23
100L	817	23
110	1080	24
110L	883	24
140	1333	25
140L	1129	25
180	1533	26
180L	1225	26

THERMOLIER CONDENSED CAPACITIES

WHEN THERMOLIER IS RUN AT NORMAL SPEEDS

All based on Standard Basis of Rating: 2 lbs. Steam Pressure and 60° Entering Air Temperature.

Note: For Capacities at other Pressures and Temperatures, see Conversion Table on opposite page.

Model Number	R. P. M. at Normal Speeds	Total heat delivered B.t.u. per hr.	Equivalent Direct Radiation E. D. R.	C. F. M. (70° F. Vol.) at 60° F. Enter. Air	C. F. M. at Exit Air Temp.	Exit air temp. °Fahr.	Condensation lb. per hr.	Air Velocity at Exit—Linear Ft. per Min.		
								Louvers Wide Open	Louvers Set at 45°	Velocity Nozzle Max.
20	1725	35,000	146	599	646	114	35	799	928	1337
20L	1140	26,900	112	406	438	122	28	543	632	908
25	1725	40,500	169	617	685	120	42	846	983	1416
25L	1140	30,900	128	427	475	127	32	587	682	982
30	1725	47,800	199	506	579	147	49	716	832	1198
30L	1140	35,200	147	345	395	156	37	488	568	818
40	1725	69,400	289	1475	1566	104	72	1117	1402	1870
40L	1140	53,300	222	954	1030	112	56	733	921	1228
45	1725	81,200	339	1792	1810	105	84	1290	1616	2150
45L	1140	62,600	261	1107	1196	113	66	853	1070	1425
50	1725	90,700	378	1661	1794	111	93	1261	1584	2116
50L	1140	67,100	280	1084	1182	118	70	830	1042	1388
60	1725	104,800	437	1267	1424	137	108	1013	1272	1695
60L	1140	77,700	324	817	938	148	81	667	837	1116
65	1140	129,500	540	2170	2356	115	134	844	1061	1592
65L	860	110,100	459	1630	1792	123	114	642	807	1210
70	1140	142,000	592	2312	2895	109	147	1037	1310	1970
70L	860	117,000	490	1722	2160	114	122	774	977	1470
80	1140	164,600	686	2623	2884	117	171	1033	1297	1951
80L	860	139,300	580	1932	2180	125	143	782	981	1476
90	1140	189,200	788	2016	2298	144	196	826	1036	1559
90L	860	151,600	632	1475	1702	152	156	612	768	1155
100	1140	234,000	975	5091	5400	103	243	1112	1499	1933
100L	860	196,000	817	3747	4010	108	203	827	1115	1438
110	1140	259,000	1080	5914	6290	101	269	1292	1746	2250
110L	860	211,600	883	4265	4530	106	219	930	1256	1620
140	1140	320,000	1333	5620	6034	113	330	1238	1671	2156
140L	860	271,000	1129	4122	4516	120	280	929	1253	1616
180	1140	368,000	1533	4236	4800	140	379	985	1328	1712
180L	860	294,000	1225	3075	3528	148	304	727	980	1264

CONVERSION TABLE

THERMOLIER

CONSTANTS FOR DETERMINING THE CAPACITIES OF THERMOLIERS

AT VARIOUS STEAM PRESSURES AND TEMPERATURES OF ENTERING AIR

Based on Steam Pressure of 2 lbs. Gage and 60° Entering Air Temperature

To determine Capacity at any Steam Pressure and Entering Air Temperature, multiply Rated Capacity at 2 lbs. Steam Pressure and 60° Entering Air Temperature by Constant from Table below.

Example: Required to find the Capacity of Model 90 Thermolier at 30 lbs. Steam Pressure and 80° Entering Air Temperature. Multiply Capacity of Model 90 at 2 lbs., 60° (189,200 B.t.u.) by Constant (1.19). 189,200 B.t.u. × 1.19 = 225,148 B.t.u.

Steam Pressure Pounds—Gage	Temperature of Entering Air—Degrees Fahr.											
	—10°	0°	10°	20°	30°	40°	50°	60°	70°	80°	90°	100°
0	1.54	1.45	1.37	1.27	1.19	1.11	1.03	0.96	0.88	0.81	0.74	0.67
2	1.59	1.50	1.41	1.32	1.24	1.16	1.08	**1.00**	0.93	0.85	0.78	0.71
5	1.64	1.55	1.46	1.37	1.29	1.21	1.13	1.05	0.97	0.90	0.83	0.76
10	1.73	1.64	1.55	1.46	1.38	1.29	1.21	1.13	1.06	0.98	0.91	0.84
15	1.80	1.71	1.61	1.53	1.44	1.34	1.28	1.19	1.12	1.04	0.97	0.90
20	1.86	1.77	1.68	1.58	1.50	1.42	1.33	1.25	1.17	1.10	1.02	0.95
30	1.97	1.87	1.78	1.68	1.60	1.51	1.43	1.35	1.27	1.19	1.12	1.04
40	2.06	1.96	1.86	1.77	1.68	1.60	1.51	1.43	1.35	1.27	1.19	1.12
50	2.13	2.04	1.94	1.85	1.76	1.67	1.58	1.50	1.42	1.34	1.26	1.19
60	2.20	2.09	2.00	1.90	1.81	1.73	1.64	1.56	1.47	1.39	1.31	1.24
70	2.26	2.16	2.06	1.96	1.87	1.78	1.70	1.61	1.53	1.45	1.37	1.29
75	2.28	2.18	2.09	1.99	1.90	1.81	1.72	1.64	1.55	1.47	1.39	1.32
80	2.31	2.21	2.11	2.02	1.93	1.84	1.75	1.66	1.58	1.50	1.42	1.34
90	2.36	2.26	2.16	2.06	1.96	1.88	1.79	1.71	1.62	1.54	1.46	1.38
100	2.41	2.31	2.20	2.11	2.02	1.93	1.84	1.75	1.66	1.58	1.50	1.42
125	2.51	2.39	2.30	2.20	2.13	2.03	1.93	1.85	1.77	1.68	1.60	1.53

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RECOMMENDATIONS

1. For Maximum B.t.u. Capacity per Unit of Electric Consumption.	Use Models 30, 60, 90, 180.
2. For Maximum Normal Velocity without use of Velocity Nozzle.	Use Models 20, 25, 30, 40, 45, 50, 60, 65, 70, 80, 90, 100, 110, 140, 180.
3. For Lowest Outlet Temperatures (usually used when steam pressures are high).	Use Models 20, 25, 40, 45, 50, 65, 70, 80, 100, 110, 140.
4. Where Quietness of Operation and Low Velocity are requisite.	Use Models 20L, 25L, 30L, 40L, 45L, 50L, 60L, 65L, 70L, 80L, 90L, 100L, 110L, 140L, 180L.
5. For any one of above—Plus Extremely High Velocity.	Use Models as listed above for any given condition—with addition of Velocity Nozzle.

For Data at conditions other than listed, see our complete Thermolier Catalog. Copy on request.

DIMENSIONS

THERMOLIER

Factory Type

STANDARD CONSTRUCTION

125 Lbs. Maximum Working Steam Pressure at 406° F. Maximum Total Temperature.

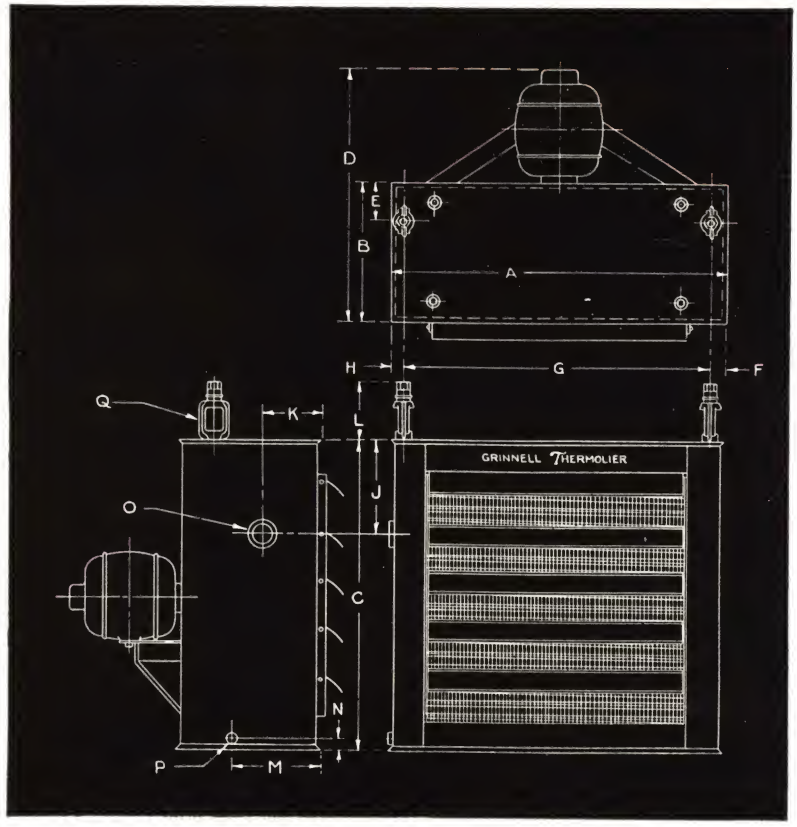
APPROXIMATE WEIGHTS OF COMPLETE UNITS • In Pounds

Models	20 to 30L	40 to 60L	65 to 90L	100 to 180L
Net	75	105	190	400
Shipping	85	145	245	545

* These dimensions vary slightly.

† Adjustable Swivel Coupling (furnished with Thermolier) tapped standard bolt thread.

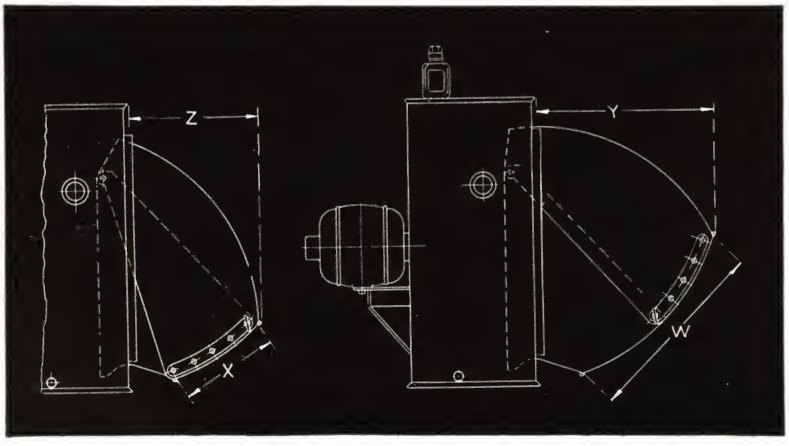
‡ Outlets bushed to pipe size next smaller than indicated in table.



DIMENSIONS IN INCHES

Models	A	B	C	D*	E	F	G	H	J*	K*	L	M*	N*	O	P	Q†
20 to 30L inclusive (4 louvers)	16	8 1/8	13	14 5/8	2	3/32	14	1 1/32	....	....	3 1/16	....	....	1	....	3/8
	Models 20, 20L, 30, 30L, Steam								2	2 7/8	....	5 1/2	7/8	....	1/2	....
	Models 25, 25L, Steam								2	2 7/8	....	5 1/4	1 13/16	....	‡ 3/4	....
40 to 60L inclusive (4 louvers)	21 1/4	9 3/8	18 1/2	16 1/2	2 11/16	1 1/16	19 1/8	1 1/16	....	....	3 5/8	....	....	....	3/4	1/2
	Models 40, 40L, 45, 45L, 60, 60L, Steam								3 13/16	3 9/16	....	6 1/8	1	1 1/2	....	....
	Models 50, 50L, Steam								3 7/8	3 9/16	....	6 1/16	1	1 1/4	....	....
65 to 90L inclusive (5 louvers)	27 3/4	9 3/4	25 9/16	19 15/16	2 13/16	1 11/16	24 7/8	1 3/16	....	....	4 5/8	....	....	....	‡1	5/8
	Models 65, 65L, 70, 70L, 90, 90L, Steam								7 11/16	3 13/16	....	5 13/16	1 1/8	2	....	....
	Models 80, 80L, Steam								7 3/8	3 1/2	....	5 13/16	2 1/4	1 1/2	....	....
100 to 180L inclusive (6 louvers)	36 7/16	11 1/16	32 3/4	24 1/8	3 7/16	1 1/2	33 11/16	1 1/4	....	....	6 3/8	....	....	....	‡1 1/4	7/8
	Models 100, 100L, 110, 110L, 180, 180L, Steam								9 1/2	4 5/16	....	6	1 5/16	2 1/2	....	....
	Models 140, 140L, Steam								8 5/16	3 11/16	....	6	2 3/16	2	....	....

APPLICATION OF VELOCITY NOZZLE TO FACTORY TYPE UNIT



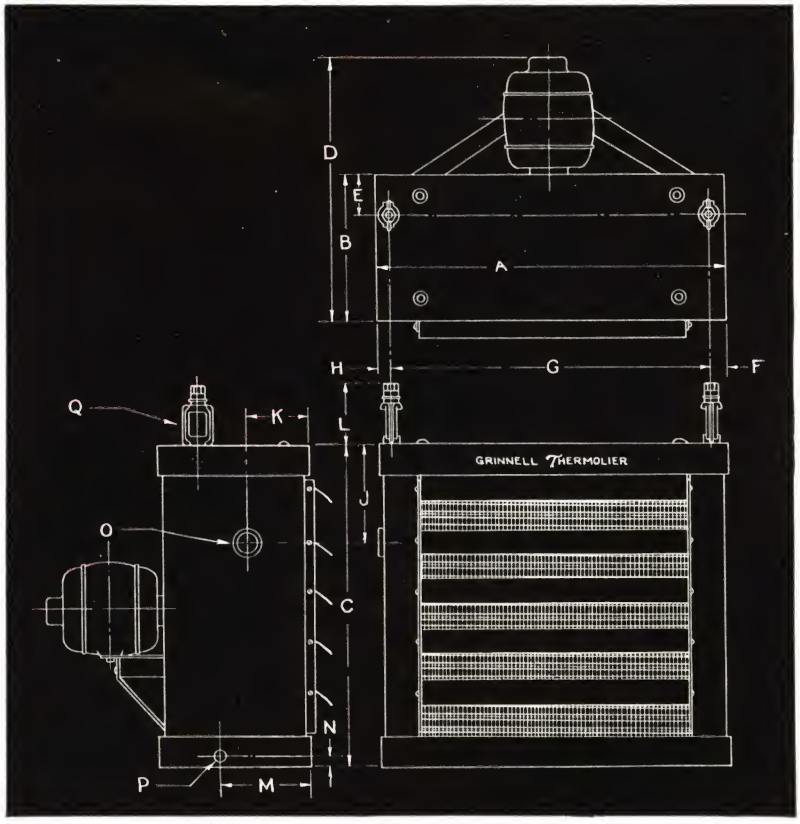
DIMENSIONS OF VELOCITY NOZZLE • In Inches

Models	20 to 30L	40 to 60L	65 to 90L	100 to 180L
DISCHARGE OPENINGS				
Length	10 3/4	14 3/4	20 3/4	28
W (max.)	8 1/4	12 3/4	16 13/16	23
X (min.)	3 3/8	6 3/4	8 7/16	10 1/2
OVERHANG				
Y (max.)	8 5/8	11	15 1/4	22 1/2
Z (min.)	5 7/8	8	10 3/4	14 1/2

THERMOLIER

DIMENSIONS

Industrial Type



STANDARD CONSTRUCTION

125 Lbs. Maximum Working Steam Pressure at 406° F. Maximum Total Temperature.

APPROXIMATE WEIGHTS OF COMPLETE UNITS • In Pounds

Models	20 to 30L	40 to 60L	65 to 90L	100 to 180L
Net	75	105	190	400
Shipping	85	145	245	545

* These dimensions vary slightly.

† Adjustable Swivel Coupling (furnished with Thermolier) tapped standard bolt thread.

‡ Outlets bushed to pipe size next smaller than indicated in table.

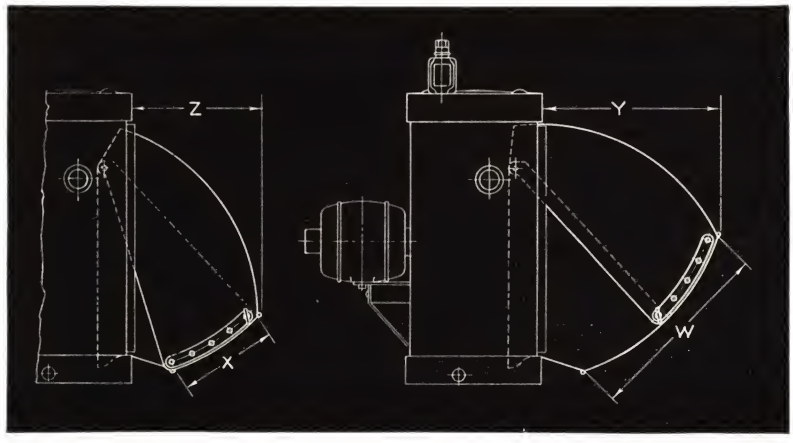
DIMENSIONS IN INCHES

Models	A	B	C	D*	E	F	G	H	J*	K*	L	M*	N*	O	P	Q†
20 to 30L inclusive (4 louvers)	15 13/16	8 1/2	13	14 5/8	2 3/16	7/8	14	1 5/16	....	....	3 1/16	....	....	1	....	3/8
	Models 20, 20L, 30, 30L, Steam								1 15/16	3 1/8	....	5 3/4	7/8	....	1/2	....
	Models 25, 25L, Steam								1 15/16	3 1/8	....	5 1/2	1 13/16	....	‡3/4	....
40 to 60L inclusive (4 louvers)	21 1/8	10 7/16	18 7/16	17	2 5/8	1	19 1/8	1	....	....	3 5/8	....	....	....	3/4	1/2
	Models 40, 40L, 45, 45L, 60, 60L, Steam								3 3/4	4 1/16	....	6 5/8	1	1 1/2	....	....
	Models 50, 50L, Steam								3 13/16	4 1/16	....	6 5/8	1	1 1/4	....	....
65 to 90L inclusive (5 louvers)	27 3/4	11 7/8	25 1/2	21	3 7/8	1 1/16	24 7/8	1 3/16	....	....	4 5/8	....	....	....	‡1	5/8
	Models 65, 65L, 70, 70L, 90, 90L, Steam								7 5/8	4 3/4	....	6 3/4	1 1/8	2	....	....
	Models 80, 80L, Steam								7 5/16	4 7/16	....	6 3/4	2 1/4	1 1/2	....	....
100 to 180L inclusive (6 louvers)	36 7/16	12 3/4	32 5/8	25	4 1/4	1 1/2	33 11/16	1 1/4	....	....	6 3/8	....	....	....	‡1 1/4	7/8
	Models 100, 100L, 110, 110L, 180, 180L, Steam								9 7/16	5 3/16	....	6 7/8	1 5/16	2 1/2	....	....
	Models 140, 140L, Steam								8 1/4	4 9/16	....	6 7/8	2 3/16	2	....	....

APPLICATION OF VELOCITY NOZZLE TO INDUSTRIAL TYPE UNIT

DIMENSIONS OF VELOCITY NOZZLES • In Inches

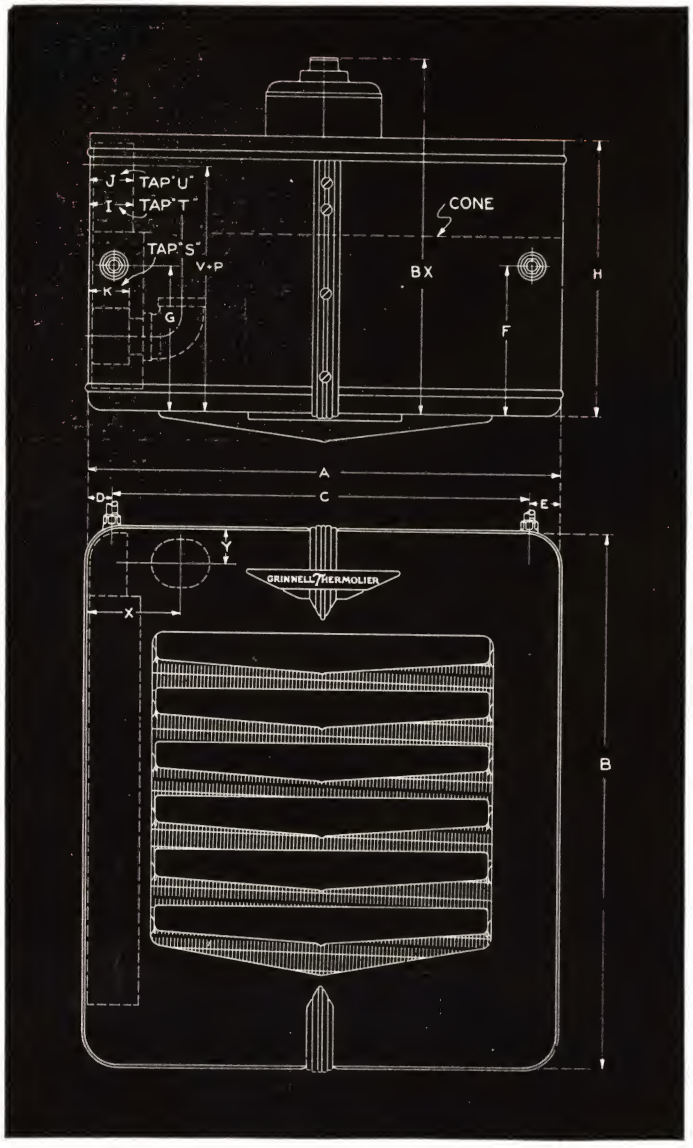
Models	20 to 30L	40 to 60L	65 to 90L	100 to 180L
DISCHARGE OPENINGS				
Length	10 3/4	14 3/4	20 3/4	28
W (max.)	8 1/4	12 3/4	16 15/16	23
X (min.)	3 3/8	6 3/4	8 7/16	10 1/2
OVERHANG				
Y (max.)	8 5/8	11	15 1/4	22 1/2
Z (min.)	5 7/8	8	10 3/4	14 1/2



DIMENSIONS

THERMOLIER

De Luxe Type

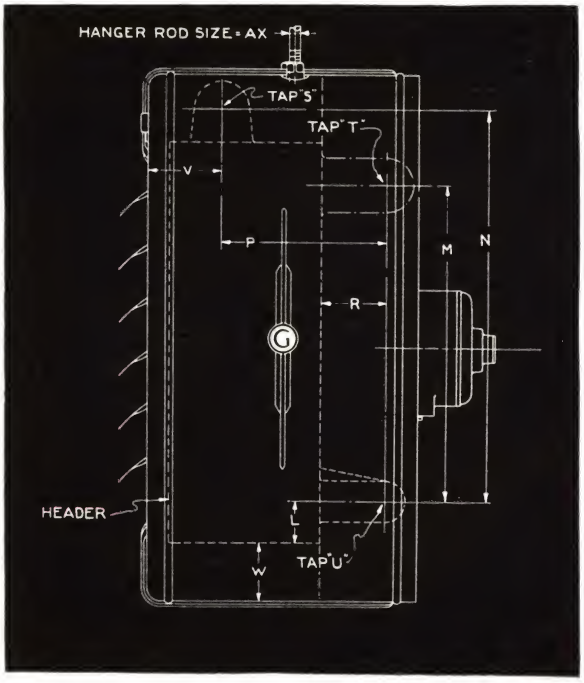


STANDARD CONSTRUCTION

125 Lbs. Maximum Working Steam Pressure at 406° F. Maximum Total Temperature.

APPROXIMATE WEIGHTS OF COMPLETE UNITS • In Pounds

Models	20 to 30L	40 to 60L	65 to 90L
Net	85	150	235
Shipping	125	215	340



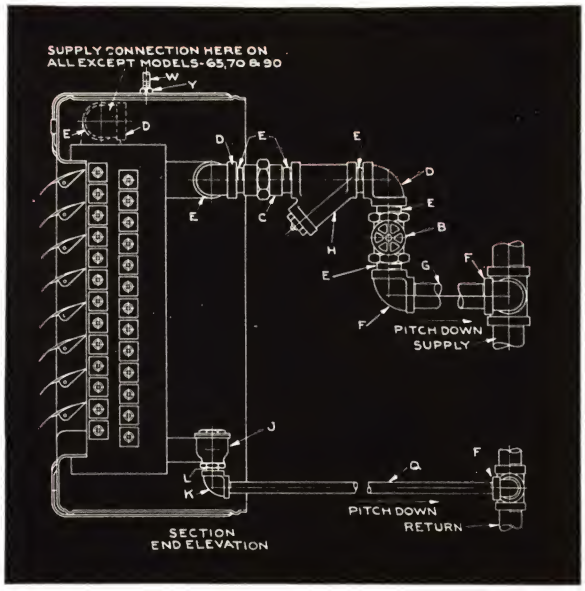
DIMENSIONS IN INCHES

** These dimensions vary slightly.*

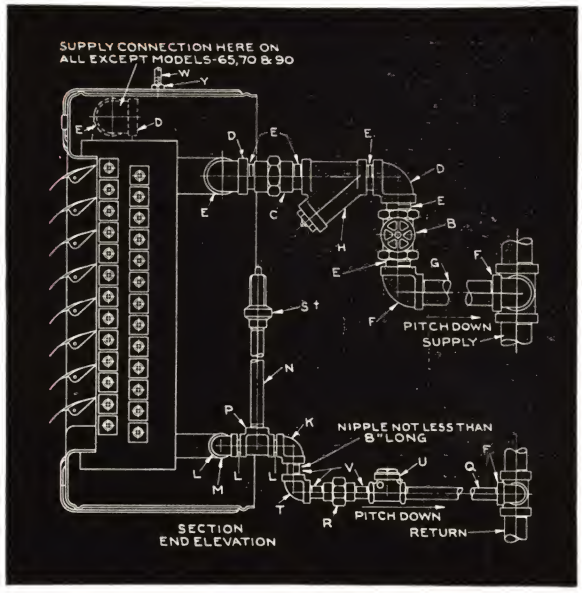
Models	A	B	C	D	E	F	G	H	I	J	K	L	M	N	P	R	S	T	U	V*	W*	X*	Y*	AX	BX*
20 to 30L inclusive (5 Louvers)	16 1/8	17 15/16	13 7/16	1 11/32	1 11/32	6	5 7/8	11	....	....	....	....	....	....	....	....	....	....	....	2 3/4	2 1/4	4 1/8	1 7/16	3/8	14 1/8
	Mod. 20, 20L, 30, 30L, **Steam**								....	1 3/4	1 3/4	1 1/8	....	13 1/8	7 3/16	3	1	....	1/2	....	....	....	....	....	....
	Mod. 25, 25L, **Steam**								....	1 3/4	2 1/4	1 3/4	....	12 1/2	7 3/16	3	1	....	1/2	....	....	....	....	....	....
	Mod. 20, 20L, 30, 30L, **Hot Water**								....	1 3/4	1 3/4	1 3/4	....	12 1/2	6 7/16	2 1/4	3/4	....	3/4	....	....	....	....	....	....
	Mod. 25, 25L, **Hot Water**								....	1 13/16	2 1/4	1 3/4	....	12 1/2	6 7/16	2 1/4	3/4	....	3/4	....	....	....	....	....	....
40 to 60L inclusive (6 Louvers)	21 1/2	24 1/8	19	1 1/8	1 3/8	6 3/4	6 1/2	12 1/2	....	....	....	....	....	....	....	....	....	....	....	3 3/8	2 5/8	4 1/4	1 9/16	1/2	16 5/8
	Mod. 40, 40L, 45, 45L, 60, 60L, **Steam**								....	1 3/4	1 13/16	1 15/16	....	18	7 7/8	3	1 1/2	....	3/4	....	....	....	....	....	....
	Mod. 50, 50L, **Steam**								....	1 15/16	1 13/16	2 1/4	....	17 11/16	7 5/8	3	1 1/4	....	3/4	....	....	....	....	....	....
	Mod. 40, 40L, 45, 45L, 60, 60L, **Hot Water**								....	1 13/16	1 13/16	1 15/16	....	18	7 5/8	3	1	....	1	....	....	....	....	....	....
	Mod. 50, 50L, **Hot Water**								....	1 15/16	1 13/16	2 1/4	....	17 11/16	7 5/8	3	1	....	1	....	....	....	....	....	....
65 to 90L inclusive (8 Louvers)	27 1/2	32	24 3/4	1	1 3/4	7	7	15	....	....	....	....	....	....	....	....	....	....	....	3 1/2	3 1/16	4 7/8	1 3/4	5/8	19 1/4
	Mod. 65, 65L, 70, 70L, 90, 90L, **Steam**								1 15/16	1 15/16	....	1 29/32	20 25/32	....	....	3 1/2	....	2	3/4	....	....	....	....	....	....
	Mod. 80, 80L, **Steam**								....	1 15/16	2 7/16	2 3/16	....	25 1/16	8 19/32	3 1/2	1 1/2	....	3/4	....	....	....	....	....	....
	Mod. 65, 65L, 70, 70L, 90, 90L, **Hot Water**								1 15/16	1 15/16	....	2 1/4	20 3/4	....	....	2 7/8	....	1 1/4	1 1/4	....	....	....	....	....	....
	Mod. 80, 80L, **Hot Water**								....	1 15/16	1 15/16	2 1/2	....	24 3/4	7 17/32	2 7/16	1 1/4	....	1 1/4	....	....	....	....	....	....

PIPING CONNECTIONS

De Luxe Type



For Vacuum or Vented Return Gravity Systems



For Closed Return Gravity Systems

TYPICAL SCHEDULE OF MATERIAL FOR THE ABOVE CONNECTIONS
At 60° F. Entering Air Temperature

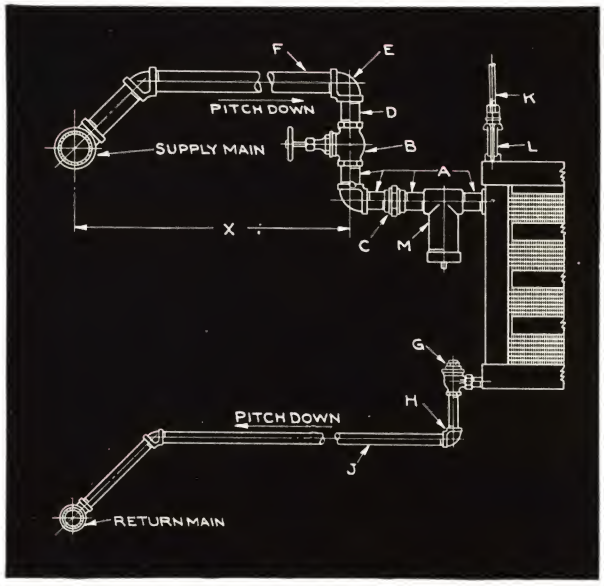
* Size governed by installation conditions.

† Locate Air Valve as high as possible, preferably above the unit. All dimensions in inches.

Models	20 20L 25 25L 30 30L	50 50L	40 40L 45 45L 60 60L	80 80L	65 65L 70 70L 90 90L
Size of Inlet Tapping	1	1¼	1½	1½	2
Size of Outlet Tapping	½	¾	¾	¾	¾
B Globe or Gate Valve	1	1¼	1½	1½	2
C Union	1	1¼	1½	1½	2
D Cast Iron Elbow	1	1¼	1½	1½	2
E Nipples	1	1¼	1½	1½	2
*F Cast Iron Reducing Elbow	....	...	...	...	...
*G Supply Run-out	....	...	...	...	...
H Sediment Strainer	1	1¼	1½	1½	2
J Thermoflex Trap	½ (No. 12) *(Right Hand Corner)*	(¾ No. 2) *(Angle)*		¾ (No. 3) *(Angle)*	
K Cast Iron Reducing Elbow (or Coupling)	¾x½	1x¾		1x¾	
L Nipples	½	¾		¾	
M Cast Iron Elbow	½	¾		¾	
N Pipe	½	¾		¾	
P Cast Iron Tee	½	¾		¾	
Q Pipe	¾	1		1	
R Union	¾	1		1	
†*S Air Valve	....	....		....	
T Cast Iron Elbow	¾	1		1	
U Check Valve	¾	1		1	
V Nipples	¾	1		1	
W Hanger Rod *(see pages 42 and 43)*	⅜	½		⅝	
Y Adjustable Swivel Coupling (furnished)	⅜	½		⅝	

THERMOLIER PIPING CONNECTIONS *for*

CONNECTIONS FOR VACUUM OR VENTED RETURN GRAVITY SYSTEMS



For equipments where distance "X" is less than 10 feet

Note: Where "X" is greater than 10 feet, supply connection is to be dripped separately.

Note: Size of Trap G:

For Models 100, 100L, 110, 110L, 140L, 180L = 1-inch.

Models 140, 180 = 1¼-inch.

* Size governed by installation conditions.

† Union required if other than a union end trap is specified.

◄ Outlet tapping to have ¾ x ½-inch bushing.

‡ Outlet tapping to have 1¼ x ¾-inch bushing.

§ Size governed by outlet size of trap.

All dimensions in inches.

TYPICAL SCHEDULE OF MATERIAL FOR THE ABOVE CONNECTIONS

At 60° F. Entering Air Temperature

Models	25 25L	20 20L 30 30L	50 50L	40 40L 45 45L 60 60L	80 80L	65 65L 70 70L 90 90L	140 140L	100 100L 110 110L 180 180L
Size of Inlet Tapping	1	1	1¼	1½	1½	2	2	2½
Size of Outlet Tapping	¾	½	¾		1		1¼	
Size of Bushing Furnished for Outlet	¾x½	....	....		1x¾		1¼x1	
A Nipples	1	1	1¼	1½	1½	2	2	2½
B Globe or Gate Valve	1	1	1¼	1½	1½	2	2	2½
C Union	1	1	1¼	1½	1½	2	2	2½
D Pipe	1	1	1¼	1½	1½	2	2	2½
*E Cast Iron Reducing Elbow	....		....		....		....	
*F Supply Run-out	....		....		....		....	
†G Thermoflex Trap, *Vacuum to 25 Lbs.*	½x¾ No. 2		¾ No. 2		¾ No. 3, 4		see note	
25 to 50 Lbs.	½ No. 12M		◄ ½ No. 12M		¾ No. 2M		‡ ¾ No. 3M	
50 to 125 Lbs.	½ No. 100A		¾ No. 100A		¾ No. 100A		1 No. 100A	
H Cast Iron Elbow	¾x.. §		1x.. §		1x¾		1¼x.. §	
J Pipe	¾		1		1		1¼	
K Hanger Rod *(see pages 42 and 43)*	⅜		½		⅝		⅞	
L Adjustable Swivel Coupling (furnished)	⅜		½		⅝		⅞	
M Sediment Strainer	1	1	1¼	1½	1½	2	2	2½

Factory and Industrial Types

CONNECTIONS FOR CLOSED RETURN GRAVITY SYSTEMS

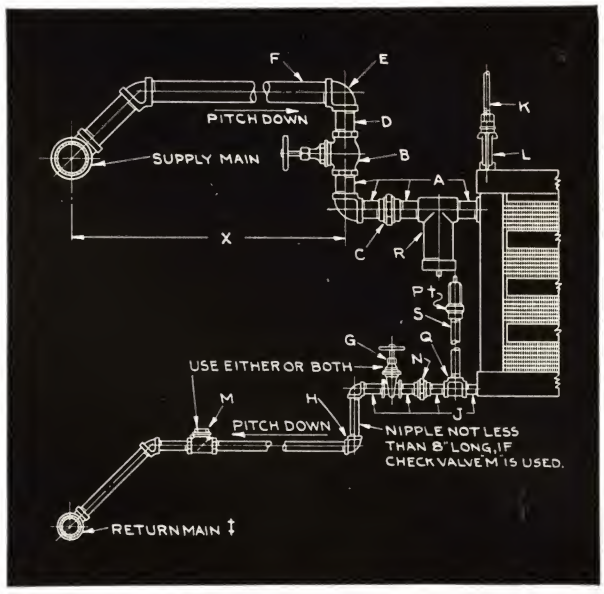
Note: Where "X" is greater than 10 feet supply connection is to be dripped separately.

Note: Return mains or risers must be vented, preferably, at point where returns drop below water line of boiler.

* Size governed by installation conditions.

† Locate Air Valve as high as possible, preferably above the unit.

All dimensions in inches.



For equipments where distance "X" is less than 10 feet

TYPICAL SCHEDULE OF MATERIAL FOR THE ABOVE CONNECTIONS

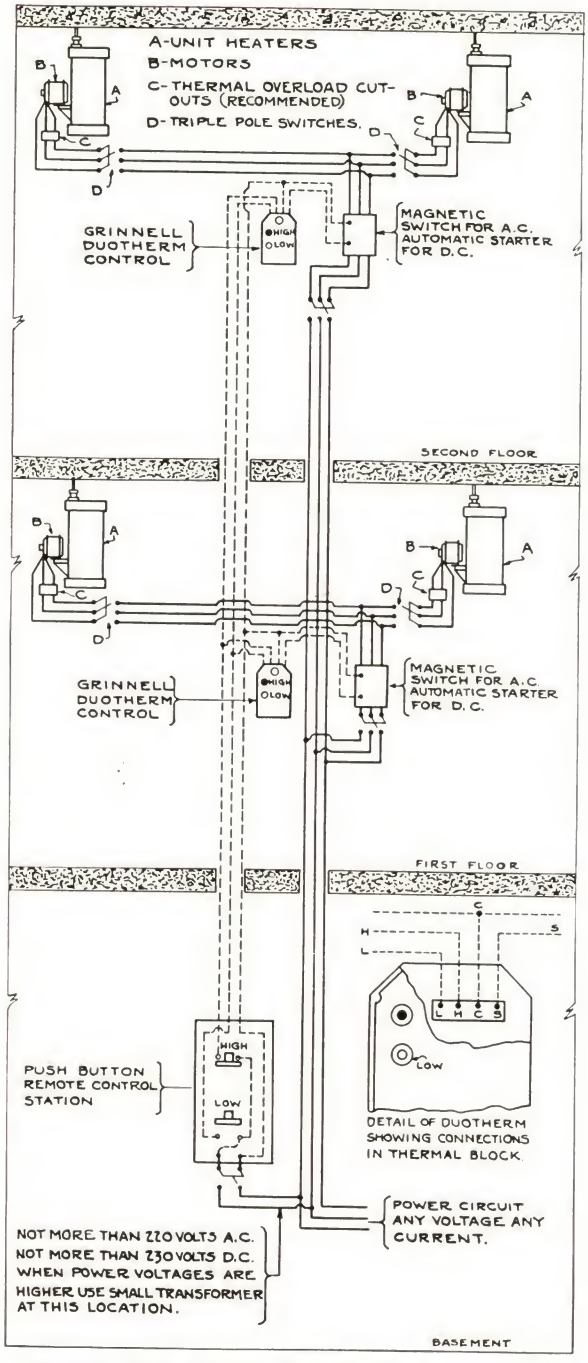
Models	25 25L	20 20L 30 30L	50 50L	40 40L 45 45L 60 60L	80 80L	65 65L 70 70L 90 90L	140 140L	100 100L 110 110L 180 180L
Size of Inlet Tapping	1	1	1¼	1½	1½	2	2	2½
Size of Outlet Tapping	¾	½	¾		1		1¼	
Size of Bushing furnished for Outlet	¾x½	....	....		1x¾		1¼x1	
A Nipples	1	1	1¼	1½	1½	2	2	2½
B Globe or Gate Valve	1	1	1¼	1½	1½	2	2	2½
C Union	1	1	1¼	1½	1½	2	2	2½
D Pipe	1	1	1¼	1½	1½	2	2	2½
*E Cast Iron Reducing Elbow	....		....		....		....	
*F Supply Run-out	....		....		....		....	
G Gate Valve	½		¾		¾		1	
H Cast Iron Reducing Elbow	¾x½		1x¾		1x¾		1¼x1	
J Nipples	½		¾		¾		1	
K Hanger Rod *(see pages 42 and 43)*	⅜		½		⅝		⅞	
L Adjustable Swivel Coupling (furnished)	⅜		½		⅝		⅞	
M Check Valve	¾		1		1		1¼	
N Union	½		¾		¾		1	
*†P Air Valve	....		....		....		....	
Q Cast Iron Tee	½		¾		¾		1	
R Sediment Strainer	1	1	1¼	1½	1½	2	2	2½
S Pipe	½		¾		¾		1	



DUOTHERM* CONTROL
FOR UNIT HEATING SYSTEMS

*Reg. U. S. Pat. Off.

THE Grinnell Duotherm Control is a device for regulating room temperatures where unit heating systems are installed. With this device a high temperature is automatically maintained when required, and a low temperature automatically maintained during idle hours such as at night and on Sundays and holidays. This wide range of high and low temperatures cannot be secured by the ordinary single thermostat control.



Typical Unit Heater installation showing how Grinnell Duotherms may all be controlled from one central point by high-low remote control.

The advantages to be secured from this control are at once obvious to anyone familiar with the proper and most economical handling of heating equipments in industrial plants. Bulletin No. A-3 giving a more complete description of this product, also a detailed analysis of the economies to be had by its use, will be mailed upon request.

REMOTE CONTROL

The Grinnell Duotherm is applicable to single room temperature control but the most important economies to be gained by its use are in the remote control of temperatures throughout large plants. When so used, the temperatures throughout the whole plant are under the control of one responsible individual in the boiler room or any other convenient location.

CONSTRUCTION

The thermostats together with switches, coils and other parts are compactly mounted in a cast aluminum box with sides and bottom perforated to provide proper circulation of air around the thermostats. Adjustment of the thermostats is made through a hinged and locked bottom drop panel. Binding post strip is plainly marked to insure proper connection of wiring to the device.

High or black push-button and *low* or red push-button are enclosed in a separate compartment.

Whenever *high* temperature control thermostat is in operation, a red bull's eye is illuminated by a small electric light in a properly ventilated enclosure on top of the main unit.

Remote control, a standard two-button push-button box, can be mounted on wall or other convenient point.

Note: Magnetic Switch for A.C. or Automatic Starter for D.C. must always be used when Grinnell Duotherm Controls are installed, regardless of the number of units to be controlled.

AUTOMATIC THERMOLIER

SIMPLIFIED thermostatic temperature control of unit heaters is now available in standardized form in the Grinnell Automatic Thermolier.

This arrangement provides a simple, convenient, practical and economical method of room temperature control by individual control of each Thermolier. While primarily intended for applications requiring but a single Thermolier, it also offers installation savings in areas heated by two or more widely spaced Thermoliers which would normally be controlled by one thermostat.

The automatic attachment consists of a free swinging adjustable thermostat suspended from the motor as illustrated. The only wiring required is to run the service to the conduit box and plug in the twist lock cap. Each Automatic Thermolier is shipped with motor wired to the conduit box as illustrated.

The initial setting of the thermostat can be made either by personal comfort requirements or more accurately by readings of a thermometer located in the comfort or working zone. Once set, the thermostat need not be disturbed unless a different temperature is desired.

The Grinnell Automatic Thermolier can be furnished in Thermolier sizes as follows:

Models 20 to 90 and 20L to 180L, inclusive, for 110 or 220 volts, single phase A. C.

Models 20 to 90 and 20L to 90L, inclusive, for 115 or 230 volts D. C.

When ordering these individually-controlled unit heaters specify "Automatic Thermolier," stating Model number and electrical characteristics.

Diagram at Right

A—Thermolier.

B—Thermolier Motor.

C—Thermal Overload Cut-out (recommended).

D—Double Pole Switch.

T—Grinnell Automatic Thermostat.

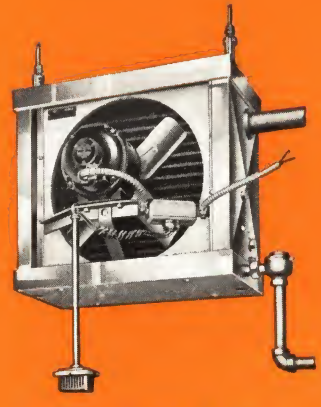
U—Conduit Box.



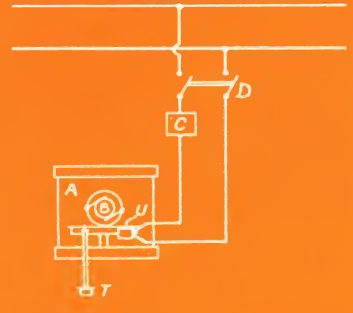
Front View of the Automatic Thermolier



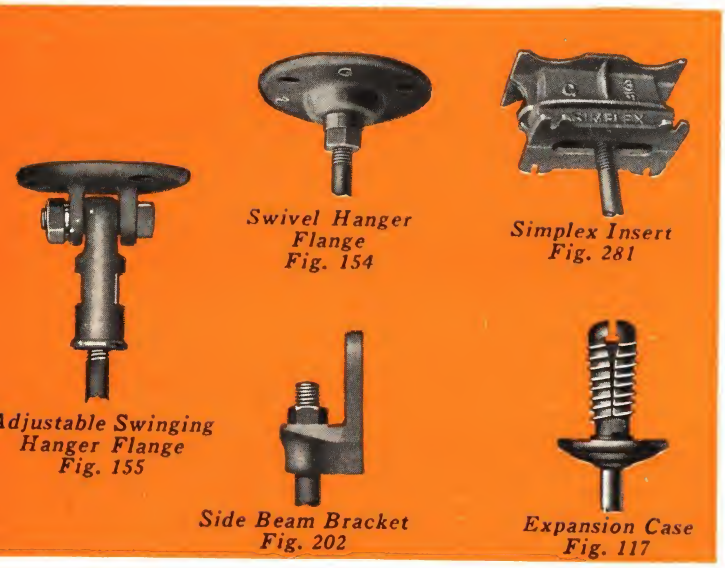
Adjustable Thermostat

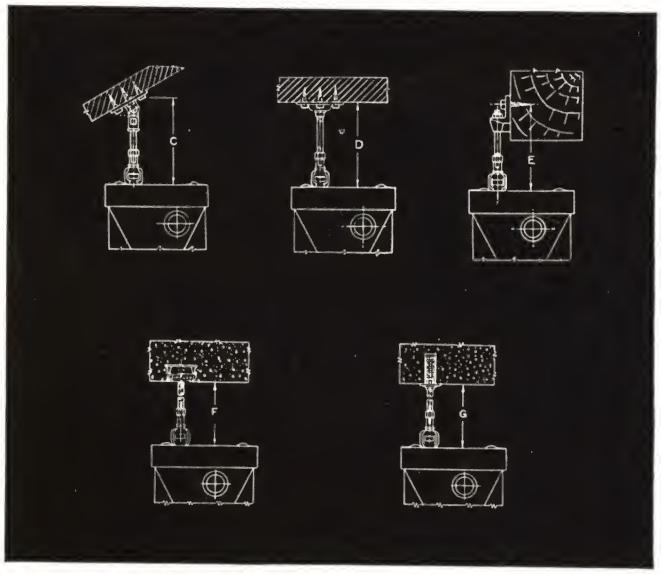


Rear View of the Automatic Thermolier



THERMOLIER ADJUSTABLE HANGERS

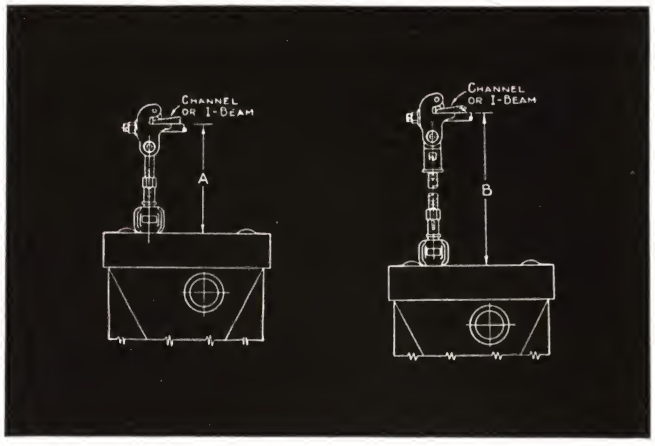




APPLICATION OF ADJUSTABLE HANGERS TO THERMOLIER

Models	20-20L, 25-25L, 30-30L	40-40L, 45-45L, 50-50L, 60-60L	65-65L, 70-70L, 80-80L, 90-90L	100-100L, 110-110L, 140-140L, 180-180L
SUSPENDED FROM PITCHED WOOD ROOFS	Quantity and Size, per Hanger			
For Ordering Hangers, Specify—				
(Quan.) (Rod size) Fig. 155 Adj. Swinging Hanger Flanges	(1) 3/8	(1) 1/2	(1) 5/8	(1) 7/8
(Quan.) (Size) Coach or Wood Screws	(2) 1 1/2 (No. 18)	(3) 3/8 x2	(3) 1/2 x2	(3) 5/8 x2
(Quan.) (Rod size) Fig. 140 Hanger Rods (state length*)	(1) 3/8	(1) 1/2	(1) 5/8	(1) 7/8
* For correct Hanger Rod Length, deduct from dimension "C"	4 1/2	5 1/2	6	9
SUSPENDED FROM FLAT WOOD ROOFS OR CEILINGS				
For Ordering Hangers, Specify—				
(Quan.) (Rod size) Fig 154 Swivel Hanger Flanges	(1) 3/8	(1) 1/2	(1) 5/8	(1) 7/8
(Quan.) (Size) Coach or Wood Screws	(2) 1 1/2 (No. 18)	(3) 3/8 x2	(3) 1/2 x2	(3) 5/8 x2
(Quan.) (Rod Size) Fig. 140 Hanger Rods. (state length†)	(1) 3/8	(1) 1/2	(1) 5/8	(1) 7/8
†For correct Hanger Rod Length, deduct from dimension "D"	2 1/2	2 1/2	3 1/2	5
SUSPENDED FROM SIDE OF WOOD OR CONCRETE BEAMS				
For Ordering Hangers, Specify—				
(Quan.) (Rod size) Fig. 202 Side Beam Brackets	(1) 3/8	(1) 1/2	(1) 5/8	(1) 7/8
(Quan.) (Size) Coach Screws—for wood beams	(1) 3/8 x2 1/2	(1) 1/2 x3	(1) 5/8 x3	(1) 7/8 x4
or				
Fig. 117 Expan. Bolts and Cases—for concrete	(1) 3/8 x2	(1) 1/2 x2 1/2	(1) 5/8 x3	(1) 7/8 x4 1/2
(Quan.) (Size) Hexagonal Nuts	(1) 3/8	(1) 1/2	(1) 5/8	(1) 7/8
(Quan.) (Rod Size) Fig. 140 Hanger Rods. (state length‡)	(1) 3/8	(1) 1/2	(1) 5/8	(1) 7/8
‡ For correct Hanger Rod Length, deduct from dimension "E"	1 1/2	2	3	5
SUSPENDED FROM CONCRETE (BY INSERTS)				
For Ordering Hangers, Specify—				
(Quan.) (Rod Size) Fig. 281 Simplex Inserts	(1) 3/8	(1) 1/2	(1) 5/8	(1) 7/8
or				
Fig. 282 CB-Universal Inserts, with Nuts	(1) 3/8	(1) 1/2	(1) 5/8	not made
(Quan.) (Rod Size) Fig. 140 Hanger Rods. (state length§)	(1) 3/8	(1) 1/2	(1) 5/8	(1) 7/8
§ For correct Hanger Rod Length, deduct from dimension "F"	1	1 1/2	1 1/2	2
SUSPENDED FROM CONCRETE (BY EXPANSION CASES)				
For Ordering Hangers, Specify—				
(Quan.) (Rod size) Fig. 117 Expansion Cases	(1) 3/8	(1) 1/2	(1) 5/8	(1) 7/8
(Quan.) (Rod Size) Fig. 215 Ceiling Plates	(1) 3/8	(1) 1/2	(1) 5/8	(1) 7/8
(Quan.) (Rod size) Fig. 140 Hanger Rods. (state length▼)	(1) 3/8	(1) 1/2	(1) 5/8	(1) 7/8
▼ For correct Hanger Rod Length, deduct from dimension "G"	0	0	0	1

Suspended from I-Beams or Channels



1. Shows Fig. 225 Universal Side I-Beam Clamp, with Fig. 220 Extension Eye Bolt.
2. Shows application of Fig. 157 Extension Piece, and Hanger Rod to Universal Clamps.
3. Shows Fig. 226 Universal Channel Clamp.



For Ordering Short Hangers, Specify—

(Quan.) (Rod size) { Fig. 225 Universal Side I-Beam Clamps, (state depth, weight and type of beam) or Fig. 226 Universal Channel Clamps, (state depth, weight and type of channel).

(Quan.) (Rod size) { Fig. 220 Extension Eye Bolts (specify length from table below–*).

LENGTHS OF EXTENSION EYE BOLTS REQUIRED FOR VARYING LENGTHS OF DIMENSION "A" (IN INCHES)

Using Fig. 220 Extension Eye Bolt, in conjunction with either Fig. 225 or 226 Clamps

Models	20-20L 25-25L 30-30L		40-40L 45-45L 50-50L 60-60L		65-65L 70-70L 80-80L 90-90L		100-100L 110-110L 140-140L 180-180L	
	*	"A"	*	"A"	*	"A"	*	"A"
Fig. 220 Ext. Eye Bolt:								
Short	2½	5 –6¼	2¾	6 – 7½	3	6⅞– 8⅝	3¼	9 –10½
Medium	4	6½–7¾	4¼	7½– 9	4½	8⅜–10⅛	4¾	10½–12
Long	5½	8 –9¼	5¾	9 –10½	6	9⅞–11⅝	6¼	12 –13½
Hanger Rod Size		⅜		½		⅝		⅞

For Ordering Longer Hangers, Specify—

(Quan.) (Rod size) { Fig. 225 Universal Side I-Beam Clamps, (state depth, weight and type of beam) or Fig. 226 Universal Channel Clamps, (state depth, weight and type of channel).

(Quan.) (Rod size) Fig. 157 Extension Pieces.

(Quan.) (Rod size) Fig. 140 Hanger Rods (specify length from table below).

Models	20-20L 25-25L 30-30L	40-40L 45-45L 50-50L 60-60L	65-65L 70-70L 80-80L 90-90L	100-100L 110-110L 140-140L 180-180L
Hanger Rod Size, In.	⅜	½	⅝	⅞
Correct Length of Hanger Rod, In.	"B" minus 4½	"B" minus 5½	"B" minus 6½	"B" minus 8



ELECTRIC TYPE

THE GRINNELL THERMOLIER, Electric Type, is designed to provide the advantages of unit heating for isolated buildings, and for room areas where steam or hot water is not conveniently or economically available. It is especially recommended for plants generating their own power or where power can be purchased at favorable rates.

Where climatic conditions are such that heating is intermittent, this unit provides ample heat for large areas without necessitating the installation of boilers.

The heating elements in Thermolier, Electric Type, are strip heaters made to exacting specifications, and have a protective coating which withstands 1000° F. They are mounted in a manner which readily allows for expansion without buckling and are so arranged, with respect to the air stream from the fan, that no parts of the strips are subject to overheating. Units are equipped with a thermal overload protective device which automatically cuts off current to the strips in case the fan is accidently stopped.

Advantages

100% Efficiency
Perfect Automatic Control Obtainable
Elimination of Boiler Installation, Maintenance and Repair
Uniform Heat Distribution
Economical Installation
Portability
Saving in space as against ordinary Electric Heaters of equal capacity.

A partial list of typical locations where these units may be installed to advantage:

Power Plants	Valve Houses	Drying Processes	Garages
Sub-Stations	Gatekeeper Houses	Waiting Rooms	Bridge Toll Houses
Temporary Construction	Gasoline Stations	Crane Cabs	Bridge Control Houses

AIR CONDITIONING TYPE



WITH THERMOLIER—Air Conditioning Type—it is just as easy to cool and dehumidify a building in summer as it is to heat it in winter—without any change whatever in units or piping. In the winter, a hot fluid is circulated. In the summer, the same fluid properly chilled is used.

This system is readily adapted to existing as well as new buildings. Simplicity of installation is possible because the air is conditioned right at the point where it is needed. Instead of circulating a large volume of air which has been conditioned at a central point, this system circulates the cooling or heating fluid through small pipes; all the air conditioning takes place right at the unit. These units can be placed anywhere—suspended from the ceiling, either exposed or concealed—or placed on the floor in an attractive cabinet.

The basic principle of this thermolier, besides making for practicability of installation, also lowers the first cost and provides for local control—thus cutting the operating expense.

A booklet completely describing Grinnell Air Conditioning Type Thermolier may be obtained upon request to any of our branch offices.

GRINNELL COMPANY
INC.

EXECUTIVE OFFICES: PROVIDENCE, R. I., 260 West Exchange Street

Cable Address: "SPRINKLER, NEW YORK"

SALES OFFICES

ALBANY, N. Y., 11 North Pearl Street
ATLANTA, GA., 240 North Highland Avenue, N. E.
CHARLOTTE, N. C., 1431 West Morehead Street
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CLEVELAND, OHIO, 5201-3 Hamilton Avenue
DALLAS, TEXAS, 1315 Marilla Street
MINNEAPOLIS, MINN., 240 Seventh Avenue, South
NEW YORK, N. Y., *Executive Office*, 420 Lexington Avenue
Sales Offices and Warehouse, 23rd Street and 50th Avenue, Long Island City, N. Y.
PHILADELPHIA, PA., Erie Avenue and D Street
PROVIDENCE, R. I., 260 West Exchange Street
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LONG ISLAND CITY, N. Y.
MINNEAPOLIS, MINN.
PHILADELPHIA, PA.
ST. LOUIS, MO.
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●

Grinnell Company of the Pacific

SALES OFFICES AND BRANCHES

LOS ANGELES, CALIF., 520 Mateo Street
OAKLAND, CALIF., 2230 Peralta Street
SAN FRANCISCO, CALIF., 601 Brannan Street, cor. Fifth
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Grinnell Company of Canada, Ltd.

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MONTREAL, QUE., 700 Beaumont Avenue
WINNIPEG, MAN., 850 Somerset Building
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BRANCHES

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G
FOUNDED 1850

THERMADOR ELECTRICAL MANUFACTURING CO.

2821 East Pico Street
LOS ANGELES, CALIF.

Third and Madison Streets
OAKLAND, CALIF.

REPRESENTATIVES IN PRINCIPAL CITIES

THERMADOR—MODERN ELECTRIC HEATERS

THE LONG RADIANT THERMADOR

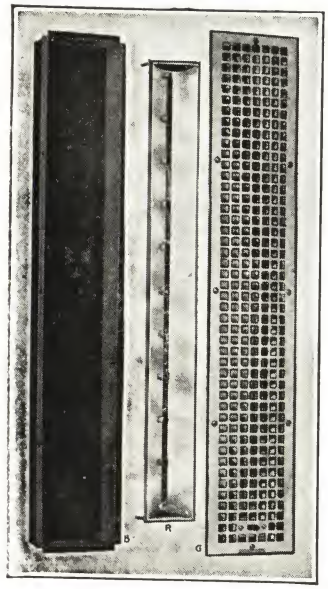
"Radiant Heat from Head to Heels"

This proven development in quick bathroom heating is logically shaped to utilize wall space to greatest advantage and to flood the lower portion of the room with quick, steady heat. *It is only 9 inches wide and 48 inches tall.*

The exceedingly limited width permits placement of this new Thermador in wall spaces formerly too narrow for the installation of any heater. Its unusual height radiates the heat exactly where it is needed—"from head to heels."

Being a Thermador, this modern heater is a quality product in every detail. The grille (G) is of steel, finished in high-grade heavy chromium plate. The reflector (R) is of chromium plated steel and it holds the nickel-chromium heating unit by special ceramics. This assembly is fastened to the grille at the factory. The wall box (B) is of steel, black enameled and furnished with sufficient knockouts. It is shipped separately.





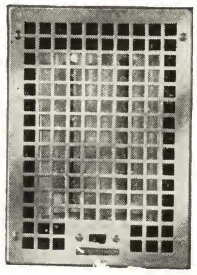
All heaters are equipped with a switch on the grille: double-pole on the 230-volt heaters, and single-pole on the 115-volt heaters.

The grille measures 9x48x1/4 inches; the wall box 7 1/8x46 1/8x4 inches. Shipping weight of heater assembly, 10 pounds; of wall box, 11 1/4 pounds.

Catalog No.	Watts	Volts
LR 161	1650	115
LR 162	1650	230
LR 202	2000	230

THE RADIANT CONVECTION THERMADOR

This heater with its improved features is specially designed for bathrooms, small bedrooms, breakfast rooms, etc., of 700 cubic feet or less. It not only gives a quick initial heat but maintains a comfortable temperature. Where minimum cost is of prime consideration, this Radiant Convection Thermador is recommended.



The Radiant Convection Thermador

To insure maximum reflection and long years of service, the heater of this Thermador has a double reflector of aluminum treated by Adnactic process. Flush steel grille is chromium plated. Switch is special heater type.

Grille measures only 12 x 17 1/4 x 3/8 inches; wall can, 10x15x4 inches. Shipping weight of heater 4 1/2 pounds; of wall can, 4 1/2 pounds.

Catalog No.	Watts	Volts
1250	R-121	115
1500	R-151	115
1500	R-152	230

THE FAN TYPE THERMADOR

For unusually quick heating of rooms, both small and large, we recommend this wall insert Thermador with fan. This heater embodies the latest scientific principles of fan circulation—and thus assures continuous movement of the warm air in the *living zone of the room.* At a flip of the switch this Thermador floods the room with warmth. There are no preliminary or generating steps. Cold spots are eliminated. The fan may be used in summer without the heat.

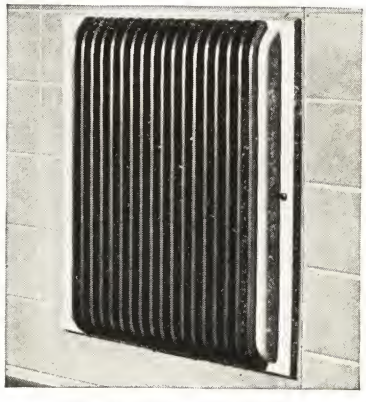
Standard finish of frame and grille is white, ivory or statuary bronze, with baked wrinkle finish; or with prime coat to be painted on job to match wall finish.

Motor is induction type, specially built with 16-blade aluminum fan. The heater is equipped with thermostatic cutout approved by Underwriters' Laboratories, Inc.

Grille size on B type, as illustrated, 13 7/8x17 1/4 inches. Wall box, 12 1/4x15 3/4x4 inches.

Grille size on W type, 15 3/4x20 1/4 inches. Wall box, 14 1/8x18 7/8x4 inches.

Catalog No.	Watts	Volts (a.-c.)
B 161 M	1650	115
B 202 M	2000	230
B 252 M	2500	230
W 302 M	3000	230
W 402 M	4000	230
W 502 M	5000	230



The Fan Type Thermador

Also Makers of Thermador Electric Water Heaters

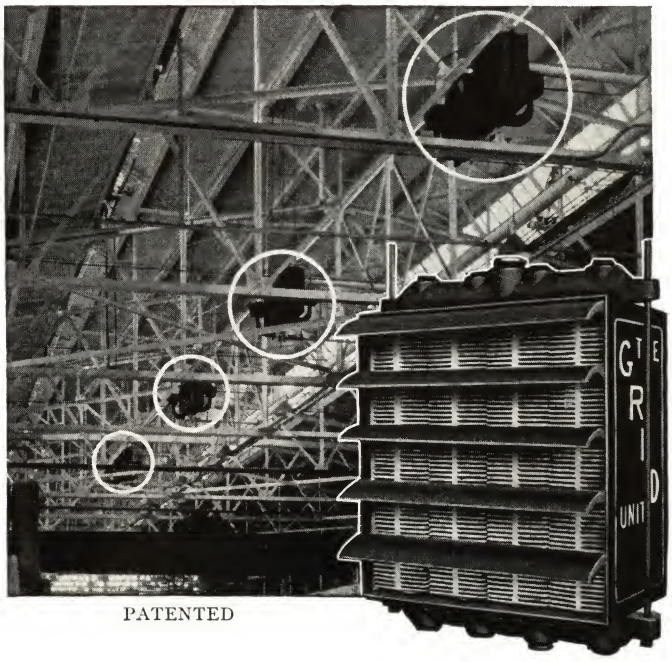
THE UNIT HEATER AND COOLER COMPANY

WAUSAU, WISCONSIN

OFFICES IN PRINCIPAL CITIES

GRID HEATER-COOLER
TRADE MARK REGISTERED

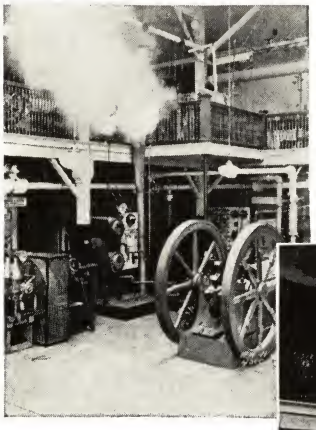
A Product of
D. J. Murray Mfg. Co.



PATENTED

A unit heater different than any you may have been specifying in the past—a unit that will save your client maintenance expense long after the installation has been made—no other unit heater like the Grid. It's a unit heater free from leaks and breakdowns. There is nothing in the Grid unit to impair its operation. It is not affected by electrolytic action that causes corrosion. The *heating sections are all-cast aluminum* bonded to cast high test iron steam chamber, cast in one piece. It is built like a piece of machinery—with *no soldered, brazed, or expanded joints or unions*—and the fewest connections possible. A design easy to keep clean, and one that does not plug up; dust, lint or fumes do not retard its operation. Applicable to either low or high steam pressures—made in various sizes and capacities to meet all requirements for suspended type heating. Not a new unit. The first Grid Units installed in 1929 are still in operation—without maintenance expense and with many years of service yet ahead of them. The Grid provides more air changes per hour in space to be heated—and can be placed in higher positions from floor—in some installations as high as 44 feet, and yet deliver warm air to the floor. A larger volume of air at a lower outlet temperature.

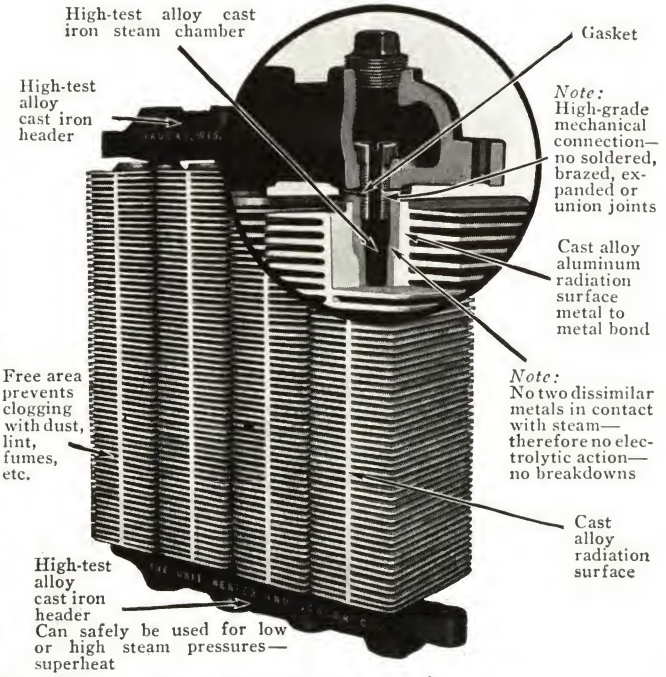
GRID heat is positive "directed" heat—to the floor and working zone. These illustrations of a "smoke bomb" test tell the story. The picture to the left is of an ordinary type industrial unit heater. Note the lower picture showing Grid warm air delivery. The heat actually reaches the floor. This is no claim, but actual performance.





The test, illustrated here, was conducted at the engineering schools of one of the leading universities in the Middle West—and on these tests everything was equal. Design and construction account for the difference in performance.

(Casing removed)



Send for capacity tables and detailed specifications on the units you may require.

YOUNG RADIATOR COMPANY

Manufacturers of Heating and Cooling Surfaces

709 Marquette St., RACINE, WIS.

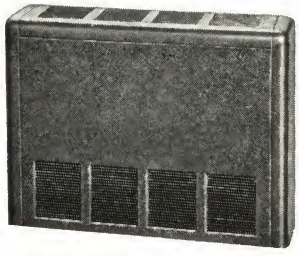
SALES AND ENGINEERING OFFICES IN ALL PRINCIPAL CITIES



Streamaire Copper Convectors

This line includes 6 distinct types of cabinet enclosures: free standing cabinets, wall-hung cabinets, partially recessed cabinets, fully recessed cabinets, bathroom cabinets, and plastered-in enclosures. All models incorporate the Streamaire principle using large elliptical tubes in the heating element which makes Young the ideal installation for one-pipe steam, two-pipe steam, vapor, vacuum, or hot water systems.

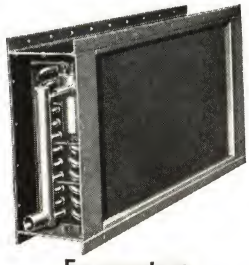
Request catalog No. 4037 for capacities and full description.



Type FC Heating Units

These units combine the pleasing appearance of the convector and the higher heating capacities of the unit heater. There are 4 models available with single or two speed motors. Units are designed for floor, wall, horizontal ceiling or inverted ceiling mounting. Each unit is equipped with two quiet operating fans which force the air through the heating element providing positive air circulation and even distribution of heat.

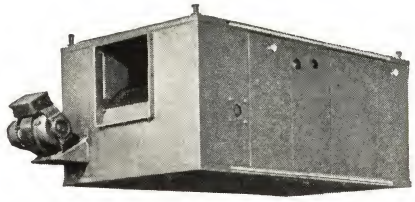
Request catalog No. 6538 for capacities.



Evaporators

For direct expansion systems using Freon or methyl chloride. A complete line, 5 groups, 11, 17, 23, 29, and 35-in. widths and lengths from 1 ft. 8½ in. to 10 ft. 8½ in.

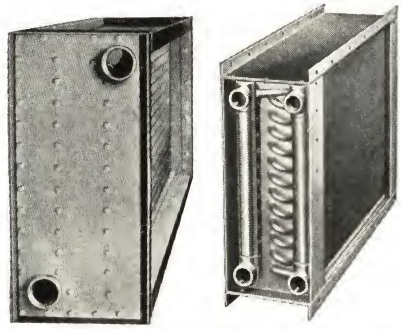
Request catalog No. 5039 for capacities.



Young Air Conditioning Units

These units are made in 4 physical sizes with two fan speeds for each size. Designed for heating, cooling, humidifying, dehumidifying, air filtration, air circulation, and ventilation; they do a real air conditioning job. When so specified units may be purchased for cooling only or merely for heating and humidifying purposes.

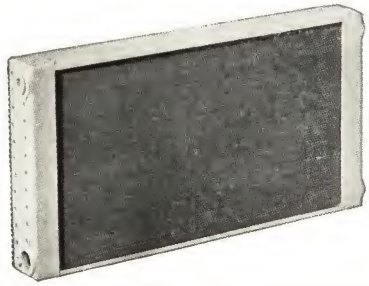
For full information request catalog No. 6037.



Coils for Cooling With Water or Brine

Continuous tube coils—coils with removable headers; both types designed for counterflow of the liquid and air, utilizing the utmost cooling capacity; making low air temperatures possible with relatively high water temperatures or slight difference between air and water temperatures. Available in widths from 11 to 35 in., lengths from 1 to 10 ft. with 2 to 8 rows of tubes.

Request catalog No. 5537 for full details.



Commercial Heat Transfer Units

Designed for use in connection with heating, cooling and air conditioning units where a compact, efficient heat transfer surface is required. Units range from 6 to 30-in. widths and from 11 to 65 in. in length and are made with one or two rows of tubes deep.

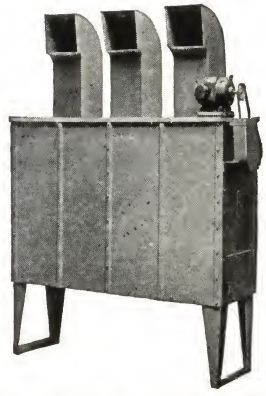
See catalog No. 4536 for further information.



Young Unit Heaters

A new complete line handsomely designed and scientifically engineered. 28 different models meet the heating requirements in all types of buildings. Both single and double fan units, suspended type, varying in capacities from 18,000 to 658,000 B.t.u. per hour. All Young Unit Heaters are guaranteed for working pressures up to 150 lbs. gauge pressure saturated steam.

Request catalog No. 2738 for capacity tables and engineering information.



Young Floor Type FH Unit Heaters

There are 10 models of Young Floor Type Unit Heaters for use with steam pressures up to 150 lbs. and ranging in capacities from 120,000 to 800,000 B.t.u. per hour. These units are also manufactured without legs and arranged for horizontal or vertical ceiling suspension. FH unit heaters have 2, 3, or 4-blower type fans depending on size of units.

See catalog No. 336 for further information.



Blast Units

An encased heat transfer surface for use in connection with forced air heating or cooling systems. Casings around units make it easy to bolt them to the duct work either in single or multiple units.

Request catalog 4536 for full information.

BAKER ICE MACHINE CO., INC.

Manufacturers of Mechanical Cooling Equipment, Air Conditioning and Commercial Refrigeration

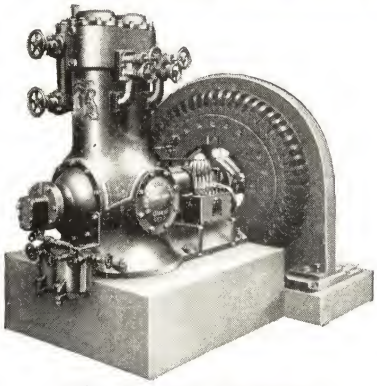
GENERAL OFFICES AND FACTORY
OMAHA, NEB.

EASTERN SALES: NEW YORK, N. Y. BRANCH FACTORIES: FORT WORTH, LOS ANGELES, SEATTLE
Sales and Service in All Principal Cities
CENTRAL SALES: CHICAGO, ILL.

AUTHORITY ON MECHANICAL COOLING FOR OVER THIRTY YEARS

Get full specifications for your requirements from the Baker line of compressors and cooling equipment. Every machine and cooling assembly turned out by Baker during the 33 years of our history has been precision-manufactured and designed to offer the greatest amount of service, dependability and economy per dollar invested.

Baker Ammonia Compressors



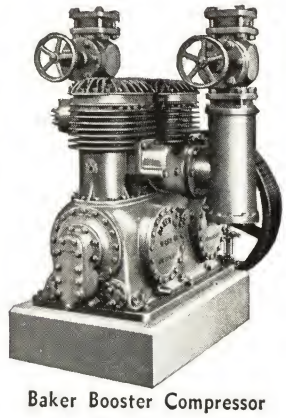
Baker Ammonia Compressor

Available to 100 tons capacity, with synchronous, direct-connected or V-belt drive. Baker compressors may be arranged in duplex or multiple installations for any desired capacity. Also equipped with double-suction, capacity reduction where conditions require utmost economy of operation.

Baker Booster Compressors

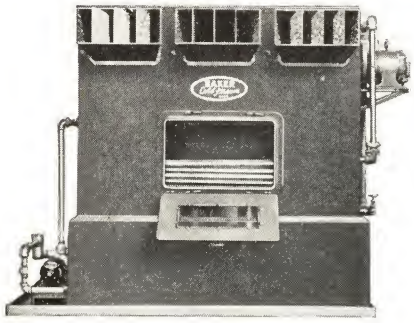
Especially designed for quick-freezing and extremely low temperature work. Made in 2- and 4-cylinder models, arranged for single or dual assembly, direct connected to synchronous type motors, engines or V-belt drive.

A multi-gear type oil pump direct connected to the crankshaft furnishes positive lubrication through drilled crankshaft and connecting rods to all internal moving parts.



Baker Booster Compressor

Baker ColdStream Brine Spray Units—Forced Draft Type

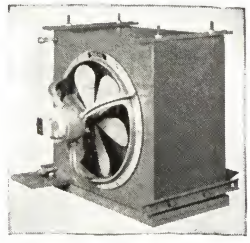


Baker ColdStream Brine Spray Unit—Forced Draft Type

Designed for applications requiring uniform control of temperatures and relative humidity. Equipped with slow-speed blowers mounted on ball bearings. Fan speeds may be changed to suit air velocity requirements. Housing is of boiler plate construction.

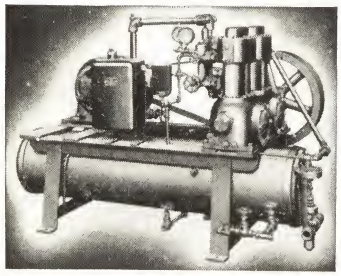
Baker Fan Type ColdStream Units

Rigidly constructed for compact, high-capacity, heavy duty service in refrigerating and air conditioning foods and other perishables requiring positive control of temperatures above the freezing point. Finned coil surfaces and air velocity designed for a correct combination of temperature and relative humidity.



Baker Fan Type ColdStream Unit

Baker Ammonia Type Self-contained Units

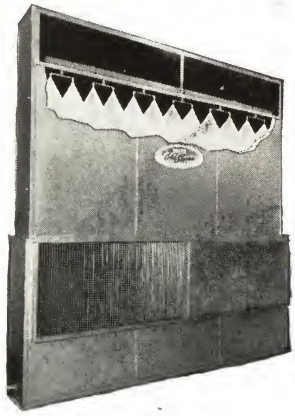


Baker Ammonia Type Self-contained Unit

Ranging in size from ½ to 25-ton capacities, 24 different models are included in the complete Baker line of ammonia type self-contained units. Complete with motor, drive and control, mounted with condenser on rigid steel base. Made in 2- and 4-cylinder models. Double trunk type pistons, honed cylinders, Timken roller bearings, pressure lubricating system, and Press-R-Seal.

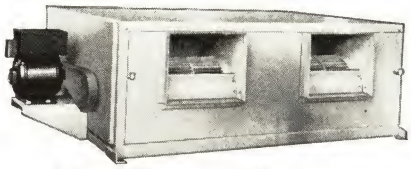
Baker ColdStream Brine Spray Units—Gravity Flow Type

Especially designed for cooling and air conditioning service in rooms which require absorption of excessive quantities of heat and moisture, such as are found in meat processing plants and pre-cooling plants. Suction created by brine spray jets draws warm air into grille openings at top. Passing through these *atomized* brine sprays, air is cooled and dehydrated, forced downward and out through rustproof moisture eliminators near bottom of unit.



Baker ColdStream Brine Spray Unit—Gravity Flow Type

Baker ColdStream Air Conditioners



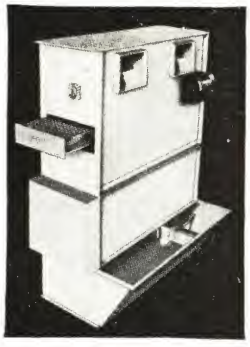
Baker ColdStream Air Conditioner

A wide range of capacities is available to suit every need. Condensed capacities for largest and smallest sizes (entering air 80° F. dry bulb and 50% relative humidity; entering refrigerant, either water or direct expansion, 40°F.):

C.f.m.	Water B.t.u.	Direct Expansion B.t.u.
3,000	65,200	64,500
12,000	433,000	484,000

Baker Evaporative Condensers

Where space is at a premium, this Baker Evaporative Condenser is ideal because of its compact design. The expense of outdoor or roof installations is not required. It eliminates the necessity of cooling towers, and drastically cuts water costs.



Baker Evaporative Condenser

The casing is constructed of heavy metal, rigidly braced and thoroughly reinforced. The finish consists of two coats of corrosion resisting paint. Outdoor units are weatherproofed.

Recirculated spray water absorbs the heat from the condenser; the spray water is cooled by evaporation into the air stream.

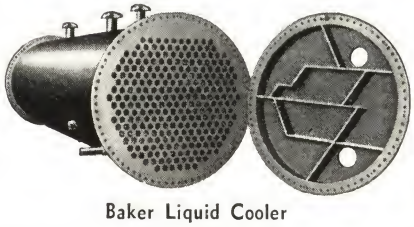
Baker Shell and Tube Condensers



Baker Shell and Tube Condenser

Baker Shell and Tube Condensers are made in all sizes up to 2,500 sq. ft. of effective cooling surface. Vertical, horizontal, multipass or single-pass types available, with diameters and tube lengths to fit any specifications. Easily cleaned.

Baker Liquid Coolers

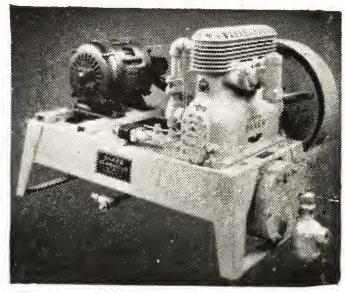


Baker Liquid Cooler

Designed to cool quickly large quantities of water or brine for refrigeration and air conditioning purposes. Horizonal multipass shell and tube construction. Design of water head insures even distribution of water through the tubes.

Complete range of sizes, 12 to 50 in. diameter, with tube lengths 9, 12, 14, 16 and 18 ft. long. Cooling capacity up to 150 tons each.

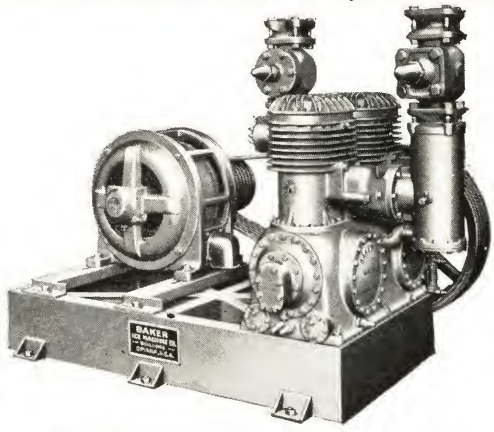
Baker Freon or Methyl Chloride Units



Baker Freon or Methyl Chloride Unit

Baker offers a complete line of 77 models assembled in both single and dual mounted self-contained automatic units from ¼ to 20 hp. capacity; 2- and 4-cylinder types. Mechanical features include double-trunk type, semi-steel pistons, full force feed lubrication, Timken bearings, shell and tube condensers. Air cooled and water cooled models available.

Baker Four-cylinder Freon Compression Units

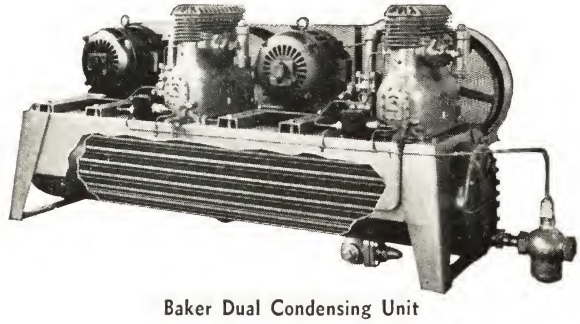


Baker Four-cylinder Freon Compression Unit

Baker 4-cylinder vertical enclosed type Freon compression units, assembled on a rigid metal base with motor and automatic control.

Available in 30 to 60 hp. Timken anti-friction roller bearings, balanced bellows crankshaft seal, and built-in removable cartridge-type oil filter. Automatic pressure-type temperature control and high-pressure cut-out (thermostat type also available). Direct-connected or V-belt drive. Compactly built, all parts easily accessible.

Baker Dual Condensing Units



Baker Dual Condensing Unit

Designed especially for variable heat load requirements. Dual 4-cylinder type water cooled Freon or Methyl Chloride unit, with automatic capacity control. Arranged with shell and tube type extra capacity condensers or for evaporative type of condensers. Cutaway view shows position and length of tubes. Available in 6 to 45 hp.

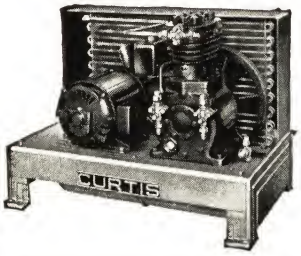
CURTIS REFRIGERATING MACHINE COMPANY

DIVISION OF CURTIS MFG. COMPANY—EST. 1854

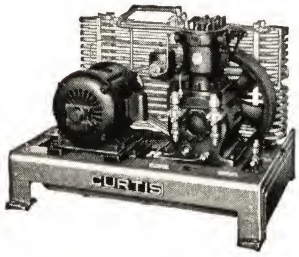
1923 Kienlen Avenue, ST. LOUIS, MO.

NEW YORK OFFICE: 30 Vesey Street

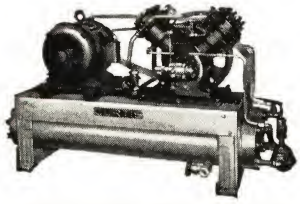
CURTIS REFRIGERATION AIR CONDITIONING AND COMMERCIAL



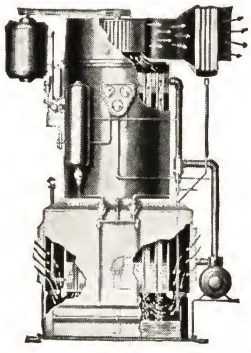
Air-Cooled Condensing Units
¼ to 5 hp. sizes



Water-Cooled (Counter-flow Type) Condensing Units
⅓ to 5 hp. sizes



Water-Cooled (Shell and Tube Type) Condensing Unit
3 hp. up to 30 tons capacity



Evaporative Condenser Receiver
3 to 20 tons capacity

General Information About Curtis

93 models comprise the Curtis line of condensing units. There are 48 air-cooled units ranging in size from 1/6 to 5 hp., and 45 water-cooled units in sizes from ⅓ to 30 hp. All models are available for either Freon (F12) or Methyl Chloride.

Curtis units are designed especially for air conditioning, ice cream cabinets, refrigerated trucks, display cases with self-contained units, etc. Gasoline powered models and special designs also available.

Curtis also supplies a line of standard coils and forced draft unit coolers to balance Curtis condensing units.

Mechanical Features of Curtis Units

All Curtis compressors employ "Centro-Ring" positive pressure lubrication—an exclusive oiling system which has only one moving part—no gears or plunger. Other Curtis engineering refinements include:

Timken tapered roller bearings (all models above ¾ hp.) . . . Positive pressure oiling system . . . Cylinder heads removable for valve inspection without breaking gas connections . . . Large valve areas . . . Drop forged, alloy steel, heat-treated crank-shaft and connecting rods . . . Individual correct displacement compressors for each motor size . . . Balanced sylphon bellows seal . . . Unusual large receivers and condensers assure maximum efficiency.

Typical Curtis Units

Air Cooled Condensing Units—For commercial cooling. Extra large air-cooled condensers and condenser receivers.

Water–Cooled Condensing Units (Counter–flow Type)—For commercial and air conditioning work. Counter-flow condensers are efficient when water is free from salt or other mineral content.

Water–Cooled (Shell and Tube Type) Condensing Units—With cleanable condensers having removable heads.

Evaporative Condenser Receiver—Cleanable type and designed to provide economical means of condensing refrigerant vapors where high water rates and high water temperatures exist.

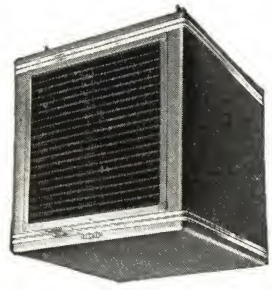
Floor Type Cooling Units—Attractive in appearance and efficient in operation. Made in two models—one for comfort cooling only, and one for complete air conditioning. The condensing unit is not part of the unit but must be placed in the basement or other convenient remote location.

Ceiling Type Comfort Unit—Each unit is complete with filter, blower fan and efficient cooling unit. Can also be furnished for cold and hot water circulation.

Store and Office Cooler—A complete packaged air conditioning unit requiring only water and electrical connections to install. Cools, dehumidifies, circulates and filters the air. Adaptable for heating.



Floor Type Cooling Units
½ to 1½ tons capacity



Ceiling Type Comfort Unit
¾, 1½ and 3 tons capacity



Store and Office Cooler.
3 and 5 ton capacity

FRICK COMPANY

Air Conditioning, Refrigerating and Ice-making Equipment

WAYNESBORO, PENNSYLVANIA

BRANCH OFFICES FOR SALES AND ENGINEERING SERVICE

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NEW YORK, N. Y.
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PALATKA, FLA.
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SEATTLE, WASH.
ST. LOUIS, MO.

DISTRIBUTORS AND STOCK POINTS IN 150 PRINCIPAL CITIES THROUGHOUT THE WORLD



1000 Tons of Frick Refrigeration Air Condition These Buildings in Tulsa, Okla.

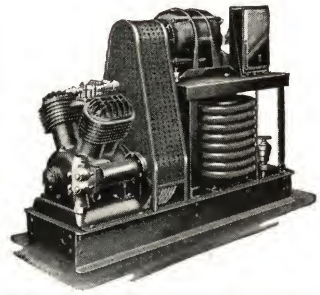
Products

Air conditioning systems, ice making plants, and cooling equipment for food service, drinking water, beverages, cold storage, quick freezing, process work, test and research.

Service

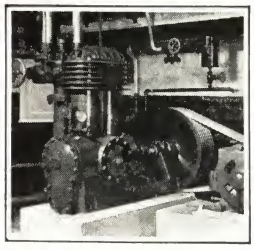
Surveys, recommendations, layouts, specifications, estimates; manufacture, erecting and maintenance service.

More than 50 Ice and Frost Bulletins available.



Frick Freon-12 Refrigeration Unit for Air Conditioning
Sizes 10, 15, 20 and 30 tons

FRICK AIR CONDITIONING

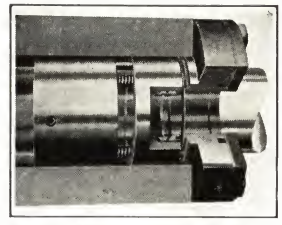


Frick Freon-12 Compressors of This Type Air Condition Over Two Dozen Theatres in Baltimore Alone

Comprises complete plants, or refrigeration for equipment furnished by others. Central, pipe line, and unit systems using direct-expansion or cold water. Patented Frick Systems and those of Auditorium Conditioning Corporation available. Installations everywhere. Let us quote on your requirements.

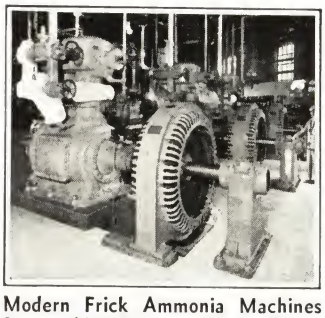


Frick Unit Air Conditioner



Detail of Patented Frick Flexo-Seal for Shafts of Enclosed-Type Freon-12 and Ammonia Compressors

FRICK REFRIGERATION

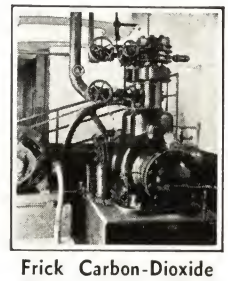


Modern Frick Ammonia Machines Saving $20,000 Annually in Nashville Plant

Experience dating back to 1882 is built into Frick compressors, condensers, coolers, coils and controls. For ammonia, carbon dioxide, methyl chloride or Freon-12. Most dependable machines built. Highly developed; show important savings on modernization programs. Full line of valves and fittings.



Frick Low-Pressure Refrigeration Units
Built in sizes of ¼ to 15 hp.



Frick Carbon-Dioxide Compressor Installed

FRICK ICE-MAKING SYSTEMS

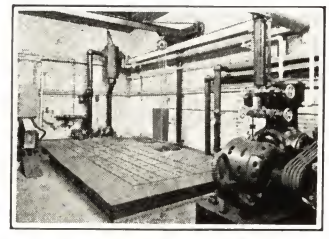
We furnish all types of ice-making plants to suit individual demand: loose can or group lift; manual or automatic control; brine race, brine cooler, or flat coil systems. Frick-Pendulum low pressure air system eliminates air compressors and dehydrators, makes clearest ice with least cost. Used in over 1000 plants.



Modern Frick Plant at Tulsa, Okla. One of 35 Recently Built in That Section



Clear Ice Made from Raw Water with the F-P Air System



Small Ice-Making System As Used in Hotels, Institutions, etc.

INGERSOLL-RAND COMPANY

11 Broadway, NEW YORK, N. Y.

ATLANTA, BIRMINGHAM, BOSTON, BUFFALO, BUTTE, CHICAGO, CINCINNATI, CLEVELAND, DALLAS, DENVER, ST. LOUIS, DETROIT, DULUTH, EL PASO, HARTFORD, HOUSTON, TULSA, KANSAS CITY, KNOXVILLE, LOS ANGELES, NEWARK, NEW ORLEANS, NEW YORK, PHILADELPHIA, PICHER, PITTSBURGH, POTTSVILLE, WASHINGTON, D. C., ST. PAUL, SALT LAKE CITY, SAN FRANCISCO, SCRANTON, SEATTLE

Branches or Distributors in Principal Cities the World Over—To Avoid Delays in Correspondence Address Requests to Nearest Branch

Products for the Building Industry

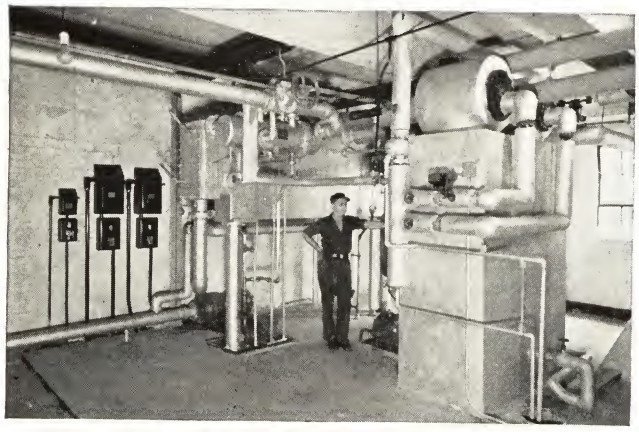
AFTERCOOLERS
AIR AND GAS LIFT PUMPS
BLOWERS
CORE DRILLS for Manholes, elevator shafts, testing
COMPRESSORS air and ammonia
CONDENSERS
ENGINES
HOISTS, air and electric
JACKBITS
JACKHAMMERS
PAVING BREAKERS
PILE DRIVERS
PNEUMATIC TOOLS, Concrete Vibrators, Diggers, Grinders, Riveters, Sanders, Saws, Surfacers
PNEUMATIC TOOLS (continued) Wood Borers, Wrenches
PUMPS, Centrifugal and reciprocating
ROCK DRILLS
VACUUM PUMPS

WATER-VAPOR REFRIGERATION

I-R Water-Vapor Refrigeration uses water as the only refrigerating medium. There is no refrigerant to purchase or replace. The system operates entirely under vacuum, and may be opened up for inspection whenever desired.

Water-Vapor Refrigeration gives lower operating costs by saving refrigerant replacement and by economical operation at light as well as full loads. Of special value is its unusual ability to handle overloads with a smaller increase in chilled-water temperature than with other types of units. Full capacity is retained for the life of the machine.

I-R Units are ordinarily sold through reliable contractors for field installation as a part of air conditioning systems.



65 Ton Steam Jet-Cooler for Air-Conditioning a Restaurant

Steam-Jet Cooler Type

Cooling is effected by direct evaporation of water at high vacuum. Steam-jet boosters maintain the vacuum, and discharge the evaporated water vapor into a surface condenser. (When desired, barometric type condenser units can be furnished.) The heat carried away by the evaporation of the water vapor chills the main body of water as it is circulated through the unit.

The I-R patented design has been specially developed to insure reliability and simplicity of operation. Steam-Jet Coolers are free from noise and vibration, and are the easiest of all refrigerating equipment to install and maintain.

Standard sizes are available for capacities of approximately 10 tons upward for chilled water temperatures of 35° F. and higher. Units are built for steam pressures of 2-lb. gauge and upward.

DIESEL ENGINES



The Type S Heavy-Duty Diesel is a modern, 4-cycle engine rated for continuous full-load operation. It is built in 6 sizes from 175 to 460 hp.

For a heavy-duty engine, the Type S is unusually compact and comparatively light in weight. It can be shipped by truck, fully assembled. The 460-hp. size weighs 12 tons and the 175-hp. size 6½ tons. Rigging expense, building cost and size of foundations are reduced. No platforms or ladders are required. The engine is only 7 ft. high and can be put through an opening less than 6 x 9 ft.

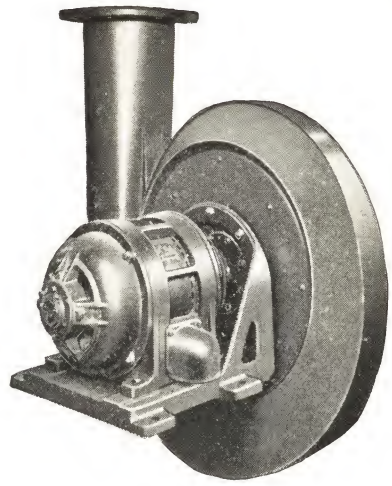
The fuel consumption of the Type S Diesel is extremely low—.38 lb. per bhp.-hr. This is an outstanding achievement for an engine of this type and is equal to that of the very largest Diesels.

Full force-feed lubrication, and precision-type shell bearings which eliminate "scraping in," reduce bearing maintenance. Small parts are easy to handle, accessible and inexpensively replaced. Many maintenance jobs are eliminated because of the high efficiency of the Type S combustion system, the controlled high-velocity cooling, and the non-clogging feature of the single-hole injection nozzles.

Because nothing has been omitted that would aid in reliability, safety and ease of operation, an experienced operator is not required.

More than 150 I-R Diesel engines of this size and general type are in operation today. Many units are providing economical power in office buildings, industrial plants, etc. Other sizes and types are available.

MOTORBLOWERS

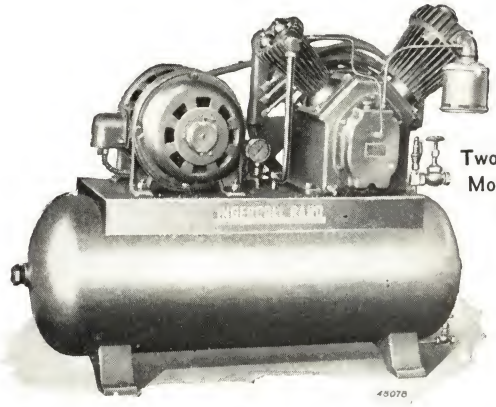


Motorblowers are ideal for pneumatic conveying tube systems handling ashes, cork, grain, mail, package, pulverized coal, etc. Other uses include Diesel-engine scavenging and supercharging, air for furnaces, etc.

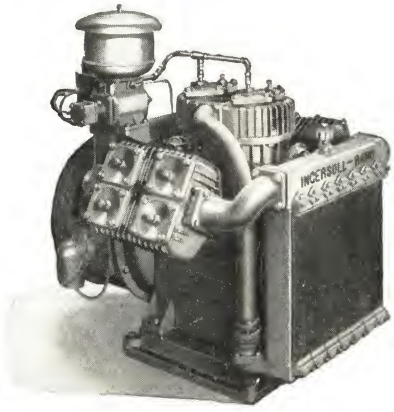
The Motorblower is a single-stage centrifugal blower with a built-in electric motor. It is a highly-efficient, compact and long-life unit.

There are 73 sizes of Motorblowers for pressures from .75 to 3 lb. per sq. in. Ingersoll-Rand also builds multi-stage and other single-stage blowers.

AIR COMPRESSORS



Two-stage Receiver Mounted—Type 30 Compressor



Two-stage Air-cooled Motor Compressor

Ingersoll-Rand builds more than a thousand sizes and types of air and gas compressors from ¼ to 3000 hp. for all kinds of service.

Type 30 two-stage, air-cooled, self-contained compressors are ideal for many applications where small amounts of air are needed. Sizes range from ¼ to 15 hp. with piston displacements from 1.2 to 102 cu. ft. per min. for pressures from vacuum to 1000 lbs. per sq. in.

Three types of automatic control can be furnished for the most economical operation. Mountings are available for nearly every type of service.

The Type 40 Motorcompressor consists of a two-stage air-cooled radial type compressor with built-in electric motor. These compact machines are highly efficient and require minimum attendance. Complete air cooling of cylinder and intercooler eliminates the need for water—no water piping, no water cost, no freezing.

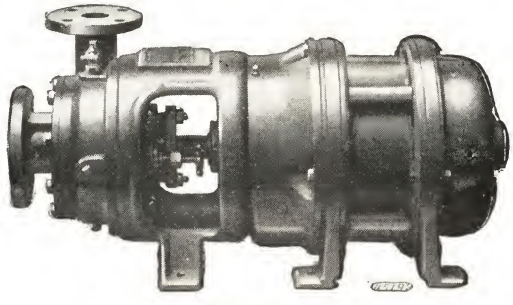
They are built in sizes from 15 to 75 hp. with displacements from 79 to 445 cu. ft. per min. for pressures from 80 to 125 lbs. per sq. in. Also furnished for V-belt or flexible-coupled motor drive.

INGERSOLL-RAND PUMPS

There is an efficient, reliable Ingersoll-Rand Pump for every purpose. Single-stage centrifugal units range from 5 to 100,000 gal. per min., and multi-stage units (2 to 8 stages) range from 125 to 3000 gal. per min. for pressure up to 3000 lbs.

The "Motorpump" is ideal for general service everywhere, ranging in sizes from ¼ to 40 hp. Pumps and motors are built as one compact and efficient unit on a single shaft. They can be mounted in any position on the floor, wall or ceiling.

Capacities range from 5 to 1000 gal. per min. for heads as high as 220 ft. single-stage; and from 20 to 275 gals. per min. for heads up to 500 ft. two-stage. Motorpump Condensate Return Units are also available in a complete range of sizes.



Motorpump

Motors for any common current conditions; open, splash-proof, totally-enclosed, or explosive-proof types.

BARBER-COLMAN COMPANY

Manufacturers of Automatic Electric Controls for Temperature, Humidity and Industrial Applications

ROCKFORD, ILL.

For Uni-Flo Grilles and Registers, Garage Doors and Electric Door Operators, see File Index

BARBER-COLMAN ELECTRIC SYSTEM OF TEMPERATURE AND HUMIDITY CONTROL

The Barber-Colman Electric System of Temperature and Humidity Control is adaptable to any kind of heating, ventilating, air conditioning system, manufactured unit, or industrial application where temperature and humidity are to be controlled. A system may be either automatically controlled or manually operated from remote switches, or by combinations of both.

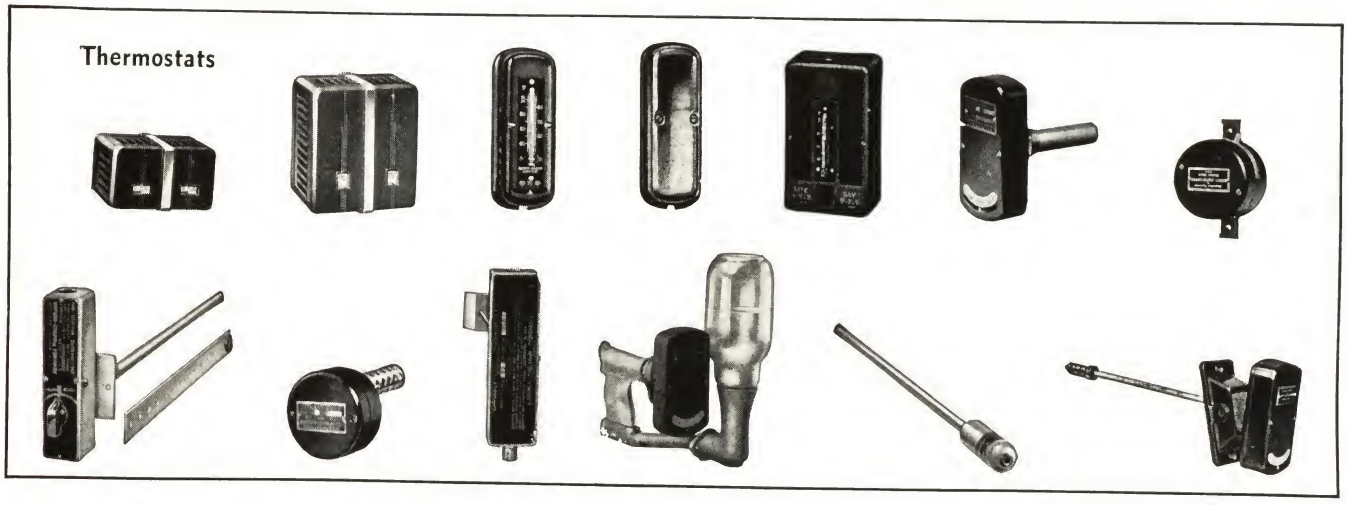
All units are electrically operated, and all connections between units are electrical. Because of the low voltage employed, 25 volts, standard thermostat wire can be used. This greatly facilitates the installation in either new or existing buildings.

All Motor-Operated Valves and Damper Control Motors are powered by the Barcol shaded pole induction motor, which has only one moving part, and requires no attention, except occasional oiling. The oil-immersed models require no attention.

The only auxiliary equipment required for operation of the Barber-Colman Electric System is a transformer.

Barber-Colman Controls are precision built to insure long, continuous, and dependable service. They are easy to install and service, or to replace if necessary on account of accidental damage. They are listed as standard by the Underwriters' Laboratories, Inc.

TYPICAL UNITS OF CONTROL APPARATUS



Single Temperature—For wall mounting and the control of usual room temperatures. Available for snap acting, floating, proportioning and compensated control circuits.

Two-Temperature—For maintaining one temperature for part of the time and a different temperature for the rest of the time, e. g., Day and Night or Summer and Winter control. The control may be shifted from one element to the other at the thermostat or by a manual or automatic switch from a remote point.

Duplex—For controlling two separate units of heating equipment or heating and cooling equipment, e. g., one element may be set at 72° F. to control the heating equipment and the other element set at 78° F. to control the cooling equipment.

Comfortstat—For controlling *effective* temperature. The control point is automatically shifted in accordance with changes in relative humidity.

Duct, Immersion, and Surface—For controlling temperature of air, gases, or liquids in pipes and either wet or dry bulb temperature in ducts and chambers.

Air Stream—For controlling the *average* temperature across the entire section of a duct.

Thermostatic Adjuster



For control applications where it is desired to shift the control point of a thermostat or system in response to a change in some other temperature, usually outdoor temperature.

Potentiometer Type—Provides a means for automatic control of an air conditioning system, so that the indoor temperature in summer will vary gradually in accordance with changes in outdoor temperature, to maintain the most comfortable, healthful, and economical conditions. One Thermostatic Adjuster can change the control point of as many as eight thermostats.

Switch Type—Provides a means for the automatic selection of a different circuit for different temperature ranges; as many as 21 circuits are available. As an example, used in the selection of different timing periods of a Cycler System to regulate the time a zone valve can be opened for corresponding outdoor temperature ranges.

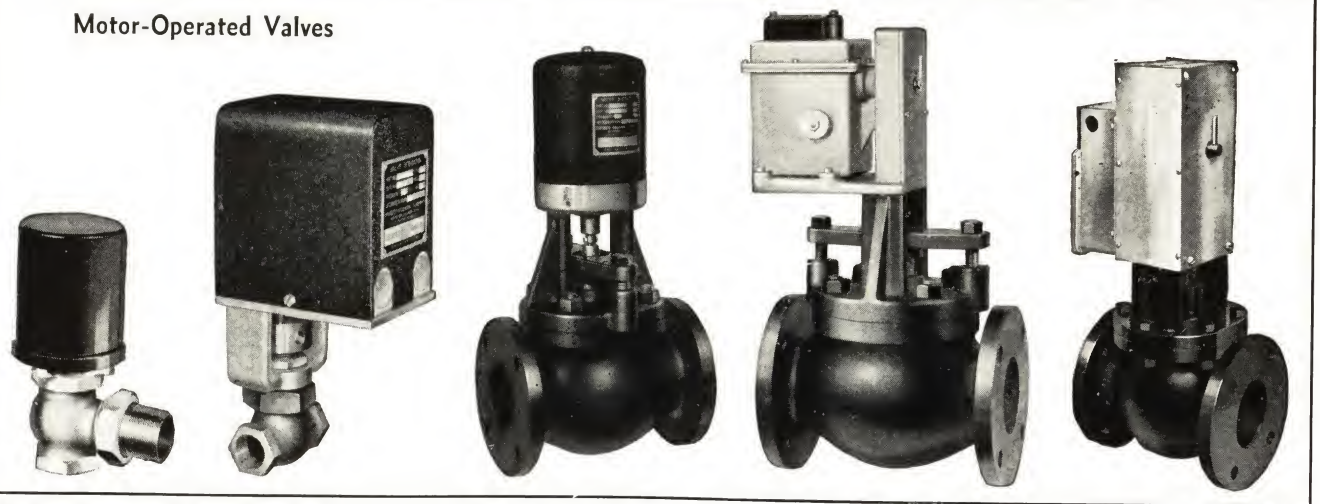
Hygrostats



Hygrostats are obtainable for either wall mounting or installation in ducts. The sensitive element of these instruments consists of a large number of human hairs, each hair being separately mounted, tensioned, and ventilated. These instruments have proven to be very sensitive, dependable, and particularly adaptable to the control of humidity in air conditioning systems.



Motor-Operated Valves

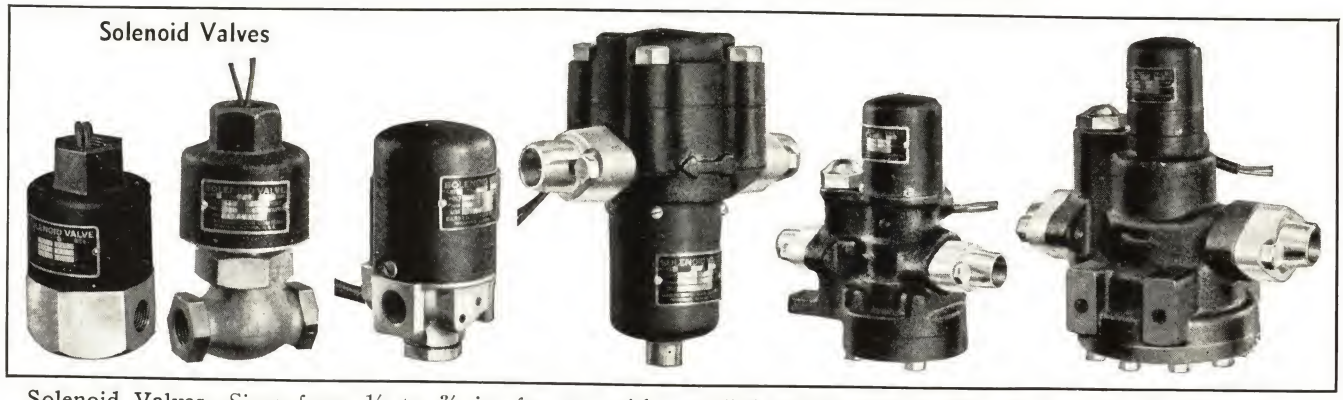


Motor Operated Valves—Sizes from ½ to 16 in. in standard valve body patterns and types. A motor driven mechanism or valve operator is available for either shut-off, throttling, or proportioning service.

Valves for shut-off service operate only to the open and closed positions; for throttling or proportioning service they can be operated in either direction and stopped or started from any intermediate position.

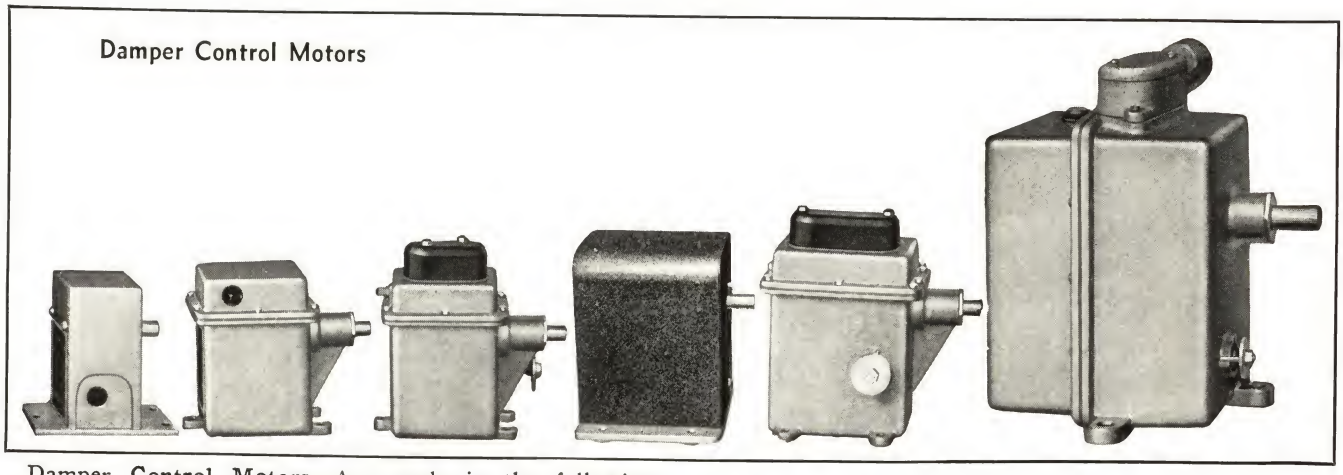
Oil-immersed operators have the operating mechanism enclosed within an oil filled die cast case and are obtainable with or without an adjustable speed mechanism. All operators may be equipped with auxiliary cam operated switches so that additional equipment may be operated automatically at definite predetermined positions of the valve.

Solenoid Valves



Solenoid Valves—Sizes from ⅛ to ¾ in. for use with gas, water, oil, or refrigerants. Valves open when current is applied and close by gravity and pressure when the current is cut off.

Damper Control Motors

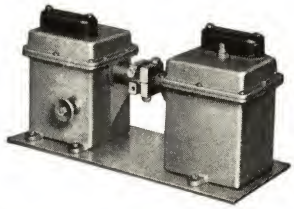


Damper Control Motors—Are made in the following types:

Stall or Spring Return Types—Constructed so as to run in one direction to a stall position when the power is on; and return in the opposite direction by means of an external spring or weight when the power is interrupted.

Uni-directional Types—Rotate in one direction only and stop automatically at designated positions.

Reversible Types—Rotate in either direction and may be stopped at any intermediate position and restarted in either direction.



Program Switches—Are motor driven contact making mechanisms. They will open contacts in any sequence with definite time intervals and close them in the same or reversed sequence.

CONTROL SYSTEMS

The Micro Control System



Consists of Microtherm (left) with Microvalve or Microtrol. It solves the problem of control for a device which causes a rapid rate of change in temperature at the source, and which is to be controlled from a point where the rate of change in temperature is relatively low; e.g., control of unit ventilators, 3-way valves on chilled water supply lines, or a series of compressors.

Microtherm instantly proportions the operated device in accordance with the amount of the change in temperature. In other words, the effect of the change in temperature is anticipated, and an equilibrium of the controls is established, and "hunting" is positively prevented.

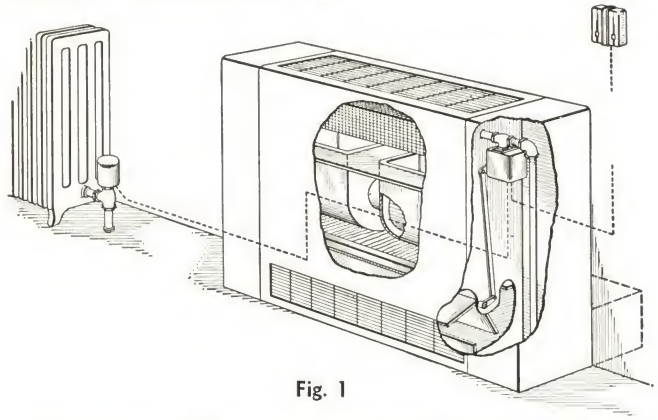


Fig. 1

Microvalve and Microtrol are identical in size with the corresponding oil immersed reversible Motor-Operated Valves or Damper Control Motors.

Fig. 1 illustrates a unit ventilator in which both the valve and mixing damper are regulated by a Microvalve controlled from a Microtherm. Auxiliary contacts in Microvalve are used to control Motor-Operated Valves on direct radiation.

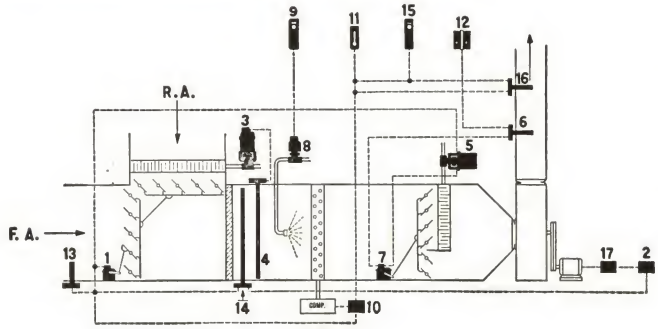


Fig. 2

Surface Cooler System

Fig. 2 represents a complete year-round air conditioning system. The shift from summer to winter operation is made automatically at any time. Thermostats (13) and (14) and Damper Control Motor (1) operate combination fresh air and recirculated air dampers to maintain a constant temperature of the air entering the system.

Fresh air damper automatically closes to a minimum position, admitting only enough fresh air for ventilation, whenever temperature of outside air rises above 65° F.

Hygrostat (9) controls operation of Solenoid Valve (8) to maintain sufficient humidity during winter operation. Hygrostat (15) operating in conjunction with Thermostat (16) controls the operation of the compressor to reduce the humidity for summer operation.

Microtherm (12), in conjunction with Low Limit Thermostat (6), proportions Microtrol (7) and positive Motor Operated Valve (5), to maintain desired temperature in the conditioned space.

Air Washer System

A complete air washer system using by-passed air for reheating is illustrated in Fig. 3. Damper Control Motor (1) positions fresh air damper according to a position selected by 5-Point Switch (15). Thermostat (4) operates Valve (3) on first preheater coil to prevent damage from freezing. Air-Stream Thermostat (13) controls operation of reversible Damper Control Motor (12), and Throttling Valve (14) to maintain a constant temperature of the fresh air. Microtherm (18), in conjunction with Low Limit Thermostat (6), controls the pro-

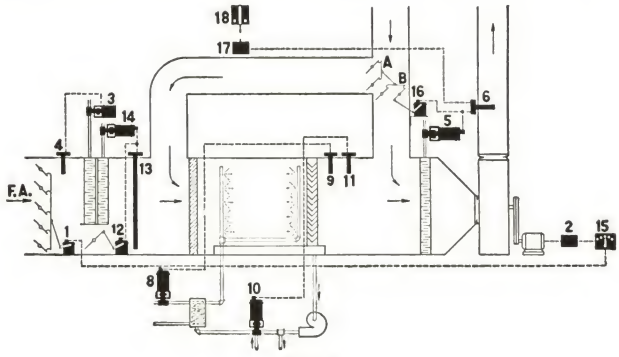


Fig. 3

portioning operation of Microtrol (16) and Microvalve (5) to maintain the desired temperature in the conditioned space.

Humidity is maintained in the conditioned space by controlling the dew point temperature of the air leaving the air washer. Thermostat (9) controls the operation of Throttling Valve (8) on the steam line to the indirect heater; Thermostat (11) controls the operation of throttling type Three-Way Valve (10) on the recirculated and chilled water supply lines.

Steam Jet Refrigeration System

Fig. 4 illustrates the control of a steam jet system which requires two steam valves for each booster unit. Each booster unit is controlled in the following manner:

Starting—Starting Valve (7) opens; running Valve (3) opens; Four-Way Valve (9) positions to operate hydraulic cylinder to open valve in evaporator; Valve (7) closes.

Stopping—Four-Way-Valve (9) positions to operate hydraulic cylinder to close valve in evaporator; Valve (3) closes.

Microtherm (1) maintains a constant temperature of the chilled water leaving the evaporator by controlling the operation of Program Switch (2), which in turn puts into operation the proper number of booster units.

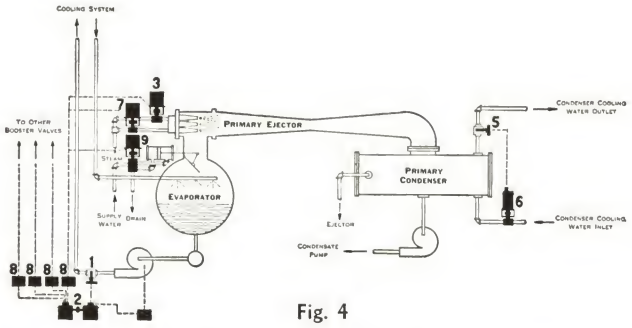


Fig. 4

Thermostat (5) controls the operation of throttling valve (6) to maintain a constant temperature of the water leaving the condenser.

To prevent any possibility of freezing in the evaporator relay (4) is wired in parallel with the pump motor, so that when the pump stops, Program Switch (2) is run to the "off" position, thereby closing all valves and shutting down all booster units.

Multi-Compressor Control

A 10-ton and 20-ton compressor are used for purpose of illustration. See Fig. 5.

Microtherm (1) controls Program Switch (3), and the operation of the compressors to maintain the desired room temperature.

The 20-ton compressor is connected to two separate sets of coils, one 15-ton capacity, and the other 5-ton capacity. Solenoid Valve (2) is installed on the liquid line to the smaller coil.

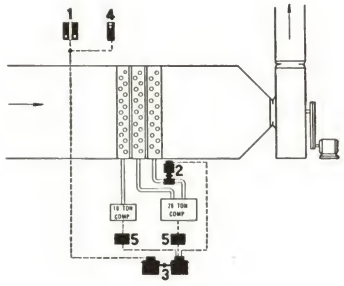


Fig. 5

Steps	Capacity available	10-ton compressor	20-ton compressor	Solenoid valve (2)
1st	10 tons	On	Off	Closed
2nd	15 tons	Off	On	Closed
3rd	20 tons	Off	On	Open
4th	25 tons	On	On	Closed
5th	30 tons	On	On	Open

The above table shows the sequence of operation and the five capacities available with this system.

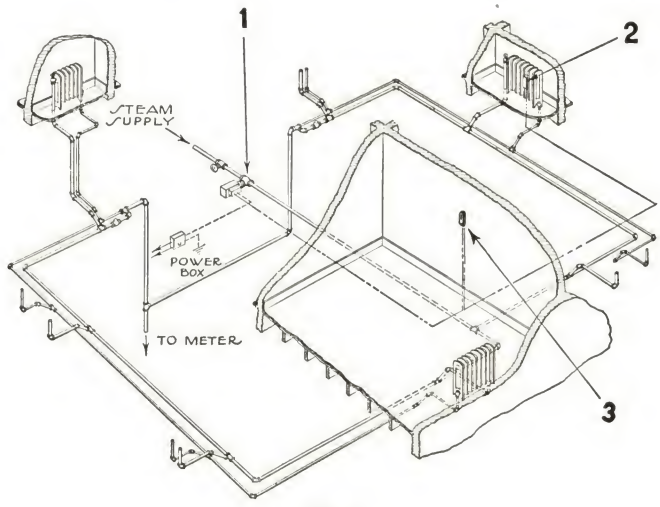


Fig. 6

Compensated Zone Control System

This system provides automatic temperature control under changing weather and occupancy conditions. Fig. 6 illustrates such a system with one Room Thermostat controlling the heat supply for a number of rooms or sections of a building. Briefly, the operation of the system is as follows:

Room Thermostat (3) calls for heat and Motor-Operated Valve (1) opens; temperature of the radiator rises, and contacts are made in Varitherm (2); heat anticipator in Room Thermostat is energized, causing it to call for less heat and close valve; valve closing, breaks heater circuit, allowing Room Thermostat to return to normal and repeat the sequence when required.

With this system the heat anticipator in the Room Thermostat is *not energized until the heating medium increases the temperature in the radiator.* The Varitherm operates on a change in temperature, rather than from a fixed temperature and thus the system automatically compensates for the heat losses from a building. These are exclusive Barber-Colman patented features.

Hot Water Storage Tank Control

Commercial Installations—Commercial installations for supplying hot water are usually controlled by a Thermostat on the tank and a Motor-Operated Valve on the steam line to the coils within the tank. The Barber-Colman Electric System permits placing the controls at the most desirable points, as it is not necessary to limit the distance between the Thermostat and the Valve.

Residential Installations—Hot water heating systems may be controlled as illustrated in Fig. 7.

Room Thermostat (5) controls Motor-Operated Valve (4) and the burner or stoker. On call for heat, valve opens, and the burner or stoker starts; on call for less heat, valve closes and burner or stoker stops.

Thermostat (1) controls the operation of the burner or stoker to maintain a minimum water temperature in the boiler. Thermostat (2) controls the operation of Motor-Operated Valve (3), to regulate the flow of water through the indirect heater.

Steam heating systems may be controlled in a similar manner, except it is not necessary to have Valve (4) on the riser.

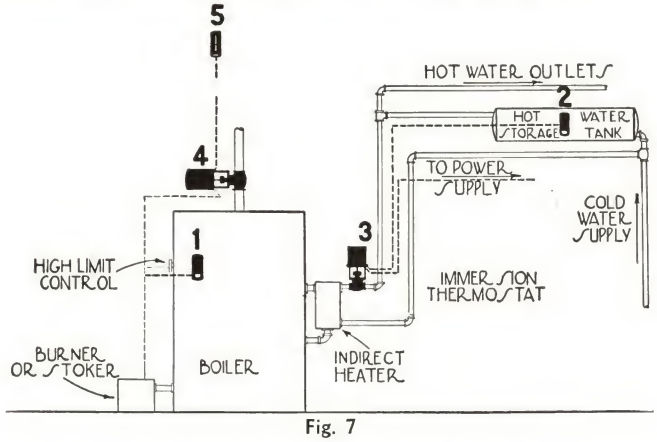


Fig. 7

Residential Air Conditioning System

Fig. 8 illustrates a typical residential year-round air conditioning system in which some rooms are heated by direct radiation.

Control of indirect part of System—Thermostats (1) control positive Damper Control Motors (3). Dampers operate so that they are always in either the full open or closed position.

Cooling Cycle—On call for cooling, dampers open; when all dampers are closed, compressor will stop. Any damper opening causes compressor to start.

Heating Cycle—Damper Control Motors (3) operate in reverse order of that described above; i.e., on call for heat, dampers open; on call for cooling, dampers close. Valve (4)

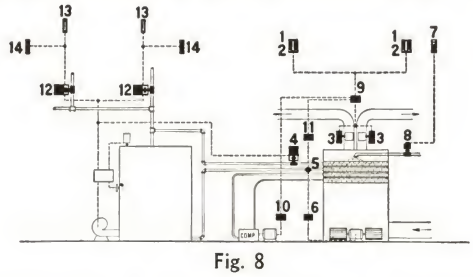


Fig. 8

is controlled from the auxiliary switches in Damper Control Motors (3); any damper opening causes valve to open.

Control of Direct Radiation—Thermostats (13) operate in conjunction with Variable Limit Thermostats (14) installed on the last radiator in each zone, to control the operation of its respective positive Valve (12).

Manual

A complete and detailed description of these and many other control systems is available in a bound manual, which will be furnished upon request. Consult a Barber-Colman representative or distributor in your territory, or write the factory for assistance on any control problem pertaining to heating, ventilating, air conditioning, or industrial applications.

MEMORANDA

BARNES & JONES, INCORPORATED

BOSTON, MASS.

AGENTS IN PRINCIPAL CITIES

Products

Vapor and Vacuum Heating Systems—Thermostatic Radiator Traps, Modulation Valves, Packless Quick Opening Valves, Strainers, Orifices, Condensators, Float and Thermostatic Traps, and Proportionator Systems of Zone Control.

Complete Heating Systems

For more than thirty years Barnes and Jones Engineers have worked with architects and heating contractors, have developed a complete line of heating equipment for all types of buildings, and have proved the quality of this equipment in terms of economical heating and easy maintenance *on the job.*



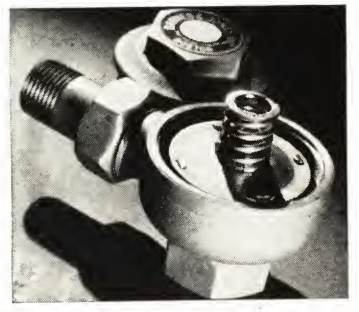
Lever Handle Modulation Valve

Modulation Valves

Barnes and Jones Type "K" Modulation Valves are supplied in lever handle, wheel handle, and lock shield models. Valve bodies are made of best composition steam metal, heavily nickel plated. Less than one turn of the handle opens or closes the valve. Supplied in ½, ¾, 1 and 1-¼ in. sizes.

Packless Quick-Opening Valves

The Type "F" packless valve is recommended for use in residences, public and semi-public buildings where a moderately priced quick-opening valve is required. Has permanently packed stem and renewable disc seat. Both Type "F" and Type "K," when fully open, have a free area practically equal to that of the connecting pipe. Sizes: ½, ¾, 1, 1¼, 1½, and 2 in.



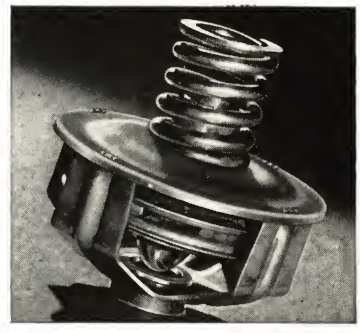
Thermostatic Trap with Cover Removed



Packless Quick Opening Valve

Thermostatic Radiator Traps

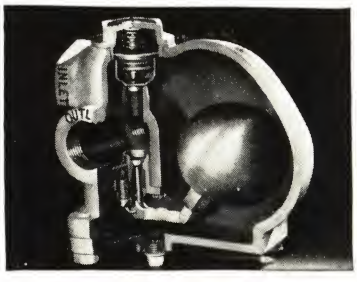
The Barnes and Jones Radiator Trap consists of a trap body, and a thermostatic Cage Unit—a complete thermostatic operating unit in one piece. This unit carries its own thermostatic element with valve piece and seat of stainless steel. Each Cage Unit is individually tested at the factory and *locked in adjustment* for proper opening and closing temperatures to insure efficient operation. Made in straightway, angle, and right-hand corner styles.



Thermostatic Cage Unit

Thermostatic Cage Unit

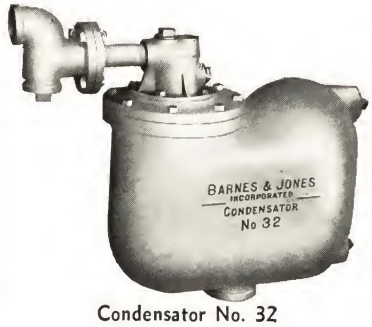
This unit is also supplied in sizes to fit practically any make of thermostatic trap. It can be inserted into the trap body without special tools, adjustments or disconnecting piping, and instantly brings the old trap lack of 100 per cent efficiency.



Float and Thermostatic Trap

Float and Thermostatic Traps

These sturdily built, yet compact, traps have air and water capacities up to 5000 lbs. of water per hour on a 2-lb. pressure differential. Float-operated valves control the discharge of condensate. The air by-pass is controlled by an instantly replaceable thermostatic Cage Unit, located in the top section of the trap. Removal of trap cover gives complete accessibility, and simplifies inspection and repairs. Tappings: ¾, 1, 1¼, 1½ and 2 in.



Condensator No. 32

Condensators

Barnes and Jones Condensators are installed on return lines to permit condensate to return to boiler independently of boiler pressure, without air binding or admitting steam to the return side of the system. They are simple in construction; all working parts are bronze, completely enclosed to prevent tampering.

Orifices

Many years of experience enable Barnes and Jones to provide correctly sized orifices to insure proper distribution of heat to all parts of the system.

Operating Principles

The inherent advantages of vapor and vacuum heating—quick response to heating needs, noise-free operation, balanced distribution of heat, and efficiency—are matched by the time-proven dependability of Barnes and Jones equipment. Barnes and Jones systems provide a sound basis of economical heating well adapted for use with air conditioning where steam is used as the heating medium.

Bring your heating problems to Barnes and Jones. Write for complete catalog.

DETROIT LUBRICATOR COMPANY

GENERAL OFFICES
DETROIT, MICH.
DIVISION OF AMERICAN RADIATOR & STANDARD SANITARY CORPORATION
Canadian Representatives: RAILWAY AND ENGINEERING SPECIALTIES LIMITED, Montreal, Toronto, Winnipeg

For over sixty years, the DETROIT LUBRICATOR COMPANY has maintained a world-wide reputation for precision and quality manufacture of automatic control devices—mechanical, electrical and manual—and similar products for heating, refrigeration and air conditioning. Our Engineering Department includes specialists in each field where our products are sold. The experience of these men is available to you in the study of your problems. We will welcome the opportunity of working with you.

TWO ELEVEN ROOM THERMOSTAT

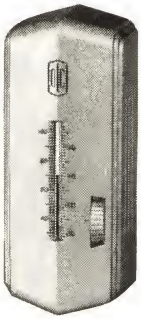
The "Genuine Detroit" Two Eleven is a very sensitive room thermostat for heating and air conditioning, built in various models to provide any type of control desired—with or without compensation (preheater). With compensation it provides straight line temperature control, eliminates "cold 70" and shows a minimum tendency toward drooping when outside temperatures fall rapidly.

Varying the electrical load has no effect on compensation for the preheater element is placed in parallel with the load circuit and not in series with it.

Two-Eleven compensating unit has a wide range of heating cycle adjustments to assure complete comfort with any type of heating plant, building exposure, house construction or character of fuel.

The Two-Eleven has a rating of 25 watts at 25 volts AC or DC, and a range of 40 deg. to 90 deg. It can be furnished as a day and night thermostat with time switch, also summer and winter thermostat and for both heating and cooling.

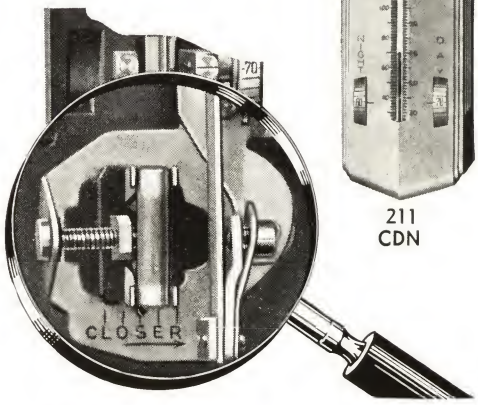
Under the designation 'Three Eleven" it becomes a high voltage instrument rated at 50 watts, 110 volts AC or DC. Range is the same, 40 deg. to 90 deg. As such it is ideal for the control of solenoids, relays and motor valves on line voltage circuits.



211



211
CDN



Compensating Element

Both the Two-Eleven and Three-Eleven are attractively styled for modern interiors and are finished in satin silver. Over-all dimensions 5 x 2 inches, projecting from the wall, only 1½ in.

197 HUMIDISTAT

The 197 Humidistat is a sensitive, low voltage instrument employing the dependable multiple hair element recognized as the most effective available. This instrument has an adjustable range of 10% to 100% Relative Humidity and it operates at a differential of 3% R. H. It is applicable to either humidification or dehumidification equipment. Electrical rating, 25 watts at 25 volts, AC or DC.

This instrument is free from objectionable flutter and the danger of corrosion of its contacts. It is not affected by dust accumulation and will operate in temperatures up to 200 deg. F.



It is styled in harmony with the Two-Eleven Thermostat and may be mounted side by side with the Two-Eleven on a special mounting plate.

The 397 Humidistat is similar in all respects to the 197, except that it is a high voltage instrument rated at 50 watts at 110 volts, AC or DC.

IDEAL FAST-VENTING SYSTEM

Fundamentals of Proper Venting and Why

An automatic, oil, gas or coal burner does not deliver heat continuously. It operates on a pronounced **on** and **off** cycle. Therefore, on one-pipe steam jobs, all venting and all heating must be accomplished during the limited **on** period—the venting first. Thus the time factor in venting is of utmost importance. Furthermore, the recent use of the accepted compensated or "preheater" type thermostat causes the heating cycles to become even shorter. If the venting of such a job is not balanced, parts of it may never get a chance to function properly, due to this comparatively short firing cycle.



No. 300. Multiport for Radiators



No. 861. Hurivent for Mains

Three fundamental requirements stand out boldly:

(1) Venting must proceed rapidly and be accomplished as early in the on period of the burner as possible.

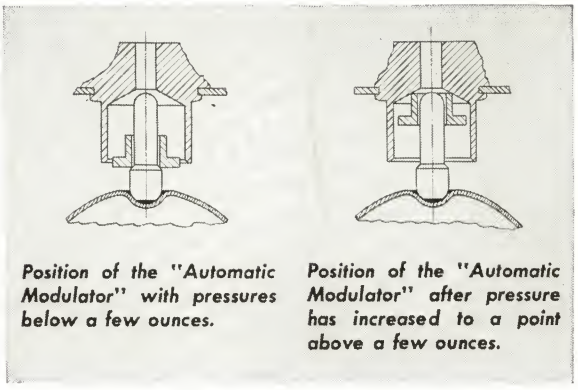
(2) All radiators must start venting simultaneously.

(3) Steam flow to each radiator must be regulated in accordance with its location and capacity.

To accomplish this, the venting must be done before boiler pressure has increased beyond a few ounces. This means large port, large capacity valves—considerably larger than anything previously available.

Automatic Modulator—the Key to the Problem

The one thing that has made the large port valve possible is the Automatic Modulator (patented) which permits large port action up to a few ounces pressure and then automatically reduces port area to that of the ordinary valve. It assures practically all venting immediately after the burner comes on and before normal pressure has had a chance to build up—this without jeopardizing any necessary subsequent venting at normal pressure.



Position of the "Automatic Modulator" with pressures below a few ounces.

Position of the "Automatic Modulator" after pressure has increased to a point above a few ounces.

If all radiators are to vent simultaneously, it is obvious that steam must fill the mains immediately pressure is available so that it can advance through all risers at the same time. To accomplish this, it is necessary to vent the mains a great deal faster than ever before.

The No. 861 Hurivent embodies a new idea in the construction of main vents. The desired large port is secured without increasing the size of the valve. This is done by employing two metal balls and composition seats. The port is ½ in., or an area sixteen times greater than that found in ordinary vents.

Unexcelled for Balancing

Of great importance to the installer, when necessary to "balance" the system, is the scientifically designed slide valve method of adjustment used on the No. 300 Multiport for (radiators). With a much larger maximum port opening to begin with (the No. 300 vents two and one-half times faster than ordinary vent valves) it obviously has a much greater range of adjustment than other valves.

The adjusting mechanism is so arranged that the change in port area is directly proportional to the distance through which the adjusting indicator is moved. A quarter swing of the indicator reduces port area just 25%—and so on through the entire swing of the indicator.

A Bold Step in Modern Design

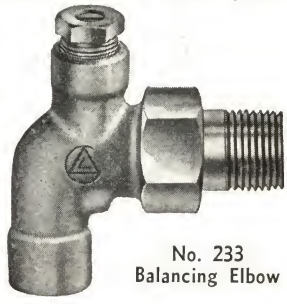
The design of this unit prevents sizzling or spitting and all danger of a clogged orifice from paint, plaster or tampering.

For the first time in forty years a positive step has been taken to improve the appearance of the air valve. The styling of the No. 300 Multiport is new, modern and very attractive in itself. It offers a striking contrast and welcome relief to the purely utilitarian lines of other valves. Its lustrous black moulded jacket accentuated by brilliant chromium striping harmonizes with any well-appointed interior.

BALANCING UNION FITTINGS

For Use With Hot Water Circulators

Every heating contractor knows how difficult it is to properly balance the circulation in hot water jobs. This becomes still more difficult where circulators are used because of the effect of the circulator and the fact that only about three sizes of pipe are used. It is necessary to choke the flow to certain radiators and to provide free flow to others. Hot water systems can be balanced properly only after being put in operation.



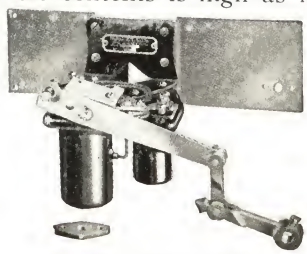
No. 233 Balancing Elbow

"Genuine Detroit" Balancing Union Elbows make it possible to provide the correct flow to each radiator after installation on either gravity or forced circulation jobs. The adjustable baffle can be set after the job is in operation without draining the system and provides an almost infinite number of settings. For straightway connections the No. 234 and No. 134 Balancing Union Straight-Way Fitting is available. This fitting is especially desirable for use on the return connection of convector radiators. Construction is the same as with the balancing elbows.

"Genuine Detroit" Balancing Elbows and Straightway Fittings are regularly supplied with standard male unions for radiator connection and either standard pipe thread or sweat connection at the bottom. Where copper pipe is used, the use of the sweat connections brings a saving because the cost of the elbow is less than the cost of a threaded elbow plus the adaptor for copper pipe. It also saves the extra joint together with the cost of making it up and presents a neater connection.

ZONE CONTROL FOR FORCED AIR SYSTEMS

It is often difficult with one thermostat to hold uniform temperatures throughout a large building, especially when the ratio of external building surface to cubic contents is high as in buildings of the rambling type or those having definite divisions between living quarters, servants' quarters, etc.

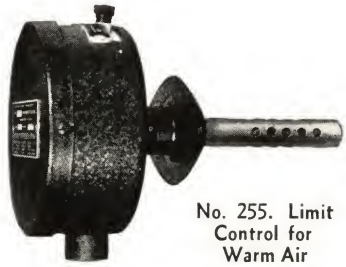


No. 431. Motor Unit

Such a warm air heating problem can be solved satisfactorily only by means of zoning. The preferred equipment is "Genuine Detroit" Zone Control.

The building is thus divided into two or more zones with a thermostat controlling each zone. Branches from the main warm air duct supply each zone and each branch is provided with a zone control actuated by its respective thermostat.

When a thermostat calls for heat in its zone, it opens the governing damper, which in turn operates the main heating unit. Dampers to zones not requiring heat remain closed, though the heating unit does not stop until all zones are satisfied.



No. 255. Limit Control for Warm Air

As thermostats are independent, different temperatures may also be maintained in different zones, if desired. Also, if day and night thermostats are used, one or more zones may be changed to day or night temperature independently of the others.

Each zone damper is actuated by a "Genuine Detroit" No. 431 Motor Unit. This is entirely noiseless, so is regularly mounted on the duct without danger of objectionable noise being telegraphed along the duct to rooms above. A No. 255 Furnace Limit Switch prevents overheating in the plenum chamber to which zone ducts connect.

STOKER CONTROL



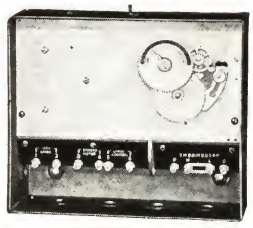
No. 251. Clamp-on Limit Control for Hot Water



No. 250. Limit Control for Steam

The satisfaction derived from a stoker fired heating plant is largely determined by the automatic controls under which it operates.

"Genuine Detroit" Stoker Timers and Time Relays for "Stand-by" control are timing mechanisms designed to maintain stoker fire by adjustable, short interval, periodic firing. They are accurate in operation, of sturdy construction and easily installed—are available for all types of applications—with or without transformer relays, safety switches, selective time cycles, time switch mechanisms for day and night thermostats and in line voltage or low voltage models.



No. 384. Stoker Time Relay

The time mechanism is operated by a self-starting, self-lubricating, quiet running, synchronous motor. The standard type is for 110 volts, 60 cycles. Available on special order for either 110 or 220 volts, 25 or 50 cycles.

All timers and time relays are provided with an ingenious gear shifting mechanism that permits a quick selection in total time cycles of either 30 or 60 minutes. This is accomplished by simply loosening a knurled knob and moving the shift lever through a short arc.

Each total time cycle has adjustable firing periods. The 30-minute cycle is adjustable between 0 to 12 minutes and the 60-minute cycle between 0 and 25 minutes. The firing time is secured by setting a knob operated pointer on an easily read dial. The dial calibrations distinguish clearly between the 30- and 60-minute total time cycles.

"Genuine Detroit" Timers are rated 1 hp.—repulsion-induction motors—at 110 volts AC. In the time relays, the relay armatures are free-floating, insuring proper seating of contacts and the elimination of humming and chattering.

"Genuine Detroit" Timers combine with the No. 211 Thermostat—page 1—and the Limit Controls illustrated at the left, to provide a complete control system for automatic coal stokers.

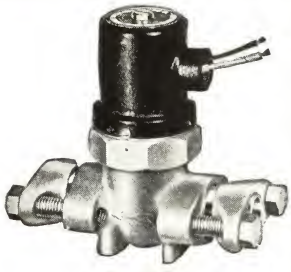
THERMOTOR GAS VALVE NO. 566

The No. 566 Valve combines in one compact unit all of the functions of a control system for gas heating—Steam (type S), Hot Water (type W) or Furnace (type F) installations. All functions, except room temperature control, operate independently of electric current. Breakage or damage to pilot safety closes the valve—operation is non-electric. Accurate throttling of gas supply according to steam pressure, water temperature or furnace bonnet temperature. Adjustment for low limit throttling flow, quickly and easily obtained. An increase in pressure or temperature above the set throttling point closes the valve with a snap action. On decrease the valve opens with a snap action. Absolutely quiet in operation. In case of current failure, valve closes—can be operated manually until resumption of current. During manual operation or current failure, the throttling control, limit control and pilot safety control are all operative since they function independently of current. Applicable to all gases—natural, manufactured or mixed. When used with the No. Two-Eleven Thermostat—page 1—a complete control system for automatic gas burners is provided.



SOLENOID VALVE 686

The No. 686-R is a heavy duty, large capacity valve for use with all non-corrosive refrigerants or water. Pilot operated type, quiet in operation. Requires a minimum pressure drop of 1¾ lbs. to operate and will open against 200 lbs. maximum pressure. Valve is normally closed and draws 15 watts when open. Inlet and outlet flanged, with companion flanges and interchangeable sweat connection tail pipes regularly supplied. ½ in. or ⅝ in. orifice available. ½ in. orifice valve supplied with any of the following sweat connection tail pipes: ⅜", ½", ⅝", ¾" or ⅞" O.D. tubing. ⅝" orifice valve connections: ½", ⅝", ¾", ⅞", 1" or 1⅛" O.D. tubing. When ordering specify inlet and outlet connections, orifice, voltage and cycle. Shipping weight 8 lbs.



No. 686-R

Also available under Stock No. 686 with ½" or ¾" female I.P.T. inlet and outlet connections.

SOLENOID VALVE NO. 683-R3

The No. 683-R3 is used as a shut-off in liquid or suction lines for Air Conditioning and Refrigeration work. It draws approximately 15 watts during operation period. Quiet in operation. Kick-off spring insures shut-off. Furnished with $\frac{3}{16}$" or $\frac{7}{32}$" orifice and ⅜" I.P.T. inlet and outlet connections. Shipping weight 3 lbs.



No. 686-R3

No. 683-W3 has same specifications and is designed for water service such as automatic humidifiers.

691 DIFFERENTIAL THERMOSTAT



The 691 is the complete answer to overcooling of a building equipped with summer air conditioning. This instrument automatically controls the operation of the cooling unit to maintain a specified difference between indoor and outdoor temperatures. This difference is regulated in accordance with the A.S.H.V.E. Comfort Curve which extensive research has found to give maximum comfort.

In maintaining this temperature relationship, summer air conditioning assures not only comfort but the most healthful conditions obtainable, and it prevents the extravagance of over-cooling.

THERMOSTATIC EXPANSION VALVES

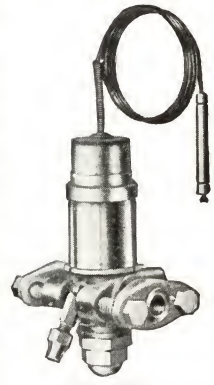
"Detroit" Expansion Valves are used in the liquid lines to evaporator coils of refrigeration and air conditioning installations. They operate at variable back pressures to keep them completely refrigerated regardless of the variations in load. Power elements are charged with gas at a definite pressure instead of a liquid. By this means the valves remain tightly closed whenever the suction pressure rises above a specified point, regardless of the temperature of the thermostatic bulb. This prevents overloading the motor when starting up a warm system or when operating under excessive temperature conditions. Also provides instant action with no temperature lag. Capacities range from ⅓ ton to 20 tons with Freon or sulphur dioxide and from ½ ton to 33 tons with methyl chloride.



No. 673

Special alloy bellows resists corrosion, is highly flexible for maximum sensitivity. High resistance to fatigue assures maximum service life. Balanced bellows construction permits consistent superheat setting over wide pressure range.

Delubaloy needles and seats are made of especially hard alloy that resists corrosion and wear—assures tight shut-off and gives years of extra service life. Self-aligning needle construction eliminates wear due to side thrust and wiping action against the seat and prolongs service life of the valves.



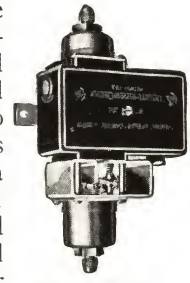
No. 783

NO. 250 SERIES REFRIGERATION CONTROLS

The No. 250 Series Refrigeration Controls are supplied in several different models for various refrigeration and air conditioning requirements. They are line voltage type switches having permanent magnets at the contacts to provide a quick "make" and "break" of the circuit and prevent excessive arcing. All models are enclosed in a black Bakelite case with removable cover. Both the operating range and differential adjustments are quickly and easily made.

Model RB-3 is of the pressure type and controls the refrigeration compressor from pressure changes in the suction line. Model RIBA (illustrated) is similar except for the addition of a high pressure cut-out which stops the compressor in the event of excessive high side pressures.

Other models designed to control the refrigeration compressor from temperature changes are also available. Model RL-1 has ten feet of flexible tubing and a temperature range of either—30° to plus 50° or 0 to 60°. Model RIBL is similar except with the addition of a high pressure cut-out. Models RN-1 and RIBN are like models RL-1 and RIBL except that they are provided with coiled tubing type bulbs for air temperature control.



Model RIBA

MEMORANDA

DUNHAM

SUB-ATMOSPHERIC STEAM

Heating Systems

and

Heating and Air-Conditioning Units

COMFORT CONDITIONING by DUNHAM

C. A. DUNHAM COMPANY CHICAGO

THE DUNHAM *Sub atmospheric* STEAM HEATING SYSTEM

Dunham Sub-Atmospheric Steam Heating is provided by a simple two pipe heating system in which all essential functions of circulation, distribution and control are coordinated to provide economical, satisfactorily balanced heating.

Provides an IMPROVED MEANS for Controlling the Heating of a Building

Reliable temperature control for a heating system involves more than the mere control of the RATE of heat supply. The varying supply of heat must be distributed through the heated space equally, automatically, continuously.

The Dunham Sub-Atmospheric System performs all of these functions quickly and economically. Desirable building temperatures are automatically maintained under varying weather conditions, and at a control station which may be located in the boiler room, remote readings of building temperatures and operating conditions may be taken.

The Control Is Fully Automatic*

The Dunham Sub-Atmospheric System provides the radiators with steam at a temperature and in the amount required to meet heating demands of widely varying weather conditions. Beginning with a heat output obtained by steam circulation at a pressure of 2 pounds and a temperature of 218 degrees F., or more, as required, the output is progressively reduced according to the demands of the weather by a reduction in the rate of steam admission to the system, which automatically causes a reduction in steam pressure and temperature so that steam may be circulated at varying temperatures down to about 133 degrees F.

Further reduction in heat output is obtained by partial filling of radiators with sub-atmospheric steam until the point is reached at which the need for heat ceases and the supply of steam is completely shut off.

A positive continuous circulation is maintained as a fundamental function of the system. This tends to maintain unusually constant temperature levels throughout the building.

You Will Obtain Distinctive Control and Economy Features from the Dunham Sub-Atmospheric System

The vitality, efficiency and health values of controlled heating, while readily demonstrable in tests, are normally regarded as intangibles difficult to evaluate.

The Fuel Saving which results from temperature control is, in contrast a tangible advantage which can be measured in terms of dollars required to buy steam, oil, gas or coal.

The most conclusive and unassailable evidence, however, is the "before" and "after" data and tenant reaction from buildings heated by ordinary systems and "changed over" to Sub-Atmospheric Heating. In percentages these annual savings run from 25 % to 50 % and in dollars they represent a rather large fraction of the cost of converting the installation.

Economies may be summarized:

1. Control of building temperature extending over the entire heating season with accuracy under mild weather conditions.
2. Control of heat loss from supply piping.
3. No upset of system control by abnormal demands such as opening windows.
4. Normally no injurious corrosion is encountered in low pressure steam heating systems. Where there is such corrosion, Sub-Atmospheric Steam Heating has a distinct value. In Sub-Atmospheric steam the rate of penetration by corrosion in the piping system is reduced approximately 50 % from that obtaining in systems operated at atmospheric pressure. Data on tests conducted at the Michigan College of Mining and Technology will be found in the Proceedings of the A. S. H. V. E.

The Sub-Atmospheric System Is Equally Successful in the Small as Well as Large Commercial Building

The fact that Dunham Sub-Atmospheric Steam Heating is giving satisfying heat comfort today in buildings whose requirements range from the whole group of skyscrapers of Rockefeller Center in New York and of commercial buildings in practically every state of the Union to those of fine large private residences, affords sufficient proof of its complete adaptability to heating requirements.

LET A DUNHAM SALES ENGINEER DISCUSS YOUR PRESENT AND FUTURE PROJECTS WITH YOU

The accumulated experience of the Dunham organization is put at the disposal of the Architect, the Heating and Ventilating Engineer and other officials. This cooperation is available for Modernization Work, as well as for new construction in industrial, commercial, housing and other projects.

Consult your classified telephone directory for address of "Dunham Heating Service" in your city, and discuss your problems with the Dunham Sales Engineer. These specialists are ready to give valuable service in selecting the correct Dunham System and Appliances for any type of building. If there is no Dunham representative in your city, write to the Chicago office for address of your nearest Dunham Sales Engineer.

*Can also be installed for manual control.

C. A. DUNHAM COMPANY

Administrative and General Offices, 450 E. Ohio St., Chicago, Ill.

FACTORIES—Marshalltown, Iowa; Michigan City, Indiana.

CANADA—C. A. Dunham Co., Ltd., 1523 Davenport Rd., Toronto, Ontario.

ENGLAND—C. A. Dunham Co., Ltd., Morden Road, London, S. W. 19.

Consult your local classified telephone directory for address of "Dunham Heating Service" in your city.

SALES ENGINEERS' OFFICES

Albany, N. Y.
Allentown, Pa.
Atlanta, Ga.
Baltimore, Md.
Bangor, Maine
Birmingham, Ala.
Boston, Mass
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Champaign, Ill.
Chattanooga, Tenn.
Chicago, Ill.
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Clarksburg, W. Va.
Cleveland, Ohio
Columbus, Ohio
Dallas, Texas
Davenport, Iowa
Denver, Colo.
Des Moines, Iowa
Detroit, Mich.
Duluth, Minn.
El Paso, Texas
Grand Rapids, Mich.
Greenville, S. C.
Harrisburg, Pa.
Houston, Texas
Huntington, W. Va.
Indianapolis, Ind.
Joliet, Ill.
Kalispell, Mont.
Kansas City, Mo.
Kingston, Pa.
Little Rock, Ark.
Los Angeles, Calif.
Louisville, Ky.
Madison, Wis.
Memphis, Tenn.
Michigan City, Ind.
Milwaukee, Wis.
Minneapolis, Minn.
Missoula, Mont.
Newark, N. J.
New Haven, Conn.
New Orleans, La.
New York, N. Y.
Oklahoma City, Okla.
Omaha, Nebraska
Philadelphia, Pa.
Pittsburgh, Pa.
Portland, Oregon
Poughkeepsie, N. Y.
Providence, R. I.
Richmond, Va.
Rochester, N. Y.
St. Louis, Mo.
Salt Lake City, Utah
San Antonio, Texas
San Francisco, Calif.
Seattle, Wash.
Spokane, Wash.
Springfield, Mass.
Syracuse, N. Y.
Tampa, Fla.
Toledo, Ohio
Trenton, N. J.
Washington, D. C.
White Plains, N. Y.
Wichita, Kansas

THE DUNHAM SUB-ATMOSPHERIC HEATING SYSTEM

Principles & Fundamentals

Steam Volume and Temperature Variation resulting from variation of Pressure are the fundamentals of the Sub-Atmospheric System.

Control of the temperature of the steam in the radiators is accomplished by controlling the pressure or vacuum of the steam in the supply piping and radiators. This basic fundamental of the Dunham System is based on the "Properties of Vapors." Refer to your "Steam Table."

Again, the heat output of the radiation is further reduced by the partial filling of radiators with sub-atmospheric steam, the amount of partial filling being reducible to the point at which the need for heat ceases entirely.

These two fundamentals form the basis upon which the system was developed. See illustration below.

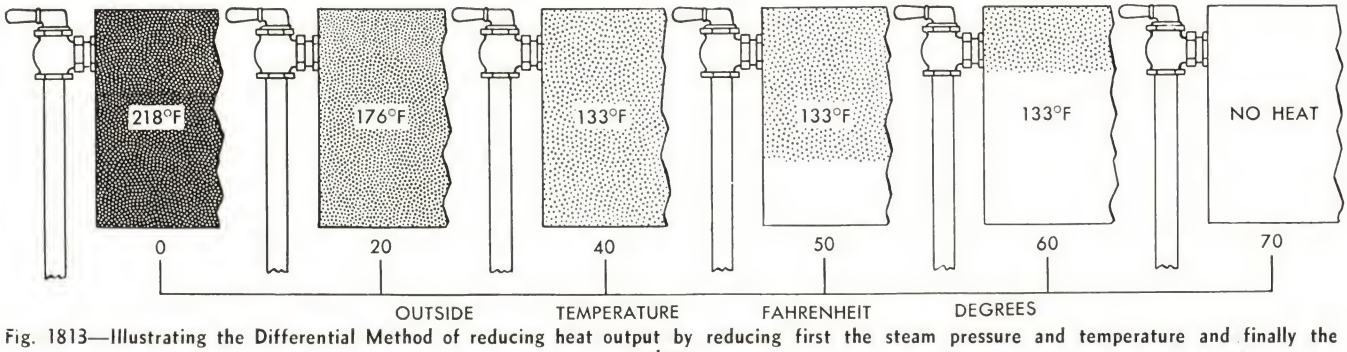


Fig. 1813—Illustrating the Differential Method of reducing heat output by reducing first the steam pressure and temperature and finally the volume.

APPLICATION OF THE ABOVE PRINCIPLES

The application of these principles results in a practical heating method by which building operators maintain a balance between heat losses from buildings and heat supply from the heating system. This is accomplished by delivering steam uninterruptedly to the radiators at pressures and temperatures in varying amounts in response to weather demands.

In order to appraise the full value of Differential Heating, it is necessary to understand both the operation and function of each part of the system and the result of their cooperative action. The simplicity and effectiveness of the Dunham Sub-Atmospheric Heating System is attained through this coordinated action.

The Resistance Thermometer Principle

Resistance thermometers are based on the property of those metallic conductors whose electrical resistance varies with variations in their temperature. They are widely used (in conjunction with a Galvanometer) to measure and to indicate temperatures or temperature changes. They are uniquely sensitive, accurate and long lived, operating *without* moving parts or wear.

Measuring Heat Demand

The demand for heat is measured by the resistance thermometer principle. Variations in temperature at control points create variations in electrical resistance in control circuits. The supply of heat is varied with the demand by using these variations in electrical resistance through Wheatstone Bridge circuits to actuate a Control Valve governing steam supply. The distribution of the steam is automatically maintained under all variations in supply by the coordinated functioning of the Traps, Pump, Differential Controller and Regulating Orifices at radiator inlets.

THE FUNCTION OF THE PARTS

The Control Valve regulates the admission of a continuous flow of steam into the heating main as called for by the room thermostat. Modifications in the rate of heat supply are made in accord with the building heat requirements determined by the thermostat. Where more than one thermostat is used, they are located in relation to the height and exposure of the building or heating zone and are interconnected at the terminal box to enable them to measure the average heat requirements and give average temperature regulation.

The Control Panel is the operating station at which the control settings are made and from which remote readings of room temperatures and control valve openings may be taken. See pages 6 and 7 for detailed description.

Radiator and Drip Traps prevent steam passage while permitting condensate and air to flow to the return piping. Throughout the entire range of pressure and vacuum variation, they release the air and condensate from radiators and steam lines and prevent the escape of steam into the return piping.

To provide the range of vacuums under which this system functions, a Differential Vacuum Pump is provided that is amply capable of producing and maintaining the necessary wide range of vacuums. This pump also operates to handle the condensate from the system. This water gravitates to an accumulator tank from which it is lifted and returned to the boiler by the pump.

Ordinary heating systems have only "Push" to secure circulation. Dunham Sub-Atmospheric Steam Heating has "Push" and "Pull." The controlled steam flow, or "Push" pressure, established in the supply side by the rate of steam admission through the Control Valve, and the "Pull" pressure (vacuum) in the return line both act upon the Differential Controller which starts and stops the vacuum pump to maintain the return pressure continuously lower within fixed limits than the supply pressure under all rates of steam admission to the system.

In brief, the Dunham Sub-Atmospheric Heating System provides for:

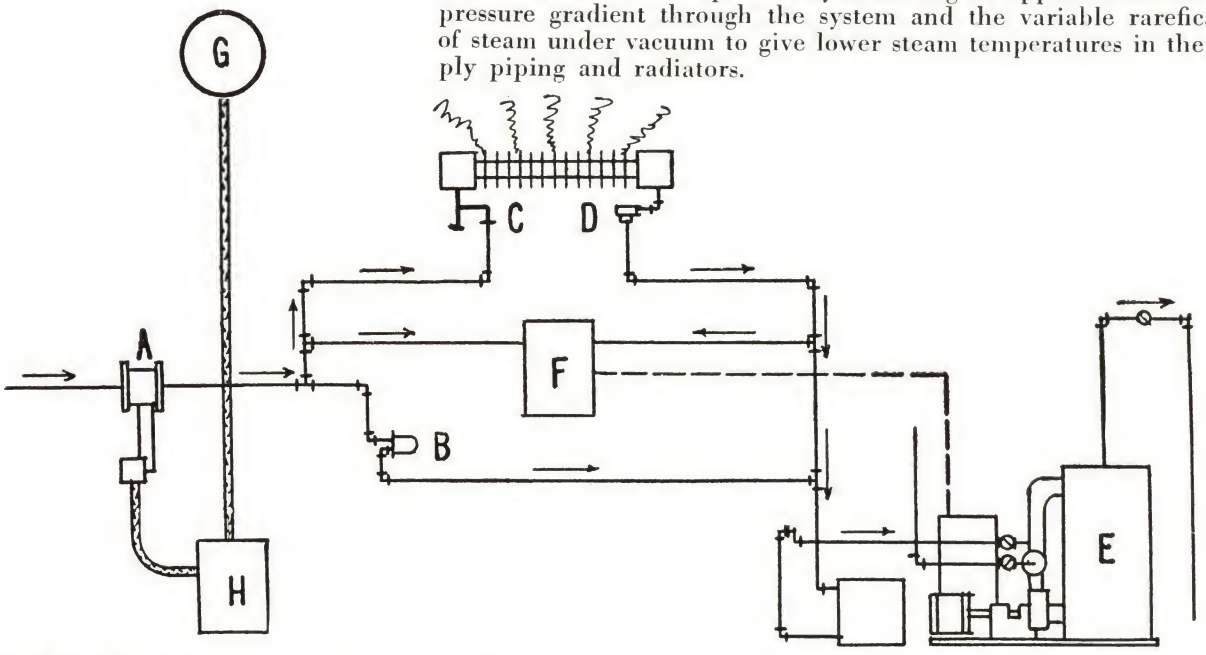
1. The maintenance of positive, continuous steam circulation, with complete venting of air and removal of condensate, and with no short-circuiting of steam from supply to return piping.
2. The proportional distribution of steam to each unit of radiation under all rates of supply.
3. The control of the rate of heat output from system in accord with the variable rate of heat requirement *caused* by outside temperatures, wind, sun, cloudiness and moisture and modified by the heat stored in building (thermal capacity) and rate of heat transfer through the building walls.

THE DUNHAM SUB-ATMOSPHERIC STEAM HEATING SYSTEM

A Coordinated "System" Solution OF THE PROBLEM

OF SATISFACTORY HEATING

This has been accomplished by obtaining an approximate constant pressure gradient through the system and the variable rarefication of steam under vacuum to give lower steam temperatures in the supply piping and radiators.



The cycle of steam flow is shown above and the units are illustrated below.

A—The Control Valve supplies steam continuously. The rate varies but the supply is uninterrupted.

B—Drip Traps keep steam mains and riser free from water and air and return mains free from steam, making circulation rapid and noiseless.

C—Radiator inlet valves with externally adjustable or internally fixed orifices at each radiator inlet give balanced steam distribution throughout the building.

D—Radiator Traps allow air and water to leave radiators and prevent steam from entering the returns under the entire range of sub-atmospheric pressure employed.

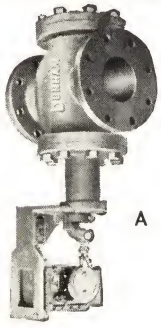
E—The Differential Pump is specially designed to create and maintain steam circulation under sub-atmospheric pressures.

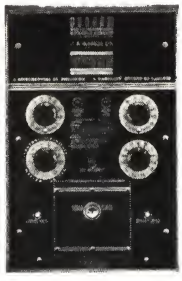
F—The Differential Controller governs Pump operation to maintain return line pressures lower than supply line pressures (by a fixed range) for all rates of steam supply through Control Valve, thus insuring equalized circulation which is positive, continuous and at substantially constant velocity.

G—Resistance Type Temperature Sensitive Equipment evaluates heat demand in the building. This equipment has no moving parts, nothing to wear out, clog or get out of adjustment.

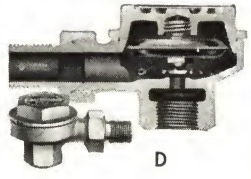
H—The Control Panel governs Control Valve Operation, centralizing all control adjustments and additionally measures and indicates the conditions it governs.

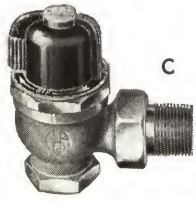
Units of Control

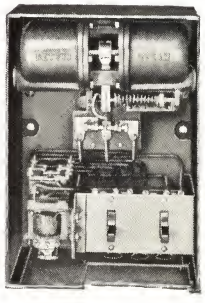

A


H

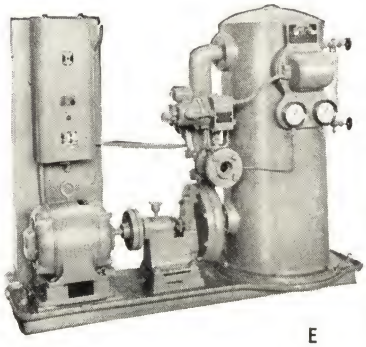

B


D


C


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G


E

Zone Control

To insure a high degree of precision in temperature regulation and the lowest possible heating costs, it may be advisable to divide larger buildings into a number of heating zones, each having an individual system of supply piping and each being controllable in accordance with the particular heat requirements of the section it serves.

This practice is called zoning. It is used in buildings serving more than one purpose, such as an office building containing stores or a theater; in institutional buildings housing various departments and services with varying temperatures and time requirements for heat; and in tall buildings with sectional variations of wind and sun exposure and subject to the phenomena of "stack (chimney) effect." Obviously each zoning project must be dealt with individually. This should be done in the light of the factors of service requirements, occupancy, exposures (wind and sun) and the construction, size and shape of the building.

When a Sub-Atmospheric installation is zoned, each zone is regarded as an individual system. Each zone requires a separate system of piping. Each also requires a separate Control Valve and the proper regulating equipment. Where the radiation load of two or more zones does not exceed the capacity of a single Differential Pump, one pump may serve a plurality of zones. Where one zone comprises blast radiation, a separate pump is usually required for this load.

Control FOR THE DUNHAM SUB-ATMOSPHERIC HEATING SYSTEM

The RT (Resistance Thermometer) control equipment is available in three models:

(1) The MODEL T CONTROL
(2) The MODEL RS CONTROL
(3) The TRS AND TRST CONTROL

The available models of RT Control (T, RS, TRS, TRST) are made up of three or more of the devices described below. The designs have reduced the problem of control in the Sub-Atmospheric System and have provided greater stability, accuracy and responsiveness. Smoothness of action is provided by the design of the Thermostat, Valve and Panel.

A BRIEF DESCRIPTION OF THE UNITS

The Dunham Control Valve

The advantages of the Control Valve are as follows. The inner valve provides smooth increments of steam flow and prevents sudden surges in this flow. Low voltage reversing motors are used on all sizes and no relay is mounted in the motor housing. The positioning of the Control Valve from the Panel, as required by the thermostatic devices, is accomplished in a unique manner. The valve is a true throttling and proportioning valve, and sudden swings of large magnitude are prohibited by the manner in which it is positioned. After a small change in valve positioning has occurred, the valve is allowed to remain stationary for a short interval before a further change is made. This space of time allows the change to become effective before further positioning is accomplished. Later a further change is made. In other words, the full correction of the Control Valve, as indicated by the thermostatic devices, is not made immediately (which would cause "hunting"). Time intervals are introduced so that the heat output is balanced with the requirements as measured by the thermostatic devices.

The Dunham Thermostat

In the Thermostat there are no moving parts, no contacts to clog, no settings or adjustments, no lost motion, wear or maintenance. These are major improvements from the maintenance viewpoint and for continued satisfactory operation. There is no movement of the thermostatic element, therefore there can be no inertia. Temperature changes immediately affect the Thermostat.

The Thermostat and its mounting plate are adaptable for installing over a standard 2¼x4 in. switch wall box, or directly to the wall with wood screws.

The Dunham Selector

The Selector is a thermostat and is always mounted on the inside surface of a window or transom. It is essentially a resistance thermometer—with no moving parts, contacts, lost motion or wear.

It evaluates heat loss by measuring temperature changes on the inside surface of the pane of glass.

The use of the inner surface of a window rather than the outdoor air has several advantages. A thermostat installed in the outside air is affected by this air temperature only. The temperature on the inner surface of a window is affected by wind velocity and other weather conditions in addition to the temperature of the outside air. This gives a better measure of the heat demand than does the outside temperature only. The Selector also responds to inside conditions, showing lower temperatures when the inside rooms are not up to temperature. This results in an indicated demand greater during the heating up period than after room temperatures have been established.

The Dunham Heat Balancer

The Heat Balancer is also a thermostat and at the same time a control radiator. It functions to insure that the actual heat output of the heating system is in keeping with the demand. It evaluates the heat output by measuring the average rise in temperature of the total air stream passing through a radiator. The steam supply to this radiator is balanced by its regulating fitting to represent the supply to all radiators in the building or zone. The use of resistance thermometers *below* and *above* the convector make possible the measurement of the rise in temperature independent of variations in inlet air temperatures.

The Heat Balancer has no moving parts. It has the same general appearance as an attractive cabinet radiator. The fact that it is complete with its own radiator simplifies the problem of application.

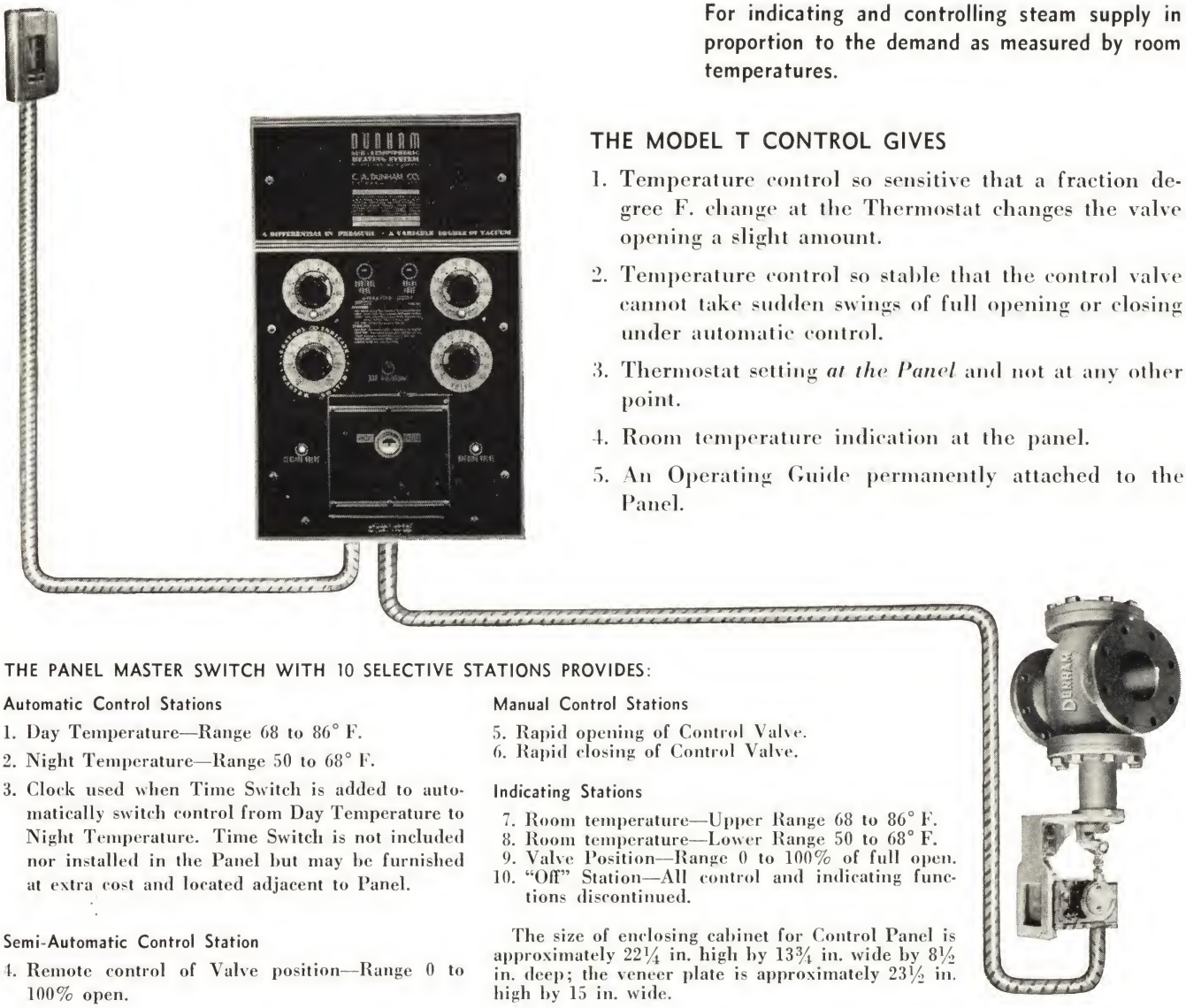
The Dunham Panel

The Panel transmits the changes at the thermostats (the Room Thermostat, the Selector and the Heat Balancer are essentially all a type of thermostat) to the necessary power to position the Control Valve. Here again the effect of inertia is reduced to insignificance. A fraction of a degree change at the thermostat is sufficient to cause the galvanometer relay to function to move the Control Valve a slight amount. The feature which is probably the most attractive to laymen as well as to Architects and Engineers is the fact that the Panel is "alive." It is continually telling a story of what is happening at the different points of the system. Additionally, it has a number of indicating and controlling stations which can be used at the will of the operator to determine room temperatures, valve opening, heat output, etc. The attractive panels have been designed by internationally known industrial designers.

COMBINATIONS OF CONTROL FOR THE DUNHAM SUB-ATMOSPHERIC STEAM HEATING SYSTEM

THE *Model* T Consisting of a Panel, a Control Valve and one or more Thermostats

For indicating and controlling steam supply in proportion to the demand as measured by room temperatures.



THE MODEL T CONTROL GIVES

1. Temperature control so sensitive that a fraction degree F. change at the Thermostat changes the valve opening a slight amount.
2. Temperature control so stable that the control valve cannot take sudden swings of full opening or closing under automatic control.
3. Thermostat setting *at the Panel* and not at any other point.
4. Room temperature indication at the panel.
5. An Operating Guide permanently attached to the Panel.

THE PANEL MASTER SWITCH WITH 10 SELECTIVE STATIONS PROVIDES:

Automatic Control Stations

1. Day Temperature—Range 68 to 86° F.
2. Night Temperature—Range 50 to 68° F.
3. Clock used when Time Switch is added to automatically switch control from Day Temperature to Night Temperature. Time Switch is not included nor installed in the Panel but may be furnished at extra cost and located adjacent to Panel.

Semi-Automatic Control Station

4. Remote control of Valve position—Range 0 to 100% open.

Manual Control Stations

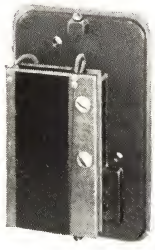
5. Rapid opening of Control Valve.
6. Rapid closing of Control Valve.

Indicating Stations

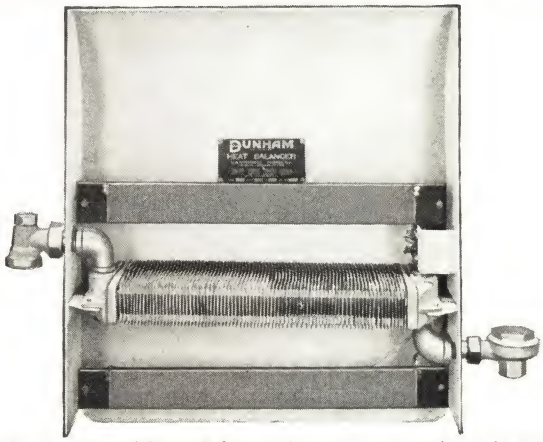
7. Room temperature—Upper Range 68 to 86° F.
8. Room temperature—Lower Range 50 to 68° F.
9. Valve Position—Range 0 to 100% of full open.
10. "Off" Station—All control and indicating functions discontinued.

The size of enclosing cabinet for Control Panel is approximately 22¼ in. high by 13¾ in. wide by 8½ in. deep; the veneer plate is approximately 23½ in. high by 15 in. wide.

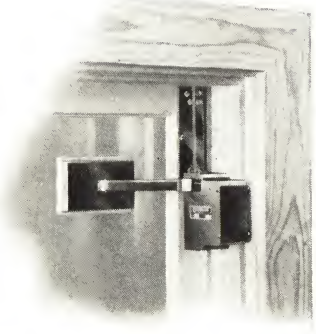
ILLUSTRATIONS OF CONTROL EQUIPMENT USED WITH PANEL AND CONTROL VALVE



Inside view of Thermostat (no moving parts) used with Models T, TRS, TRST



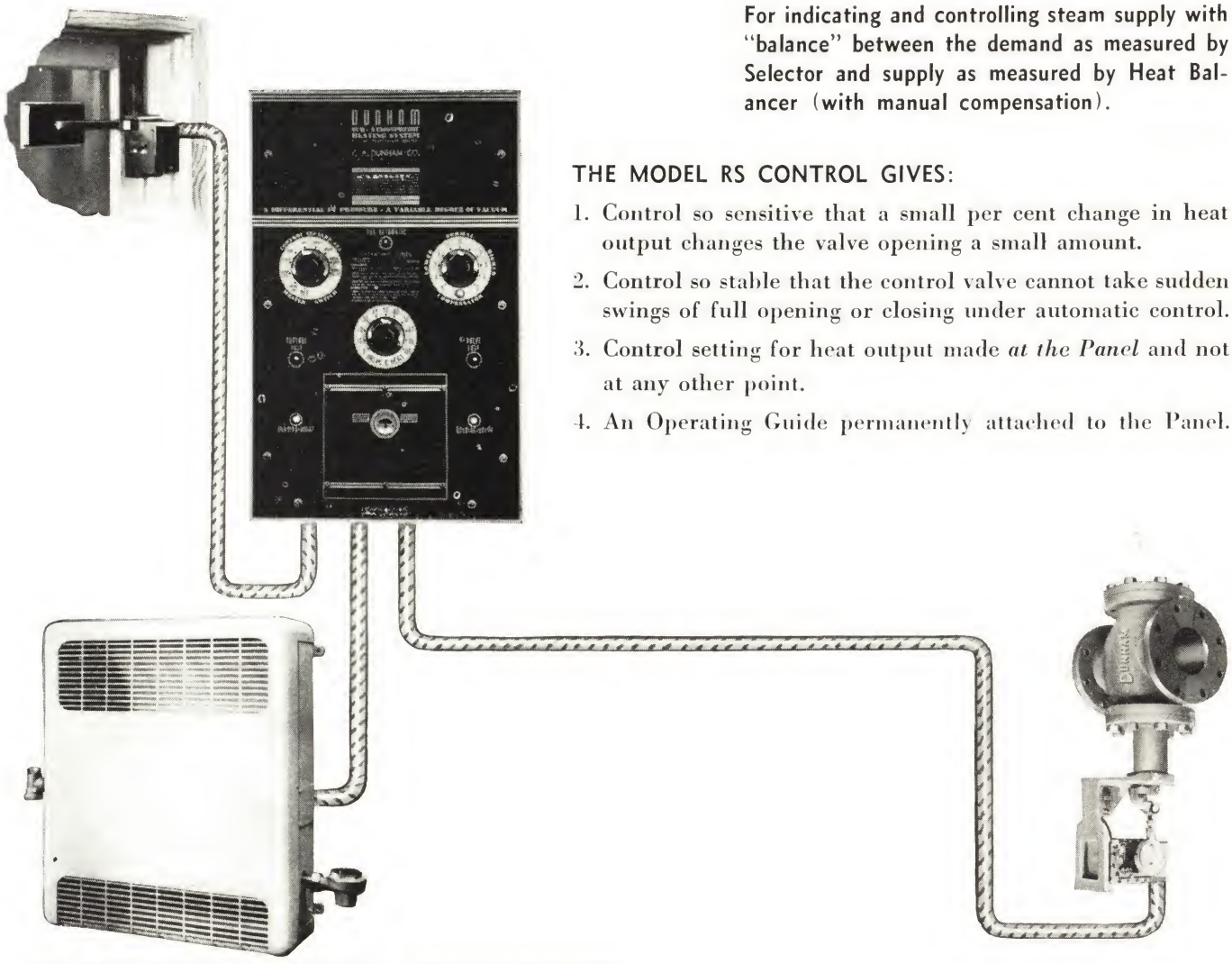
Inside view of Heat Balancer (no moving parts) used with Models RS, TRS and TRST



The Selector (no moving parts within it, but a movable arm to permit opening of window) used with Models RS, TRS and TRST

THE *Model* RS consisting of a Panel, a Control Valve, a Selector and a Heat Balancer.

For indicating and controlling steam supply with "balance" between the demand as measured by Selector and supply as measured by Heat Balancer (with manual compensation).



THE MODEL RS CONTROL GIVES:

1. Control so sensitive that a small per cent change in heat output changes the valve opening a small amount.
2. Control so stable that the control valve cannot take sudden swings of full opening or closing under automatic control.
3. Control setting for heat output made *at the Panel* and not at any other point.
4. An Operating Guide permanently attached to the Panel.

THE PANEL MASTER SWITCH WITH 10 SELECTIVE STATIONS:

Automatic Control Stations

1. Day Control—Normal Heat supply in relation to weather, with manual compensation.
2. Night Control—Reduced heat supply for night operation.
3. Clock used when Time Switch is added to automatically switch control from Day Temperature to Night Temperature. Time Switch is not included nor installed in the Panel but may be furnished at extra cost and located adjacent to Panel.

Semi-Automatic Control Stations

4. Remote Control by Heat Balancer—Range 0 to 100% Heat Output.
5. Remote Control of Control Valve Position—Range 0 to 100% Open.

Manual Control Stations

6. Rapid opening of Control Valve.
7. Rapid closing of Control Valve.

Indicating Stations

8. Heat Output—Range 0 to 100% of maximum.
9. Valve position—Range 0 to 100% of full open.
10. "Off" Station—All control and indicating functions discontinued.

The size of enclosing cabinet for Control Panel is approximately 22¼ in. high by 13¾ in. wide by 8½ in. deep; the veneer plate is approximately 23½ in. high by 15 in. wide.

Models TRS & TRST consisting of a Panel, a Control Valve, a Selector, a Heat Balancer and one or more Thermostats.

For indicating and controlling steam supply in proportion to the demand as measured by room temperatures with maximum and minimum limits established by Heat Balancer and Selector.

Models TRS and TRST are the only controls on the market that provide fully automatic control in response to the effect of outside weather conditions and to building heat-loss.

Added features of TRS and TRST, not obtainable in other models include additional indicating and Controlling Stations; optional Time Switch built into the Panel cabinet; window thermostat; continual checking of actual heat output (by the Heat Balancer) and a means of limiting it to demands of the Selector. Yet, both Selector and Heat Balancer affect the heat supply only when it is not kept within the limits as set by outside weather.

At all times there is an automatic control of the steam supply with a maintained balance between heat supply and demand. At the Panel are 6 pilot lights that continually flash fundamental signals to the operator.

These features insure a most simple, trouble-free operation not previously approached.

A Typical Specification

1. THE GENERAL CONDITIONS governing this work shall be those established as standard by the American Institute of Architects.

2. CONSTRUCTION AND MATERIALS. The heating installation proposed includes the furnishing, delivery and erection of all necessary material, which shall be first class in all particulars and in accordance with the specifications, heating plans and manufacturer's details.

3. INSPECTION. The Contractor shall allow the representative of the manufacturer of the controlled heating system to inspect the installation and shall lend any assistance necessary to expedite and perfect the work.

4. SCOPE OF WORK. The Contractor shall furnish and install a Sub-Atmospheric Steam Heating System in which the distribution and circulation of steam shall be balanced or equalized by means of externally adjustable or internally fired orifices at radiator valves to insure all radiators receiving steam at the same time and in quantities proportional to the size of the radiator, all in accordance with these specifications, the accompanying plans and instructions issued by the manufacturer.

5. PATENTS. The Contractor shall obtain and furnish the owner with a license to install and operate the system specified above under U. S. Letters Patent Nos. 1,644,114; 1,771,077; 1,983,218; 1,802,383 and 1,802,384.

6. BOILER. Steam for the heating system shall be supplied from the boiler plant located as shown on the drawings. The steam boiler shall be a.....with guaranteed rating for at least..... sq. ft. of equivalent direct radiation. It shall be installed upon a suitable foundation in accordance with the boiler manufacturer's instructions. It shall be equipped with all necessary connections and trimmings, including a safety valve set to blow at 10 pounds pressure, a Compound Gauge 15 pounds by 30" vacuum, and a sensitive Damper Regulator and approved boiler feeder or other adequate means to insure proper boiler water line at all times. (Omit Regulator on gas-fired and automatic oil-fired installations.)

7. SMOKE PIPE. Connect boiler to chimney with suitable black iron pipe ..... gauge. Size to be as recommended by Boiler Manufacturer. Smoke pipe must be provided with hand stop damper. (Omit damper on gas and oil-fired installations.)

8. AUTOMATIC CONTROL EQUIPMENT. Steam mains shall be run as indicated on the drawings. The steam main to each zone shall be provided with an electrically operated control valve of the throttling and proportioning type. The control valve shall function as an integral part of a heating system capable of circulating steam at variable sub-atmospheric pressures and temperatures and simultaneously providing continuous steam flow to the system. Control valves shall be flanged and of a size specified by manufacturer of the control equipment.

Note: Use either paragraph 9 (Model T), 10 (Model RS) or 11 (Model TRS) as required.

9. Each control valve shall be electrically connected to one, two or more approved indoor thermostats located at various suitable points throughout the zone under control, so connected that the resultant control is the equivalent of a single thermostat actuated by the average of the temperatures at the various thermostat locations. The thermostatic control instruments shall operate on the resistance thermometer principle. They shall be located where recommended by the manufacturer of the control system, and approved by the Architect.

At the central control operating station located as designated by the Architect and/or Engineer an electrical control panel shall be furnished and suitably mounted for—(A) Automatic control of the steam supply by room thermostats; (B) Manually decreasing the temperature to be maintained at the thermostats at night; (C) Manually increasing or decreasing the temperature to be maintained at the thermostats (Day or Night); (D) Manually positioning the control valve at any per cent of its maximum opening; (E) Indicating the temperature at thermostat locations; (F) Indicating the per cent of control valve opening; (G) Indicating by pilot lights when the control valve is opening or closing; (H) Opening or closing the control valve for emergency.

10. Each control valve shall be electrically connected to an approved thermostat which is to be located on the inner surface of a window glass and to an approved heat-rate thermostat which shall consist of a control radiator equipped with temperature coils above and below the heating element. It shall not be used as heating surface but only as a measure of the heat output of the system. The thermostatic control instruments shall operate on the resistance thermometer principle. They shall be located where recommended by the manufacturer of the control equipment, and approved by the Architect.

At the central control operating station located as designated by the Architect and/or Engineer an electrical control panel shall be furnished and suitably mounted for—(A) Automatic control of the steam supply as measured by the heat-rate thermostat and demands as measured by the window thermostat; (B) Manually decreasing the heat output for night operation; (C) Manually increasing or decreasing in variable amounts the quantity of steam to the radiators as required by abnormal conditions or for rapid heating up; (D) Manually positioning the control valve at any per cent of its maximum opening; (E) Manually controlling the heat output of the system at any per cent of its maximum capacity; (F) Indicating the actual heat output of the system in per cent of its maximum capacity; (G) Indicating the valve opening in per cent of its maximum opening; (H) Indicating by pilot lights when the control valve is opening or closing; (I) Opening or closing of the control valve in emergency.

11. Each control valve shall be electrically connected to one, two or more approved indoor thermostats, one approved thermostat to be mounted on the inside surface of a window glass and one approved heat-rate thermostat which shall consist of a control radiator equipped with temperature coils above and below the heating element. It shall not be used as heating surface but only as a measure of the heat output of the system. The indoor thermostats are to be located at various suitable points throughout the zone under control, so connected that the resultant control is the equivalent of a single thermostat actuated by the average of the temperatures at the various thermostat locations. The thermostatic control instruments shall operate on the resistance thermometer principle. They shall be located where recommended by the manufacturer of the control system, and approved by the Architect.

At the central control operating station located as designated by the Architect and/or Engineer an electrical control panel shall be furnished and suitably mounted for—(A) Automatic control of the steam supply by the indoor thermostats with continued checking of the actual heat output as measured by the heat-rate thermostat and limiting it to the maximum or minimum demand as measured by the window thermostat; (B) Manually decreasing the temperature to be maintained at the room thermostat locations at night; (C) Manually increasing or decreasing the temperature to be maintained at the thermostat locations (Day or Night); (D) Manually positioning the control valve at any per cent of its maximum opening; (E) Manually controlling the heat output of the heating system at any per cent of its maximum capacity; (F) Indicating the temperature at the thermostat locations; (G) Indicating the actual heat output of the system in per cent of its maximum capacity; (H) Indicating the control valve opening in per cent of its maximum opening; (I) Indicating by pilot lights when the control valve is opening or closing and when the control circuit checks the room temperature, the maximum and minimum heat output; (J) Opening and closing the control valve in emergency.

12. The Contractor is to supply a complete Sub-Atmospheric Heating System, including electric wiring, as well as all fuses and switches and electrical connections to power sources where required, all in accordance with manufacturer's instructions, these specifications and local regulations. The power supply for all equipment shall be furnished by extending separate circuits to nearest house panel. All wiring carrying less than 30 volts shall be enclosed in cable and each conductor shall consist of No. 18 gauge solid tinned annealed copper wire covered with not less than .012 in. concentric wall of homogenous rubber and a cotton braid, saturated in wax and color coded, individual conductors twisted together and then an overall braid of brown cotton and saturated in wax. Splices in control cable will not be permitted. All wires in cables shall be connected to terminals on racks in cabinets and soldered thereto. All circuits shall be tested and any found faulty are to be replaced or repaired by the Contractor.

13. VACUUM PUMP. Furnish and install on a suitable foundation where shown on the drawings a Vacuum Pump with accumulator tank equipped with float switch. The pump shall have a capacity to handle the maximum load requirements under operating conditions of 20 pounds discharge pressure at the pump.

26 – 36

The suction of pump to be connected to accumulator tank outlet and discharge of pump connected to boiler (or other apparatus) as directed by the Architect and/or Engineer.

The Unit shall be of the assembled type with pump, air exhauster capable of exhausting air up to 25 inches of vacuum without the addition of cooling water, motor, copper-bearing steel float controlled accumulator tank, air separating tank with float, suction strainer, gauge water level gauge and discharge valve, complete with automatic and manual control.

Automatic and manual control shall consist of a controller with duplex switches capable of governing Vacuum Pump operation to maintain a pressure differential between the steam and return piping with vacuum at variable amounts up to 25 inches and with adjustable means for stopping pump at any lesser vacuum, each pump with on and off switches, seamless bronze float, with adjustable float switch controlling the magnetic type automatic starter and with line switch. All electrical equipment shall be enclosed, wired in metal conduit and mounted on the unit by the pump manufacturer.

The pump shall be of the enclosed impeller type, fitted with bronze internal parts, equipped with approved ball bearings and non-corrosive metal shaft, driven by an approved motor of ample horsepower to handle the load requirements and rotating at not more than 1800 r.p.m. Motors shall be wound for the current characteristics available at the project.

The pump shall have a capacity to handle the rated load in square feet of equivalent direct radiation surface under operating conditions within the radiators of 2 or more pounds per square inch gauge pressure to 25 inches of vacuum.

The Vacuum Pump equipment is to be assembled and valved in accordance with manufacturer's drawings.

Return mains shall be connected to the accumulator tank as shown in detail furnished by manufacturer. Lift connections must not be used except between pump and accumulator tank. There must be gravity flow of water and air from all drip and radiator traps and drip points to the accumulator tank.

14. **RADIATION.** Furnish and install concealed radiators (or cast iron direct radiators) of type and size shown on plans.

15. **RADIATOR VALVES.** Each radiator shall be provided with an externally adjustable or internally fixed orifice valve constructed of red-brass composition of the highest grade, rough body, finished trimming, nickel plated all over with ball-joint unions. Valves shall have non-rising stem plastic bonnet handle and multiport valve sleeves. The valve handles shall be constructed of molded plastic composition, and the metal spindle shall be secured with set screw or equivalent, countersunk. Radiator valves shall be "bellows" type, using a series of bronze diaphragms or a bronze bellows arranged to form a metal wall between the inside and outside of valve.

16. Each concealed radiator shall be equipped with an Adjustable Regulating Fitting, or with a Packless Valve and a Regulating Plate in accordance with manufacturer's instructions.

17. All adjustable valves and fittings to be adjusted and regulating plates installed by the Contractor according to manufacturer's instructions after the heating system has been cleaned.

18. **RADIATOR TRAPS.** Each radiator shall be provided at its return outlet with a Thermostatic Radiator Trap of suitable size for satisfactory operation. The outlet of these traps to be connected to the return piping and to be capable of operating efficiently over a range of steam temperatures and pressures of 15 pounds per square inch to 25 inches of vacuum.

Thermostatic traps (½ in. or ¾ in. size) must have cast brass body with ball joint integral union and be of the angle or offset corner pattern, as is shown on plans or specified. Traps are to have finished trimmings and are to be nickel plated.

19. The thermostatic element is to be of the hollow diaphragm construction made of non-corrosive metal and containing a volatile liquid; said diaphragm to be attached to cover and held firmly and definitely in a fixed position so as to be positive in action and free from noise. Thermostatic traps must be nonadjustable and without bypass and must have been tested and adjusted at the factory under working conditions.

20. **FLOAT AND THERMOSTATIC TRAPS.** Float and Thermostatic Traps capable of operating efficiently over a range of steam temperatures and pressures of 15 pounds per square inch to 25 inches of vacuum shall be furnished for all drips on piping and apparatus connected to the vacuum return lines where the maximum load of condensate exceeds 50 pounds per hour.

21. **PIPE AND FITTINGS.** Furnish and erect a system of steam supply and return piping. All piping to have tight connections, be properly supported and graded to insure free and noiseless circulation. Use wrought steel pipe (or wrought iron) and cast iron fittings of standard weight and quality. The ends of all pipes shall be reamed or filed. Use graphite and oil applied to male threads only for making up all pipe joints. Provide for expansion of mains and risers by using loop type expansion joints and swing connections wherever possible. In other cases provide approved all-metal packless expansion joints.

22. All steam tappings in boiler shall be connected full size of tapping into a steam header which shall be dripped to the return header through a bleeder. Springpieces to steam and return mains shall be taken off the top of mains at 45 degrees. On down-feed systems take the springpieces from the bottom of overhead steam main at 90 degrees.

23. The end of each steam main, down-feed riser and drip point shall be drained into return main using a gate valve, strainer and trap as indicated on plans. Each drip shall flow by gravity into the return main. No lift connection shall be used.

24. Grade steam mains, return mains and drip piping ½ in. in 10 ft., down with flow. All steam supply springpieces, offsets in steam risers and runouts to radiators which grade in a direction opposite to steam flow shall in each case be installed not less than one size larger than the vertical pipe to which they connect and graded ½ in. per ft. Grade return springpieces ½ in. per ft.

25. Risers are to be run concealed or in the open as directed by the Architect. All concealed piping must be tested and made tight at 15 pounds water pressure before being concealed and covered.

26. All union connections, flanges, packing nuts on gate and globe valves and on gauge glass of boiler must be drawn up tight to prevent air leakage into system when under a vacuum. This work must be performed after system is completed and while it is working with a vacuum in both steam and return lines.

27. **FLOOR PLATES, SLEEVES.** Furnish approved floor and ceiling plates and sleeves on pipes passing through floors and partitions.

28. **VALVES AND CHECK VALVES.** All shut-off valves in steam and return piping (except radiator inlet valves) shall be gate valves of approved make. Valves 2 in. and under shall be brass; 2½ in. and larger to be iron bodies, brass trimmed; 5 in. and larger shall be flanged. Check valves shall be horizontal or angle swing type of approved make and with light weight brass disc, tested for tightness. Check valves shall be installed where shown on plans or details, and wherever necessary.

29. **PAINTING.** All exposed piping, and parts of boiler and radiators shall be painted as directed by the Architect. The paint must be applied when the entire system is under vacuum.

30. **COVERING.** Cover all steam mains and their springpieces with 4-ply, 1-in. thick asbestos sectional covering secured in place with metal bands. Fittings to be covered with asbestos cement. Cover all steam and return risers and other piping run concealed in outside walls or concealed in partition within 18 inches of outside wall, with 2-ply ½-in. thick asbestos sectional covering. Cover boiler as specified by boiler manufacturer.

31. **FINISHING UP.** After operating several hours thoroughly blow down and clean out the System under 5 lb. steam pressure, wasting condensate to sewer. After this, close valve in steam main and surface, blow off the boiler through safety valve tapping at 5 lb. pressure, supplying make up water constantly, for at least two hours. Then, extinguish the fire, entirely drain the boiler and allow it to cool before filling with fresh water.

32. **TEST.** When System is finished and cleaned, but prior to covering of pipes, it shall be tested for tightness by the Contractor who shall furnish labor and materials for performing the following test: Obtain a vacuum of 15 inches on a cold* system by operating the vacuum pump. Stop the pump. After two hours, there shall remain 10 inches vacuum on the system.

**System considered cold 5 hours after steam was last on system.*

33. **GUARANTEE.** The Heating Contractor shall guarantee the apparatus installed to circulate steam through every radiator without noise, with a vacuum of 15 inches in steam main. If the installation shall fail to accomplish this guarantee by reason of any defect developing within the first heating season due to faulty material or workmanship, the Contractor shall remedy such defect at his expense within reasonable time after notice.

34. **FINALLY.** Nothing herein contained shall be construed to relieve the Contractor from making good and perfect work in all details of construction.

THE DUNHAM *Temperator*

A COMPACT, EFFICIENT AND ATTRACTIVE UNIT FOR HEATING AND COOLING

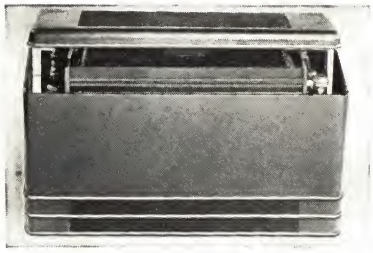
An All Purpose Conditioning Unit

For the home, the store or the office, or wherever healthful temperatures are desired or important, this Dunham Temperator is a logical solution.

Whether for winter or summer service, or for both, the Temperator may be installed with access to outside atmosphere. A uniquely designed damper, operating on ball bearings and subject to either automatic or hand operation, regulates the amount of outside and inside air to be mixed and circulated. Coincidental with the tempering of the air is the humidifying element, which, by increasing or decreasing moisture content in the delivered air, insures healthful humidity. A distinctive feature of Temperator is its adaptability to all Air Conditioning requirements.



EASY AND FULL ACCESS TO ALL PARTS



Top is held by concealed catches

The Temperator for Winter Service

The fundamental basis of winter air conditioning is good heating. For this reason Temperator has been created as a part of the Dunham Sub-Atmospheric Steam Heating System, because this system, by reason of the great range of "cooler" steam temperatures on which it operates in mild weathers, simplifies humidifying problems. But whether used with Sub-Atmospheric Heating or with less modern systems circulating pressure steam or hot water, the unit will in all cases provide clean, properly warmed and correctly humidified air with a comfortably exhilarating yet quiet air movement.

The Temperator for Summer Service

In the summer time, instead of adding heat and humidity as in the winter time, it dehumidifies and cools. The other functions of cleaning and giving air motion as well as supplying a steady stream of fresh air remain the same, and regulating adjustments are available to meet any and all conditions. A special feature lies in the heating and cooling coil which is three times greater area in cooling surface than when used for heating, yet utilizing the same supply and return connections. The change from heating to cooling is made by switching the system from contact with a boiler to a connection with a chilled water supply or a refrigerating unit which may be at a remote point. Three fan speeds add to the adjustment for heating and cooling a given space.

The unit may be adjusted to circulate outside air, a mixture of outside air and inside air, or it may be confined to the recirculation of the inside air alone. This is all accomplished by the adjustable damper. Through regulation of the operation valve and electric switch, it is possible to adjust the temperature of the air to suit the individual preference.



Side cover provides access to valve and damper adjustment lever

Construction Features

The heating and cooling element is constructed entirely of non-corrosive materials.

The tubes and fins are of copper and all castings are of bronze. The entire heating and cooling element design is such as will present a minimum restriction to the flow of air and permits a minimum transfer of heat. As a final guarantee of permanence in service, each element is tested hydrostatically to a pressure of 175 pounds per square inch.

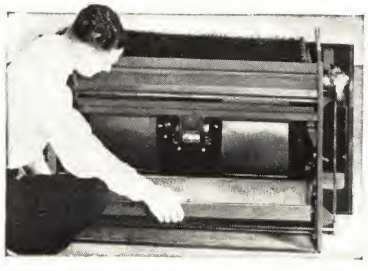
The unit is designed to coincide with the modern motif of interior decoration. Its smooth flowing lines, finished in metallescent brown, are set off with a restrained use of stainless steel. No mechanism or operating controls are visible, yet are easily accessible.



Top right hand cover conceals motor switch

Installation Service

Wherever the Temperator is to be installed, a Dunham trained Engineer will cooperate with you in designing and supervising its installation.



Sides may be tilted out and off for access to water, pans and filter

THE DUNHAM
Sav-T-Heat SYSTEM USING GAS FUEL

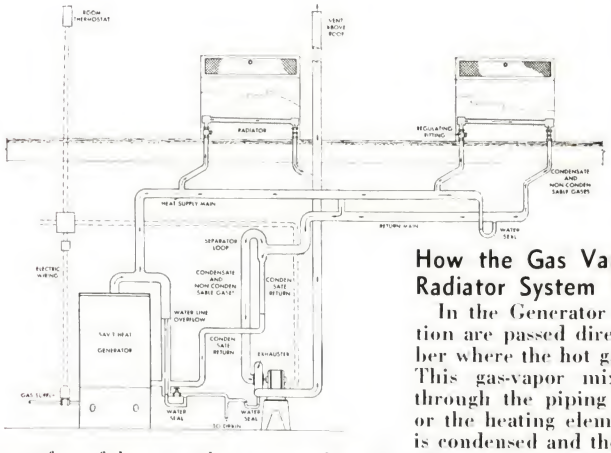
A Practical, Efficient and Economical Method of Residential Heating and Air Conditioning

Sav-T-heat is not just another boiler or furnace. It is a heat generator. In effect, it becomes a heat distributor extracting heat from gas fuel so efficiently and economically that gas heating is no longer a luxury. The system harnesses the products of combustion and *makes unnecessary the need for the large chimney.* It can now be replaced by a small copper vent pipe or flue.

Sav-T-heat utilizes an entirely new principle of heat transfer to obtain high efficiency with little heat waste; it also eliminates costly chimney deterioration which sets limits on the practical efficiencies obtainable from traditional heating plants. This system adds vapor to the products of combustion (after combustion is completed) at a rate which keeps the condensate at sufficiently harmless dilutions at all times, and provides moisture which flushes the entire system continuously of impurities when it is in use.

Sav-T-heat may be installed as an air conditioning system, as a vapor radiator system, as a hot water system or a combination of these. The same high efficiencies are obtainable with each type of system.

Time and laboratory tested. Laboratory test procedure is important in making efficiency and other tests, but actual seasonal operating conditions must be duplicated as far as possible. Sav-T-heat has not only been tested by many laboratories where efficiency up to 97% have been found, but has been in use for a number of heating seasons actually heating a great many homes with long time efficiencies commonly found in the 90% range.





How the Gas Vapor Sav-T-heat Radiator System Functions

In the Generator the products of combustion are passed directly into a mixing chamber where the hot gases take up water vapor. This gas-vapor mixture is then conveyed through the piping system to the radiators, or the heating elements, where the moisture is condensed and the gases are cooled by the transfer of heat to the surrounding air. The condensate and the cooled gases then pass into the return piping. The condensate is returned to the water jacket of the Sav-T-heat Generator and the non-condensable gases pass to the exhauster which discharges them through a flue to the outside. The circulation in a complete system is shown on the schematic diagram. The exhauster "draws" upon the Generator through the system giving this circulation as well as maintaining the draft upon the combustion chamber.

Volume Water Heating with Sav-T-heat. See detail ⇒

This hot water type Sav-T-heat Unit is ideally suited to large volume water heating for apartment buildings of medium size as well as medium size office buildings.

Under constant operation it is possible to obtain 100 Gal. of water per hour average—with 100° rise in temperature delivered to the storage tanks with typical Unit efficiencies in the 90% range.

The Sav-T-heat Unit may be connected in parallel with other hot water heating means. Where extra capacity is required above that of one generator, additional Sav-T-heat Units may be connected in parallel to care for such loads.

Conversion Type Sav-T-heat for Use on Hot Water Heating System

The Hot Water Type Save-T-heat Unit as constructed may be used on changeover existing low temperature hot water home heating systems.

The Hot Water Type Sav-T-heat Unit consists of a standard Sav-T-heat generator and exhauster with a twin coil heat exchanger mounted on top of the generator surrounded by a jacket of the same width as the generator—making a unit standing on the floor approximately six feet high and eighteen inches diameter.

The unit is highly efficient because it is well insulated and has controlled combustion. There is no draft over the water heating surfaces when the gas burner is off. Natural chimney draft cools other types of heating units and thus waste heat up the chimney. Excessive up-draft or down-draft does not affect Sav-T-heat through this small 2 in. vent pipe.

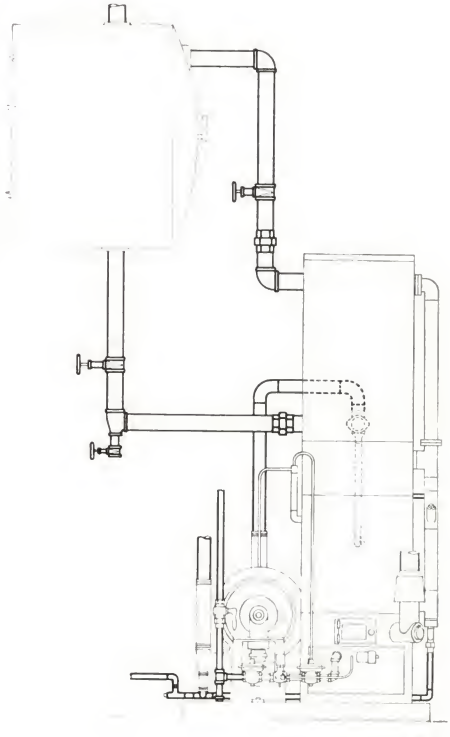


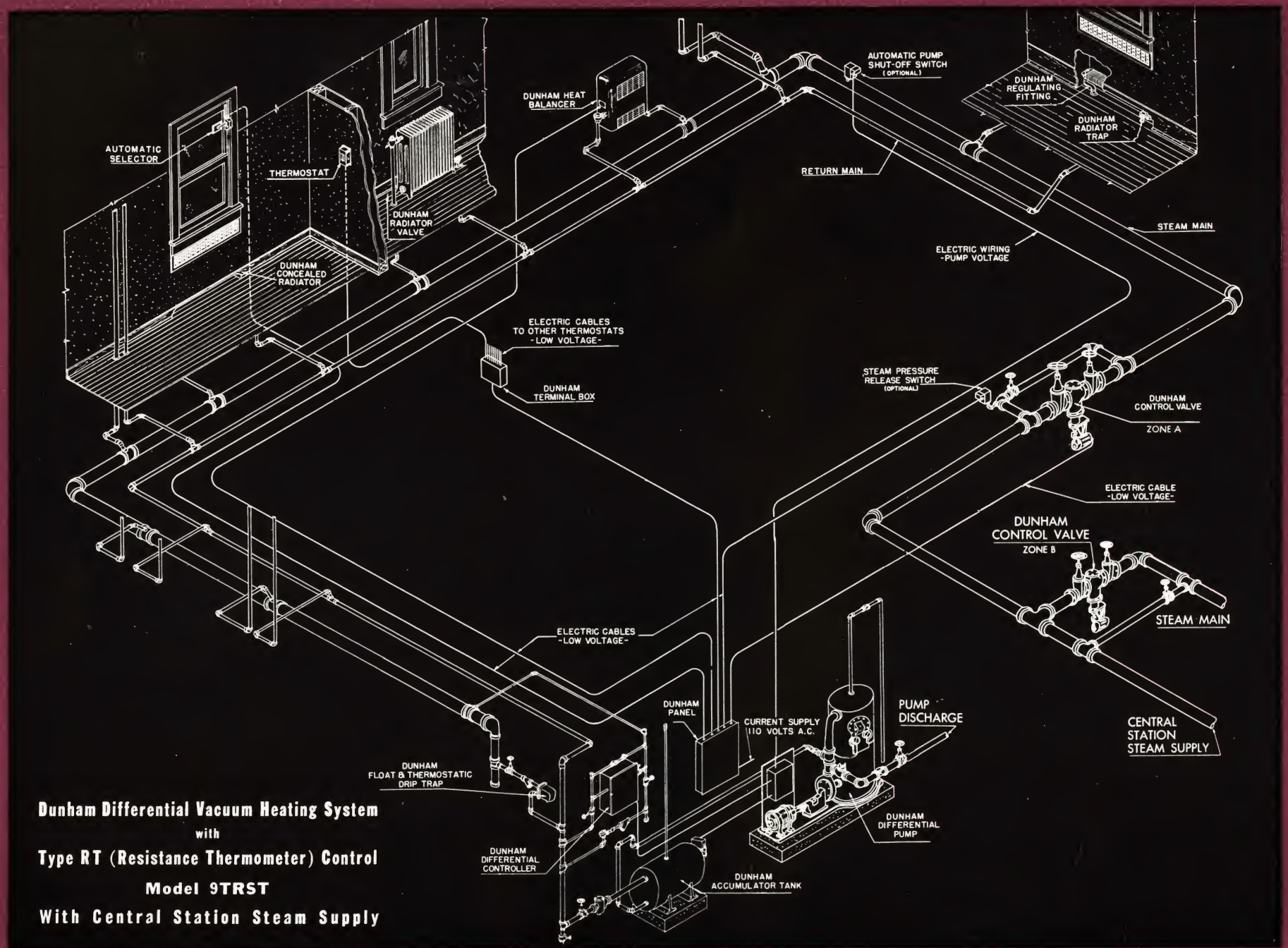
Sav-T-heat as a Comfort Conditioning System

The Sav-T-heat System provides winter and summer air conditioning. It makes available to the home the comfort of air conditioning found in commercial installations such as theaters, office and public buildings.

In winter service Sav-T-heat Conditioners clean the air, heat it to a comfort level, humidify it (that is, charge it with the proper degree of moisture content), and deliver it evenly and consistently with the greatest economy.

In summer service the air conditioner can be used to ventilate the home. At night the cooler outside air can be drawn in through the filters, and circulated clean and cool, through the rooms. In the day time cool air from the basement can be circulated. Additionally, chilled water may be circulated through the coil (used for heating in winter service) providing cool and dehumidified air. A simple means converts the copper heating coil into a cooling coil.





Dunham Differential Vacuum Heating System

with

Type RT (Resistance Thermometer) Control

Model 9TRST

With Central Station Steam Supply

SECTION 26

CONTINUED ⟶

THE FULTON SYLPHON COMPANY

Manufacturers of Sylphon Automatic Temperature Controlling Instruments and Packless Expansion Joints

KNOXVILLE, TENN.

SALES REPRESENTATIVES IN PRINCIPAL CITIES

Products

HOT WATER SUPPLY: Temperature Regulators for storage water heaters, Thermostatic Water Mixers, Steam-Water Mixers. REFRIGERATION: Regulators for Control of Refrigerating Rooms and Boxes, Drinking Water Cooling Systems, etc. AIR CONDITIONING: Automatic Radiator Valves (both self-contained and electric types), Temperature Regulators for Duct Type Heating Systems, Unit Ventilator Controls, Unit Heater Controls, Thermostats, Damper Motors. EXPANSION JOINTS: Packless Expansion Joints for Heating and Plumbing Risers. PRESSURE REGULATION: Pressure Reducing and Regulating Valves.

General Information

Fulton Sylphon Products depend upon the famous Sylphon Metal Bellows for their superior, trouble-free service and long life.

Over thirty-five years ago, THE FULTON SYLPHON COMPANY originated this bellows—a precision-built, seamless, jointless "miracle in metal."

By continuous engineering study and intimate contact with heating and refrigeration problems, this Company has used this efficient, practically indestructible bellows in the development of a line of temperature control and heating specialties known today as a standard of quality.

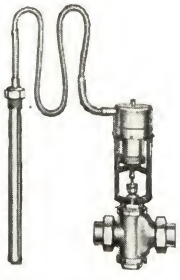
In attaining and maintaining this leadership, THE FULTON SYLPHON COMPANY'S plant has been extended until today it is one of the largest in the world, specializing in the manufacture of this type of equipment.

Every phase of the quality production of Sylphon products from raw materials to the finished product is scientifically controlled in this plant. A unique testing laboratory is maintained as a proving ground where every Sylphon product is subjected to conditions duplicating the most strenuous actual service in the field before approval for shipment.

It is with the knowledge of these resources behind the Fulton Sylphon line that many architects and engineers prefer, whenever possible, to specify Fulton Sylphon equipment. For they know by experience that permanent satisfaction will always be assured.

HOT WATER SUPPLY

No. 923 Temperature Regulator — For controlling temperature of water in heaters, open or closed tanks and various types of equipment. Operation is unaffected by temperature fluctuations at the valve, either above or below bulb temperature. Neat. Compact. All parts, except steel adjustment spring, made of non-ferrous metals. May be installed in any position. Ranges from 40°-80° F. to 290°-330° F. One of a complete line of Regulators for water temperature control purposes. Write for Bulletin SAC-20.

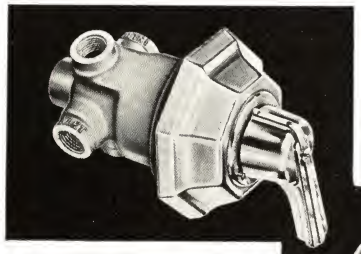


No. 923 Temperature Regulator

Sylphon Thermostatic Water Mixers—Utilize hot water from any storage tank or instantaneous heater, and effectively regulate the amount of cold water required to temper it to the desired degree, actually mixing the hot and cold water together before delivery. They not only save hot water, but effect increased capacity of storage tanks by permitting water to be heated to a higher temperature.

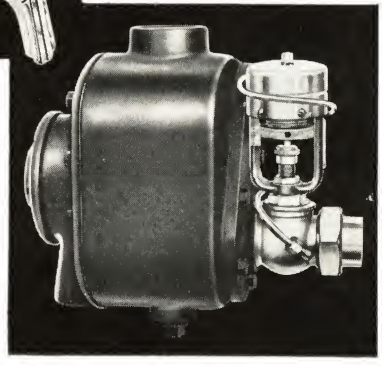
Readily adjustable for any desired water temperature, this temperature remains constant in spite of fluctuations in supply water temperatures or pressures.

Capacities ranging from 5 to 131 g.p.m. Bulletin SAC-40.



No. 905 Thermostatic Water Mixer

An individual shower mixer with temperature selector handle permitting setting for any desired, thermostatically maintained, temperature from cold to a safe maximum temperature of hot water. Unaffected by variations in pressure of supply water



No. 902 Sylphon Thermostatic Water Mixer

14 to 131 g.p.m. depending on water pressure

REFRIGERATION CONTROL

A complete line of Sylphon Refrigeration Controls, adaptable to the regulation of temperatures down to 40° below zero and wherever brine is used as the refrigerant, provides a broad selection for refrigeration or drinking water cooling service.

Latest development of Fulton Sylphon Engineers is a positively "freeze-proof" valve (illustrated at right on the popular Sylphon No. 945-Z Regulator). It has been proven that this design will assure stem working freely without frosting even when subjected to temperatures as low as 70° below zero. Bulletin SAC-20.



No. 945-Z Regulator

Showing detail of "freeze-proof" valve stem

PACKLESS EXPANSION JOINTS

The Sylphon Packless Expansion Joint eliminates useless building height, expensive construction and non-revenue producing space. It prevents costly leaks and repairs, requires no repacking, and because it is always tight, it allows the heating system to operate at full efficiency. Two types for steam (No. 110), and for water (No. 111). Thousands are in use in many prominent buildings. Write for Bulletin SAC-140.



No. 110 Sylphon Expansion Joint

PRESSURE REGULATION

No. 955—Sylphon Interlocking Valve is a safety appliance designed to protect oil-fired furnaces by shutting off oil flow should atomizing pressure fail or fall below the required minimum. Approved by the Associated Factory Mutual Fire Insurance Companies and preferred by the leading engineers for its positive unfailing protection. Bulletin SAC-100.

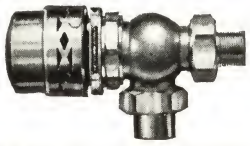
No. 952—This regulator of all-metal construction may be used as a pressure reducing valve as well as a uniform pressure regulator. It may be installed in any position and is easily adjusted for different pressures. Bulletin SAC-100.



No. 955 Interlocking Valve

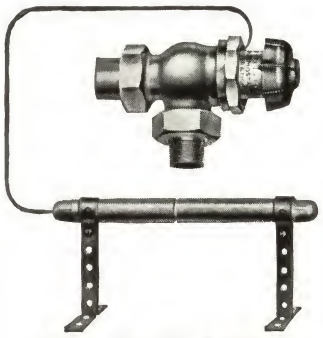
SPACE HEATING AND AIR CONDITIONING CONTROL

No. 885 Automatic Radiator Valve—For exposed radiation. Small, neat, finely finished, adjustable to room temperature desired. Simply replace ordinary radiator valves with these Sylphon Automatic Regulators—no wiring, piping or auxiliary equipment are required. These valves answer the demand for an inexpensive means of providing accurate, dependable space temperature control in rooms, sections or throughout large buildings, new or old. Similar type valves for concealed radiation also —get Bulletin SAC-80.



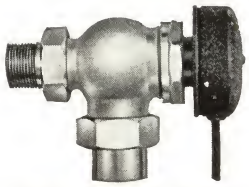
Sylphon No. 885 Automatic Radiator Valve

No. 892 Automatic Radiator Valve—For enclosed radiators. With manual shut-off. Hand wheel is provided so valve may be opened or closed manually regardless of operation of automatic control; but automatic feature prevents room temperature rising above point for which adjustment is set. Automatic control can be set at any desired point between 40° F. and 90° F. For steam pressures up to 15 lbs.; any two-pipe steam, vapor or vacuum system properly trapped and where there is no back pressure in the system. Bulletin SAC-80.



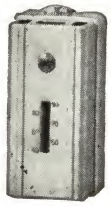
Sylphon No. 892 Automatic Radiator Valve

No. 890 Electric Radiator Control Valve—For either exposed or concealed radiation. Similar in appearance and action to Sylphon Automatic Valves, but operated by an electric wall thermostat. The closing of the thermostat circuit energizes a low voltage electric heater coil surrounding a bulb containing a volatile liquid. This liquid expansion causes pressure on a bellows in the valve head operating the valve. This provides radiator valve control from a remote location, permits regulation of several radiators from a single thermostat, enables a time switch to be installed, if desired, offers effective zone control of large areas at a fraction of the cost of conventional motor-operated valve systems. Bulletin SAC-70.



Sylphon No. 890 Electric Control Valve

Sylphon Thermostats—Heat accelerated and on-off types, with or without night setback feature and with or without anticipating feature. Simplest types close contacts on increase in room temperature, open on decrease in temperature. Anticipating types by making and breaking contacts before the valve can fully open or close, have a modulating or throttling effect. This causes valve normally to "float" in an intermediate position, giving very close control; opening or closing tight only when extreme temperatures are encountered. For 20-25 volts a-c. or 110 volts a-c. or d-c. circuits. Complete information in Bulletin SAC-70.

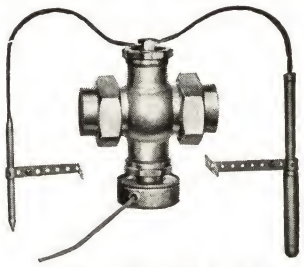


Sylphon Thermostats
Several types for various services

No. 889-E Unit Ventilator Control—An electrically and mechanically operated dual valve developed for use in unit ventilators. The electric side of the valve utilizes the same "heat motor" as used in Sylphon Electric Radiator Valves and is operated by a wall thermostat in the room. This valve operates to bring room temperature up to desired level during heating up period, and maintains desired temperature during period of "thermal balance".

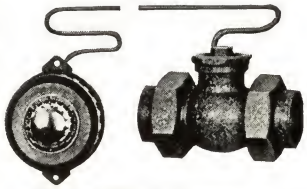
The mechanical side of the valve is operated by a thermostat bulb placed in the discharge air stream and is known as the "minimum air stream thermostat."

This modulates the valve, when the electric thermostat is "off", to prevent discharged air from falling below a predetermined minimum temperature, eliminating objectionable cold drafts. Suitable for steam pressures up to 15 lbs. and for any two-pipe steam, vapor or vacuum heating system.



Sylphon No. 889-E Unit Ventilator Control

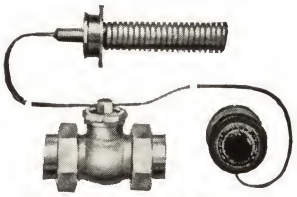
No. 7 Temperature Control—A self-contained, self-powered regulator for controlling unit heaters, wall or ceiling type radiators, heating coils in duct-type heating systems, etc. A sturdy, practically indestructible control, easily and quickly installed, holds temperatures within close limits. Valve is placed in steam line to one or a gang of heaters, thermostat is mounted on wall or column. Operation is entirely mechanical. The No. 7 Regulator is designed for use on regular heating pressures up to 15 lbs. Similar regulators, Nos. 7-2 and 7-3 for 50 and 75 lbs. pressure are also available. Suitable for temperatures up to 170° F. Bulletin SAC-50.



Sylphon No. 7 Temperature Control

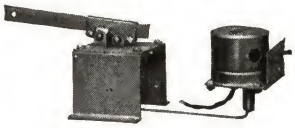
No. 928-C Temperature Regulator—For temperature control of air or gases. A sensitive, compact regulator, especially suited to control of duct temperatures. Bulb is a series of copper coils, sensitive to slightest change in air temperature, mounted through duct wall. Small over-all dimensions. Convenient adjustment.

No exposed operating mechanism. Perfect regulation. An ideal regulator for use in inaccessible places. Three types for 15, 50 and 75 lbs. steam pressures and temperatures not exceeding 170° F.



Sylphon No. 928-C Duct Temperature Regulator

No. 371 Damper Motor—A positive type motor for on-and-off control of dampers. Operation may be controlled by room thermostat, by hand operated switch, by a motor starting switch, or other means. Motor, safety type, returning to closed position in event of current failure. Heat-motor bulb and damper motor itself in separate units—easy to install. Can be located where extremely low temperatures exist, provided "heater" is placed where not subject to temperature below 55° F. or above 100° F. Damper motor has adjustable operating lever. Write for descriptive literature.



Sylphon Damper Motor
(Self-operating and Electric types)

GENERAL CONTROLS CO.

700 West Ivy Street
GLENDALE (LOS ANGELES COUNTY), CALIF.

BRANCHES

CHICAGO, ILL., 450 East Ohio Street
CLEVELAND, OHIO, 1505 Broadway
DETROIT, MICH., 6432 Cass Avenue
NEW YORK, N. Y., 267 Fifth Avenue
HOUSTON, TEX., Kress Building
SAN FRANCISCO, CALIF., 915 Bryant Street

PRODUCTS

ROOM THERMOSTATS, MAGNETIC VALVES for controlling Gas, Air, Oil, Water, Steam and Refrigerants; RELAYS; LOW-WATER CUTOUTS; AUTOMATIC SAFETY PILOT CONTROLS; DAMPER CONTROLS; SWITCHES; STRAINERS, and TRANSFORMERS.

SALES AND SERVICE

Complete stocks of GENERAL CONTROLS CO. products are maintained at the branch offices listed above. Engineering service available in branch offices and principal cities. Sales and service also offered by Distributors in all principal cities. Catalog available giving complete engineering data on entire line. Large wiring diagram sheets sent on request. State nature of application.

K-3B MAGNETIC GAS VALVE



Listed as Standard by Underwriters' Laboratories and Associated Factory Mutual and A.G.A.

Applications

Closes fuel line supply at demand of room thermostat, limit control or similar device. Widely used for controlling gas to warm air furnaces, gas fired boilers, industrial furnaces, conversion burners.

Characteristics

Magnetic, two-wire, current-failure, quiet solenoid valve. Closes with the flow, with pressure on top of seat, insuring tight shut-off indefinitely. Compact in design. Low current consumption. Easily meets rated flow capacity and operating pressures. Greatest range of sizes in magnetic valves—⅜ to 6 in., inclusive.

Specifications

Sizes—Screwed connections ⅜ to 4 in., inclusive; flanged 4 to 6 in., inclusive; companion flanges not furnished. Available for any commercial voltage or frequency; valves 2½ in. and larger furnished for line voltage only; when requirements call for low-voltage, large-size valves, the B-55 series is recommended. Pilot light connections are ⅛ in. IPS up to 1 in. Jr. valve; ¼ in. IPS on 1 to 3 in.; ¾ in. IPS on 4 to 6 in. Manual opening device furnished on ½ in. and larger valves. Impact plunger. All sizes packless. ½ in. IPS internal thread standard for all sizes and currents for electric fitting connection.

CAPACITIES K-3B

Size	Solenoid size	Watts	Gas capacity cu. ft. per hr.*			Max. oper. pressure, lbs.	Dimensions		Approx. ship. wt., lbs.
			0.5 in. drop	1 in. drop	4 in. drop		A	B	
⅜"	180	8	90	127	250	2	2¼"	3¼"	2
½"	180	8	165	230	470	1	2⅞"	3⅝"	2½
¾"	180	8	320	450	910	⅔	3⅜"	4"	3
1" Jr.	180	8	420	580	1180	⅔	3⅞"	4"	4
1" Std.	225	14	520	730	1470	⅓	4⅜"	5½"	5
1¼"	225	14	800	1130	2250	5	5"	5¾"	6½
1½"	225	14	1060	1500	3000	5	5⅜"	5¾"	10
2"	300	28	1900	2700	5400	5	6⅞"	9¼"	21
2½"	300	28	2700	3800	7600	5	8⅛"	9½"	28
3"	300	28	4000	5600	11300	5	9½"	9¾"	37
4"	400	60	6500	9200	18000	5	12"	12"	80
4" flg.	400	60	6500	9200	18000	5	11¾"	12"	90
6" flg.	400	60	14000	20000	40000	5	16"	14"	160

B-55 SLOW-OPENING GAS VALVE

Applications

Controls gas flow and damper opening on domestic and industrial gas furnaces and boilers. Synchronizes both actions for perfect combustion conditions.



Listed as Standard by Underwriters' Laboratories and Associated Factory Mutual

Characteristics

Electrically - operated, two-wire, current-failure valves having adjustable opening speed, an extremely desirable feature where conditions of variable ignition, combustion and gas pressure exist. To insure fast shut-off, closing time is fixed regardless of opening adjustment. When damper control is incorporated, its operation is separate from main valve stem so that the valve will close even though the damper arm may be held up by an external object of friction. Also damper set slightly ahead of gas flow to assist in proper ignition. Pilot valve is the G. C. Quiet A. C. Solenoid. Bleeds gas into furnace only during opening period for flare pilot effect to help ignite main flow of gas. Any voltage AC or DC.

Specifications

B-55-1—Made in sizes from ¾ to 6 in. for controlling manufactured or natural gas. Damper arm for secondary air control is incorporated, and is easily rotatable to any desired position. Adjustable for either direct or reverse acting dampers or louvres. Manual bypass incorporated to open valve in case of prolonged current failure. Valves ¾ to 1½ in., inclusive, standard maximum operating pressure 2 lbs. (see Spec. B-55-2). Valves 2 to 6 in. maximum operating pressure 5 lbs. Low voltage standard equipment. Available for any commercial voltage AC or DC. Minimum gas pressure 2½ in. water column.

B-55-2—Same as B-55-1, except equipped with No. 225 solenoid for pilot valve to handle maximum gas pressure of 5 lbs., or 11½ in. diaphragm to handle low inlet gas pressures.

B-55-3—Same as B-55-1, except assembled without damper arm. Minimum recommended gas pressure 2 in. water column.

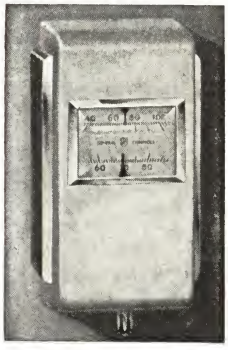
B-55-4—Same as B-55-3, except equipped with No. 225 solenoid for 5 lbs. gas pressure or 11½ in. diaphragm to handle extremely low inlet gas pressures.

B-55-5—Made in sizes from 1¼ to 2 in. for controlling gas at maximum inlet pressure of 30 lbs. To operate satisfactorily, minimum gas pressure must be 5 lbs. Opening speed fixed in standard valves for 60 seconds. However, can be varied by changing bleed orifice. Tight shut-off and satisfactory control of manufactured, natural gas, or butane. *Capacities on next page.*

CAPACITIES B-55 GAS VALVE

I.P.S.	Spec. No.	Solenoid size	Watts	Diaph. size	Max. oper. press., lbs.	Gas capacities				Dimensions			App. ship. wt., lbs.
						0.5″ drop	1″ drop	4″ drop	1 lb. drop	A	B	C	
¾″	1&3	180	8	9″	2	360	500	1000	3600	4	8⅝	9	11
¾″	2&4	225	14	11″	5	360	500	1000	3600	4	9⅞	11½	19
1″	1&3	180	8	9″	2	540	760	1530	5400	4⅜	8¾	9	12
1″	2&4	225	14	11″	5	540	760	1530	5400	4⅜	10	11½	20
1¼″	1&3	180	8	9″	2	900	1270	2550	9000	5	8¾	9	12
1¼″	2&4	225	14	11″	5	900	1270	2550	9000	5	10	11½	20
1½″	1&3	180	8	9″	2	1200	1700	3400	12000	5½	8¾	9	14
1½″	2&4	225	14	11″	5	1200	1700	3400	12000	5½	10	11½	22
2″	1&3	225	14	13″	5	2000	2800	5600	20000	6⅞	12½	13½	35
2½″	1&3	225	14	13″	5	2800	3950	8000	28000	8⅛	12¾	13½	40
3″	1&3	225	14	13″	5	4200	5900	11800	42000	9½	13⅛	13½	50
4″	1&3	225	14	13″	5	7000	9900	20000	70000	12¼	14⅛	13½	75
4″ flg.	1&3	2–225	28	16″	5	7500	10500	21500	75000	12¼	14⅛	18	95
6″ flg.	1&3	2–225	28	16″	5	16000	22500	45000	160000	16	15⅛	18	180
1¼″	5	225	14	13″	30				90000	5	10¾	13½	25
1½″	5	225	14	13″	30				120000	5½	10¾	13½	29
2″	5	225	14	13″	30				200000	6⅛	12⅝	13½	45

T-70 SERIES ROOM THERMOSTATS



The Metrotherm
Low and Line Voltage

The General Metrotherm combines in one instrument beauty, simplicity and positive control. Adjustable heat acceleration is provided, eliminating the necessity of stocking several instruments to take care of variable electrical load factors and heat loss conditions encountered in the field. Heat acceleration can be removed or added as desired.

Open face contacts, with a permanent magnet, are employed throughout to provide positive snap action. The conventional type of glass thermometer for temperature indication has been eliminated and in its place is used a bimetal thermometer, giving quick response, absolute accuracy, greater visibility and elimination of breakage or separation of liquid. Locking device standard on all types.

Specifications

T-70-1—Two-wire Metrotherm for heating application. Makes contact on drop of temperature. Electrical rating 2 amp. at 24 volts; 1 amp. at 110 volt; .5 amp. at 220 volts. No heat accelerator. See T-70-10.

T-70-2—Same as T-70-1 but with night cut-off which provides for complete shut-off irrespective of room temperature.

T-70-3—Three-wire Metrotherm, single pole, double throw. No heat accelerator. Electrical rating 2 amps. at 24 volts; 1 amp. at 110 volts; .5 amps. at 220 volts.

T-70-4—Same as T-70-3 but with night cut-off which provides for complete shut-off irrespective of room temperature.

T-70-5—Two-wire Metrotherm for cooling application. Makes contact on rise of temperature. No heat accelerator. Standard range 55°–85°F. Electrical rating 2 amps. at 24 volts; 1 amp. at 110 volts; .5 amp. at 220 volts.

T-70-6—Dual thermostat built specifically for use with D-40 valve to give automatic operation of high-low fire.

T-70-7—Same as T-70-6, except with positive night cut-off.

T-70-8—Two-wire line voltage Metrotherm for heating application. Makes contact on temperature drop. Electrical capacity 5 amps. at 110 volts; 2.5 amps. at 220 volts; motor rating, 110 or 220 volts, 60 cycle, ¼ hp. p. i., ⅛ hp. s. p. (low starting current), or 25 watts DC standard with conduit box plate.

T-70-10—Same as T-70-1 but with adjustable heat acceleration.

T-70-11—Same as T-70-10 but with night cut-off which provides for complete shut-off irrespective of room temperature.



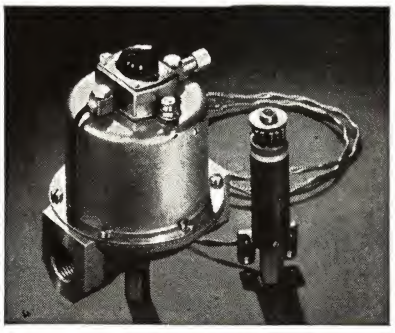
L-2-1 LOW-WATER CUTOUT

The result of many years' field tests, the L-2-1 Low-Water Cutout is now offered as a simple but positive device for turning off fuel burner when water in the boiler becomes dangerously low. A mercury tube relay of the rotating armature type (no iron-to-iron contact) is actuated by current conducted by water in the electrode chamber. A level differential exists between cut-in point and cut-out point by virtue of relay characteristics which require more current to pull in than to drop out. Electrode current is very nominal, being but a few hundredths of an ampere and further permits use of 24 volts on electrode instead of high voltage usually common on this type of device.

Specifications

Capacity: 2 amps.—24 volts; 1.5 amp.—110 volts; 0.75 amp.—220 volts. Furnished for alternating current only—50-60 cycle. Steam pressure up to 30 lbs. 2-wire control—normally open. Breaks circuit on level drop. Fits all centers 6¼ to 16 in. for quick hookup.

B-60-4 SPACE-HEATER CONTROL



Applications

For circulating heaters, gas radiators, garage heaters and, by using remote thermostat, floor furnaces.

Characteristics

A gas-actuated control, yet with all the advantages of electric control, available for the first time anywhere. No outside source of current is needed. The electric current for valve operation is supplied by the pilot burner generator. Integral thermostat operates on total differential of ½° F.—an extremely important feature in controls mounted close to floor. Main valve is gas-actuated diaphragm type, pilot-operated by rugged sensitive pilot valve with three-way action. Bleeds gas *only one second* during opening cycle. Absolutely no hum or click. Failure of pilot flame causes valve to close through inability of generator to supply current. Diaphragm rupture causes valve to close.

B-60-4 Specifications

Temperature range—45° to 85° F. Scale unmarked. Differential: less than ½° F. total. Opening time: 1 second; closing time: approximately 15 seconds. Valve action: 3-way; no constant bleed. Night cut-off available. Valve: on or off type. Over-all diameter: 3⅞ in. Over-all height: ⅜—4½ in.; ½ and ¾ in.—5½ in. Shipping weight: ⅜ in., 2¾ lbs.; ½ and ¾ in., 3 lbs. Maximum operating pressure—⅛ lb. For similar unit with remote thermostat see Gas Package Sets—Type B-60-1.

CAPACITIES B-60-4

Type	Size	Gas capacity	Night Cut-off	Style No.	List
B- 60-4	⅜″	160	No	12 R898	$15.80
BN-60-4	⅜″	160	Yes	12 R901	16.40
B- 60-4	½″	240	No	12 R899	16.40
BN-60-4	½″	240	Yes	12 R902	17.00
B- 60-4	¾″	370	No	12 R900	16.40
BN-60-4	¾″	370	Yes	12 R903	17.00

GENERAL CONTROLS RS-100 RELAY



For handling single phase motor loads up to 1 hp. or heating loads up to 1.1 k.w. we recommend the RS-100 relay. Incorporates a double break relay and integral transformer for supplying power. An extra terminal for supplying power to small indicating lamps, wall clocks, or small sensitive relays eliminates the necessity for a separate low voltage source to take care of such devices. Specifications, capacities and other details upon request.

Ask for Complete Catalog and Prices

MEMORANDA

JOHNSON

Automatic Temperature and Humidity

CONTROL

for *Heating - Cooling*
Ventilating
Air Conditioning
Industrial Processes

JOHNSON SERVICE COMPANY

HERE IS INFORMATION:

Stripped of "sales-talk" and unnecessary descriptive matter, these pages attempt to present a brief "index" of Johnson apparatus for automatic temperature and humidity control applied to heating, cooling, ventilating, air conditioning, and industrial processes. A Johnson sales engineer will be glad to give you further information. There is no obligation. (See list of branch offices on back cover, page 12.)

SEE TABULAR DESCRIPTIONS:

For your convenience, essential points regarding each device are presented in tables on the following pages, with brief descriptions, in outline form. These descriptions, together with the "Bulletin" numbers and other data indicated in the tables, may be used with confidence in the preparation of specifications.

AIR CONDITIONING.....Pages 3 & 4
ROOM THERMOSTATS.....Page 5
DUCT THERMOSTATS.....Page 6
HUMIDITY CONTROL.....Page 7
VALVES .....Page 8
DAMPERS .....Page 9
CLOCKS & COMPRESSORS.....Page 10
ZONE CONTROL.....Page 11

ASK FOR BULLETINS:

For more detailed information, APPARATUS BULLETINS will be furnished on request. Some of them are referred to, by number, in this condensed catalog. There are many others, in this interesting and informative series. Simply tell our nearest branch what will be of interest to you.

SEE LIST OF OFFICES ON PAGE 12 (BACK COVER)

THE JOHNSON ORGANIZATION

The Johnson Service Company sells apparatus only for installation by its own trained mechanics. There may be other engineers and mechanics who are entirely familiar with automatic temperature regulation. Nevertheless, it is felt that no one will assume such complete responsibility for satisfactory installation as do the manufacturers. When apparatus is sold to others for installation, there is always the likelihood that responsibility will cease when the transaction is closed and the possibility that such concerns may go out of business. The Johnson Service Company has been in existence for more than fifty years, will continue to operate, and will take the same interest in a plant that is twenty-five years old as in its most recent installation.

There are twenty-eight direct branch offices in the United States. Each office has an adequate staff, consisting of branch manager, sales engineers, superintendent of installations, clerks, and mechanics. A stock of material for new installations and of parts for repair work is available so that service may be rendered on short notice.

The branch managers and sales engineers are technically trained men, familiar with the work of this company and conversant also with all phases of heating, ventilating, and air conditioning. None of them are agents, jobbers, or part-time representatives. Each is paid a salary and devotes his entire effort to the interests of the Johnson Service Company and its customers.

JOHNSON CONTROL FOR AIR CONDITIONING

JOHNSON CONTROLS FOUR ESSENTIALS Johnson automatic regulation is the proper solution of the operating problems presented by four of the essential features of a complete air conditioning system: Heating, humidification, cooling and dehumidification. Devices which have been manufactured and installed by the Johnson Service Company for fifty years, in one form or another, for the control of temperature and humidity in heating and ventilating installations, find exactly the same uses in modern air conditioning. See pages 5 to 10. Beyond that, the ever-present Johnson policy of "progress" is evident again in the development of many new devices. The result is a complete line of Johnson equipment for every requirement of air conditioning engineers, manufacturers, and contractors.

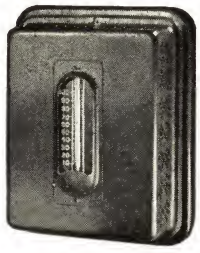
"SUMMER-WINTER" THERMOSTATS One of the requirements for automatic temperature control for air conditioning systems, is that certain instruments, sensing a rising temperature, must *close* the device which they control, during the heating season, and that those same instruments, on a rising temperature, must *open* those devices during the cooling season. The Johnson "Summer-Winter" room thermostat accomplishes this action. No complicated switching mechanism is required nor are two instruments necessary. Each "Summer-Winter" thermostat is equipped with two sensitive elements: "direct acting" for winter and "reverse acting" for summer. By changing the air pressure in the small compressed air "main" which supplies power to the thermostats, just as is done with the "Dual" thermostat described on page 5, Johnson "Summer-Winter" instruments are indexed from one season to another. The switching is done from a central point by a manually-operated switch or by a pilot thermostat which senses outdoor temperature.

A further interesting feature of the Johnson "Summer-Winter" thermostat is that the temperature setting for heating may be quite different from that for cooling. A separate dial is provided for each of the two sensitive elements. With the usual type of thermostat, this re-adjustment of operating temperature from season to season must be made *at each individual instrument.* The Johnson "Summer-Winter" thermostat is set permanently at *both* temperatures, and every instrument in the building is shifted from one to the other from a central point and in one operation. *See Bulletin T-311.*

THE "SUMMER-WINTER" INSERTION THERMOSTAT A special form of the Johnson two-point insertion thermostat is provided for use where a duct-type instrument is required to perform the function of a "Summer-Winter" thermostat. Moreover, this form of Johnson insertion thermostat may be arranged for automatic shifting from one cycle to another. For example, acting as a pilot instrument and sensing outdoor temperature, it will arrange the entire temperature regulation system for "control of heating" until the temperature outdoors reaches 68°, change all apparatus to simple "ventilating control" until the temperature rises to 75°, and then shift to "cooling control" for higher outdoor temperatures. Many other applications for this unique device are readily apparent.

DIFFERENTIAL THERMOSTAT A great contribution to the science of air conditioning is the Johnson "Differential" thermostat. It is accepted by most authorities that it is preferable to maintain indoor conditions, by means of cooling systems, at temperatures which bear a "sliding relationship" to the outdoor temperature. The general concensus of opinion is that a temperature of 72° indoors is desirable when the outdoor temperature is 70°, rising, as the outdoor temperature increases, until cooling to about 80° is sought when it is 95° outdoors.

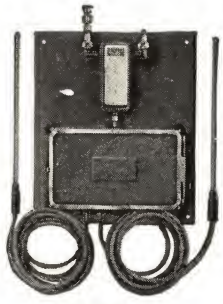
The Johnson "Differential" thermostat maintains that relationship. Further than that, it is adjustable, so that any desired relationship between the temperatures at two different points may be secured. In air conditioning work, one bulb of the "Differential" thermostat is mounted in a suitable location to sense the outdoor temperature, while the other bulb is located where it will sense the temperature in the conditioned space, usually measured most conveniently in a "recirculating duct." The "Differential" thermostat is described in *Bulletin T-304.*



SUMMER-WINTER THERMOSTAT



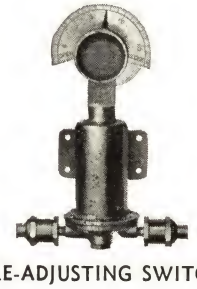
SUMMER-WINTER SWITCH



DIFFERENTIAL THERMOSTAT

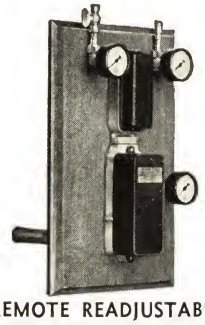


REMOTE-READJUSTABLE SUMMER-WINTER THERMOSTAT



RE-ADJUSTING SWITCH

JOHNSON REMOTELY ADJUSTED THERMOSTATS



REMOTE READJUSTABLE INSERTION THERMOSTAT

RE-SET BY PILOT THERMOSTAT OR SWITCH Another important Johnson development, is the complete line of Johnson "Remotely Adjusted" thermostats. There are many cases where it is desirable to change the operating temperature of certain instruments, in accordance with the temperature sensed at some remote point by another thermostat. In other cases, a manual switch is used to readjust the setting of a distant thermostat.

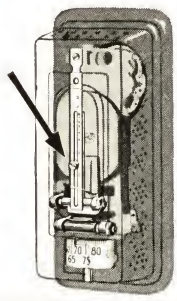
The "Pilot" instrument for a remotely adjusted thermostat or humidostat may be any Johnson intermediate room, insertion, or immersion thermostat (or humidostat). When it is desired to accomplish the readjustment by means of a switch, the Johnson gradual switch, described in Bulletin S-220, is used. The dial of the switch is calibrated in degrees to indicate the exact amount of re-setting.

FLEXIBILITY The action of the pilot and of the remotely re-adjusted devices may be arranged so that any desired relationship will be maintained between them. For instance, a rise of one degree in the temperature sensed by the pilot instrument may react on the remotely adjusted thermostats or humidostats to raise or lower the operating temperature of the latter several degrees.

REMOTELY ADJUSTED INSTRUMENTS

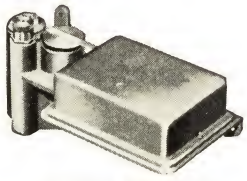
Bulletin	Type
T-312	Standard Room Thermostat
T-322	Summer-Winter Thermostat
T-302	Insertion Thermostat
T-305	Immersion Thermostat
T-325	Airstream Thermostat
T-411	Room "Comfostat"
H-101	Room Humidostat, Type BW
H-351	Insertion Humidostat, Type G

For characteristics of the basic instruments, see pages 5, 6 and 7.



SENSITIVITY ADJUSTMENT

THE JOHNSON SENSITIVITY ADJUSTMENT



STATIC PRESSURE REGULATOR

UNIQUE AND ORIGINAL The "sensitivity adjustment," which permits instruments to be balanced closely *after installation* for the work to be performed, is an important Johnson improvement. A simple and convenient method for adjusting the sensitivity of Johnson thermostats and humidostats, balancing the time lag and the heating, cooling, or humidifying capacity of the apparatus under control. Proper adjustment of sensitivity means uniform and steady flow of cooling, heating, or humidifying effect to the conditioned space, without fluctuation. Johnson engineers were the first to design this type of adjustment in such form as to make it simple and practical.

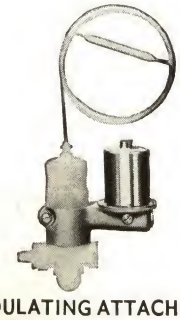
NECESSITY FOR ADJUSTABLE SENSITIVITY An instrument which is too sensitive will tend to hunt, and thereby affect adversely the quality of the control produced. If the sensitivity of the instrument is too low, unnecessary departures from the control point will occur, due to varying capacity demands. The sensitivity of a thermostat for any particular application should be as "close" as possible without producing objectionable "hunting" and fluctuating actions in the control cycle. See tables for various Johnson instruments equipped with "adjustable sensitivity." These devices insure that perfect balance will be possible, between control and load, when finally adjusted.



VELOCITY REGULATOR

OTHER JOHNSON DEVELOPMENTS for AIR CONDITIONING CONTROL

SPECIAL REGULATORS Static pressure regulators and velocity regulators, ingenuous Johnson devices, are used to regulate the flow of air in ducts, by means of Johnson automatically controlled dampers. When "cut-off" dampers in branch ducts and at register faces in individual rooms are opened and closed in connection with cooling systems, these regulators are required in order to maintain the proper balance in the system by keeping constant the pressure or velocity in main delivery ducts. Static Pressure Regulator *Bulletin R-300.* Velocity Regulator, *Bulletin R-301.*



MODULATING ATTACHMENT FOR THERMOSTATIC EXPANSION VALVES

THERMOSTATIC EXPANSION VALVES Johnson diaphragm valves find many uses in air conditioning. Where valves must be located in unit heater-cooler cabinets and other inaccessible locations where steam and moisture may be present, the ruggedness and simplicity of Johnson valves will be appreciated. See page 8. Particularly interesting are the new Johnson modulating attachments for thermostatic expansion valves. These "modulating attachments" are applied in the Johnson factory, to various standard makes of thermostatic expansion valves, forming a complete unit that is controlled by a distant thermostat as well as by the usual bulb on the outlet of the evaporator. The bulb operates the expansion valve in the usual way. When maximum cooling is not required, the controlling instrument, sensing room or duct temperature or humidity, gradually "throttles" the expansion valve, regardless of the bulb, reduces the flow of refrigerant. Actually two automatic control valves, combined in one! *Bulletins V-301, 302, and 303.*

"MODEL" AND "DUAL" ROOM THERMOSTATS

TYPES: Standard Johnson room thermostats are "model" (single-temperature) or "Dual" (two-temperature). Special instruments for air conditioning described on pages 3 and 4.

The Johnson "Dual" thermostat is equipped with two sensitive elements, each with a separate adjusting dial. One element is set to operate at a normal temperature for day or "occupancy" conditions, while the other is adjusted to maintain a reduced, economy temperature for night or "non-occupancy" periods. The change from one to the other is made from a central point by means of a switch or clock, changing the air pressure in the piping system.

The flexibility of the Johnson "Dual" system allows the thermostats to be connected in groups, depending upon the usage of various sections of the buildings. Each group is fed from a separate "air main" and a separate switch or clock is used for each group. Thus, without separate steam mains, a normal temperature is maintained in those parts of the building which are in use while the unoccupied sections are carried at a reduced temperature. Single rooms may be cut from the group operation by a push-button on each thermostat and each is re-set automatically on the next operation of the central switch.

THERMOSTATIC ELEMENT: Bimetallic strip to sense temperatures up to 150° F.

KIND OF ACTION: Intermediate (gradual) for modern heating, ventilating, and air conditioning systems. Operate valves or dampers gradually, or hold them in intermediate positions to maintain temperatures within one degree, if desired. Positive (snap-action) for "single-pipe" systems or high steam pressure, where rapid movement, fully open to tightly closed, is required.

TEMPERATURE ADJUSTMENT: Dials calibrated in degrees. (1) "Closed adjustment," necessitating removal of cover and preventing tampering. (2) "Open adjustment," with knob at bottom of instrument. (3) "Key adjustment," requiring insertion of removable knob. (4) "Restricted adjustment," allowing adjustment over a range of four or six degrees only. (5) "Positive shut-off lever," for sleeping rooms. (6) Shut-off levers also in combination with full-dial or restricted-lever temperature adjustment.

SENSITIVITY: See tabulation below, expressed in terms of pressure change in branch line leading to controlled device for a change of one degree, F., in temperature sensed by thermostat. For discussion of selection of proper sensitivity, see page 4.

COVERS: "Model" thermostats—"P" pattern, illustrated in all but one view, or "R", residence cover, an ornamental design. $5\frac{5}{16}$" high, $2\frac{9}{16}$" wide, $1\frac{7}{16}$" thick. "Dual"—"P" pattern only. $5\frac{5}{16}$" high, $4\frac{3}{16}$" wide, 1½" thick. Bakelite backs ⅜" thick for concealed piping. 1¼" thick for exposed piping. Covers are supplied in any standard hardware finish or with prime coat for finish like walls.

"MODEL" THERMOSTATS



Concealed Adjustment



Restricted Adjustment



Restricted Adjustment and Shut-off Lever

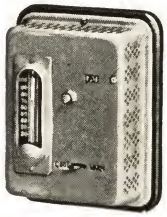


"Residence" Cover

"DUAL" THERMOSTATS



Concealed Adjustment with Pushbutton

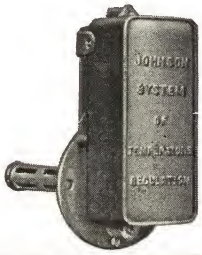


Restricted Adjustment

PRINCIPAL TYPES OF STANDARD ROOM THERMOSTATS

Bulletin	Type	Kind of Action	Sensitivity
T-401	Single Temperature	Standard Intermediate	7½ lbs. per deg.
T-400	Single Temperature	Supersensitive Intermediate	2½ lbs. per deg.
T-403	Single Temperature	Proportioning Intermediate	Adjustable ¼ to 12 lbs.
T-425	Single Temperature	Positive (Snap-action)	½ Deg. Differential
T-461	Dual (Two-Temperature)	Standard Intermediate	10 lbs. per deg.
T-460	Dual (Two-Temperature)	Supersensitive Intermediate	2½ lbs. per deg.
T-462	Dual (Two-Temperature)	Positive (Snap-action)	½ Deg. Differential

INSERTION AND IMMERSION THERMOSTATS



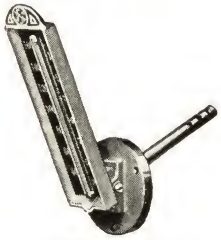
INSERTION THERMOSTAT



FOUR-POINT MULTIPLE INSERTION THERMOSTAT



CALIBRATED IMMERSION THERMOSTAT



"SUNRISE" DUCT THERMOMETER

TYPES: Standard Johnson insertion and immersion thermostats are shown in tabulation below. Special types available for air conditioning and process control, some of which are described on pages 3 and 4. Sensitive elements arranged for insertion through walls or into ducts and for immersion in tanks. Operating mechanism located outside, for ready adjustment and observation.

THERMOSTATIC ELEMENT: Invar rod enclosed in brass tube, perforated for control of air and other gases, solid for immersion in liquids. Maximum temperature 250° F.

KIND OF ACTION: Intermediate (gradual) for operation of dampers, throttling valves, etc. Positive (snap-action) for rapid movement, fully open to tightly closed.

TEMPERATURE ADJUSTMENT: (1) "Closed adjustment," with knob beneath cover, to prevent tampering, (2) "Open adjustment" with knob extending through cover and dial visible through window. Although all Johnson insertion and immersion thermostats have adjusting dials marked in degrees, some types (designated below as "Calibrated") have larger, easily-read dials for use where frequent and very accurate re-setting is required, as in process work.

SENSITIVITY: See tabulation below, expressed in terms of pressure change in branch line leading to controlled device for a change of one degree, F., in temperature sensed. For discussion of selection of proper sensitivity, see page 4. All "supersensitive intermediate" instruments equipped with adjustable sensitivity.

COVERS: "Model Calibrated"—$5\frac{3}{16}$" high, $2\frac{7}{16}$" wide, $1\frac{3}{16}$" thick. ½" pipe thread. All other immersion types—$6\frac{5}{16}$" high, $2\frac{7}{16}$" wide, $2\frac{5}{8}$" thick. 1" pipe thread. Insertion types—Same, with mounting flange 4" diam.

THERMOMETERS

"SUNRISE" INSERTION THERMOMETERS: Illustrated on this page. A high grade mercury thermometer for insertion into sheet metal ducts or through walls. A flange is provided so that the thermometer may be fastened to the wall or duct with screws. Made only in the angle pattern. A patented arrangement allows tilting through an angle of 45 degrees so that the scale of the instrument is readable even though mounted above the line of vision. Scales of various ranges of temperatures from —20° to 400° F. Shanks for duct mounting or for insertion through walls up to 24" thick.

"SUPERSENSITIVE" INSERTION THERMOMETERS: A high grade mercury thermometer for insertion into sheet metal ducts or through walls. Large V-shaped scale, tilted slightly, with magnifying tube, and screwed flange for mounting. Has a larger scale than the "Sunrise" thermometer, is generally more appropriate for high class engine rooms. Scales 30° to 240° or —20° to 120° F. Shanks for duct mounting or for walls up to 30" in thickness.

IMMERSION THERMOMETERS: Mercury column. Scale 6" long, ½" male pipe thread. Straight stem type, 40° to 240° F. with $1\frac{3}{16}$" shank. Angle type in various ranges from —20° to 260° F. and with shanks up to 12" in length.

DIAL THERMOMETERS: Various types of dial thermometers are supplied where that type is preferred.

PRINCIPAL TYPES OF INSERTION AND IMMERSION THERMOSTATS

Bulletin	Types	Kind of Action	Sensitivity	Length of Stem
T-316	Unit Insertion	Supersensitive Intermediate	Adjustable ½ to 8 lbs.	$6\frac{1}{4}$" to $49\frac{7}{16}$"
T-318	Unit Insertion	Positive (Snap-Action)	½ Deg. Differential	$6\frac{1}{4}$" to $49\frac{7}{16}$"
T-350	Multiple Insertion (2, 3, 4 pt.)	Positive, Int. or Combined	Same as T-316 and 318	$7\frac{1}{2}$" to $25\frac{1}{2}$"
T-320	Unit Airstream	Intermediate	Adjustable ¼ to 4 lbs.	$19\frac{13}{16}$"
T-317	Unit Immersion	Supersensitive Intermediate	Adjustable ½ to 8 lbs.	$7\frac{21}{32}$" to $43\frac{17}{32}$"
T-319	Unit Immersion	Positive (Snap-Action)	½ Deg. Differential	$7\frac{21}{32}$" to $43\frac{17}{32}$"
T-351	Multiple Immersion (2, 3, 4 pt.)	Positive, Int. or Combined	Same as T-317 and 319	$6\frac{11}{32}$" to $24\frac{7}{32}$"
T-326	"Model" Calibrated	Standard Intermediate	10 lbs. per deg.	14"
T-349	Calibrated	Standard Intermediate	5 lbs. per deg.	$13\frac{5}{16}$"
T-348	Calibrated	Positive (Snap-Action)	½ Deg. Differential	$13\frac{5}{16}$"

HUMIDITY CONTROL

HUMIDOSTATS

TYPES: Standard Johnson humidostats, both room and insertion types, are tabulated below. Remotely adjusted patterns for air conditioning control are described on pages 3 and 4. Humidostats sense relative humidity in the same manner that thermostats re-act to temperature and are equally dependable. Insertion humidostats are used to sense conditions in ducts and other chambers; room patterns for wall mounting in humidified spaces.
Johnson "Comfostats" are thermostats in which the temperature setting is re-adjusted by a humidity element. Room type *(Bulletin T-408)*. Insertion type *(T-409)*.

HUMIDOSTATIC ELEMENTS: Several types: bi-wood strips, animal membrane, multiple strands of human hair. Temperature and humidity limitations for each are tabulated below.

KIND OF ACTION: Intermediate (gradual) for modern heating, ventilating and air conditioning systems. Operate valves or dampers gradually, or hold them in intermediate positions to maintain humidities within one percent, if desired. Positive (snap-action) for "single-pipe" systems or high steam pressure, where rapid movement, fully open to tightly closed, is required.

HUMIDITY ADJUSTMENT: Room types—Same as described for "TEMPERATURE ADJUSTMENT" of room thermostats, page 5. Insertion types—Same as insertion thermostats, page 6. Adjusting dials have various ranges for different instruments. See tabulation below.

SENSITIVITY: See tabulation below, expressed in terms of pressure change in branch line leading to controlled device for a change of one percent in relative humidity.

COVERS: Same as for room and insertion thermostats, pages 5 and 6.

HUMIDIFIERS

Johnson humidifiers have been in successful operation for many years in connection with ventilating and blast heating. The "grid" type has several branches of perforated pipe, wrapped with wicking. Low pressure steam moistens the wicking whenever the automatically controlled valve is open. The "pan" type humidifier is a brass steam coil immersed in a water-pan of copper with automatic float control. Humidity is controlled by humidostatic operation of a valve on the steam supply. Steam does not come in contact with the air. *Bulletins H-201 and 202.*

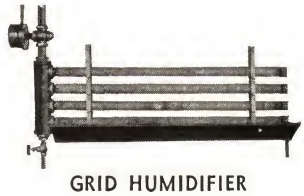
WET-BULB ATTACHMENTS

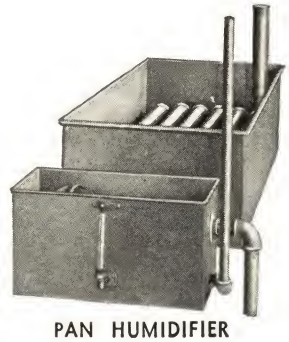
All types of Johnson insertion, immersion, and extended tube thermostats become "wet-bulb" thermostats when fitted with any of the various Johnson wet-bulb attachments. These attachments are of two types; wick or alundum tube, with or without circulating fans. All are described in *Bulletin H-310.* Johnson manufactures a relative humidity indicator *(Bulletin H-301)*, a whirling hygrometer (*H-303*), and a psychrometer with circulating fan (*H-302*), all designed for accurate reading of relative humidity.



ROOM HUMIDOSTAT


INSERTION HUMIDOSTAT

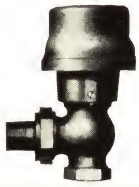

GRID HUMIDIFIER


PAN HUMIDIFIER

PRINCIPAL TYPES OF ROOM AND INSERTION HUMIDOSTATS

Bulletin	Type	Kind of Action	Sensitivity	Element	Humidity	Maximum Temperature	Dial Range
H-102	BW Room	Supersensitive Intermediate	1½ lbs. for each %	Bi-wood	10 to 60%	95°	30%
H-103	G Room	Supersensitive Intermediate	1 lb. for each %	Membrane	Up to 95%	110°	20%
H-105	BW Room	Proportioning Intermediate	Adjustable ¾ to 6 lbs.	Bi-wood	10 to 60%	95°	30%
H-155	W Insertion	Standard Intermediate	12 lbs. for each %	Wood cylinder	10 to 70%	150°	15%
H-153	H Insertion	Standard Intermediate	5 lbs. for each %	Multiple hair	Up to 95%	175°	20%
H-154	H Insertion	Supersensitive Intermediate	Adjustable 1 to 10 lbs.	Multiple hair	Up to 95%	175°	20%
H-151	G Insertion	Standard Intermediate	5 lbs. for each %	Membrane	Up to 95%	110°	20%
H-152	G Insertion	Supersensitive Intermediate	Adjustable 1 to 10 lbs.	Membrane	Up to 95%	110°	20%
H-156	W Insertion	Positive (Snap-action)	1% Differential	Wood cylinder	10 to 70%	150°	15%

VALVES



RADIATOR VALVE



COIL VALVE
("SYLPHON" DIAPHRAGM)



MIXING VALVE
(RUBBER DIAPHRAGM)



BY-PASS VALVE
("SYLPHON" DIAPHRAGM)

TYPES: Johnson diaphragm valves are simple, rugged devices without complicated moving parts. Dependable diaphragms, built for long, uninterrupted service, operate the valve stem by means of air pressure transmitted through a branch line leading from a Johnson thermostat, humidostat, or switch. Strong, heavy springs of various pressure characteristics, as required, operate the valves in the opposite direction. There is no line of diaphragm valves as complete as that offered by Johnson: for steam, water, brine, ammonia, compressed air, and other liquids and gases.

SIZES AND PATTERNS: All standard sizes, as shown in tabulation below. Direct-acting "radiator valves" available in angle, globe, offset, corner, and straight corner: Direct-acting "coil valves" in angle and globe patterns: All others, globe pattern only.

KIND OF ACTION: Direct-acting "normally open," reverse-acting "normally closed," three-way mixing, three-way by-pass. Balanced types for high pressures.

SPRINGS: Strong springs of proper characteristics for pressure and type of service required.

DIAPHRAGMS: The seamless metal bellows in Johnson "Sylphon" valves was the first practical and reliable metal diaphragm adapted to automatic temperature control devices. The "Sylphon" diaphragm is especially desirable for valves in radiator enclosures and other locations where other materials might be affected by high temperatures . . . For those applications where a rubber diaphragm is desired, Johnson manufactures valves with diaphragms of special moulded rubber, super-aged and heat-resistant. The totally enclosed construction prevents corrosive action of fumes, keeps dirt away from internal parts.

DISCS: Various types of composition or metal discs are provided to suit the particular service which each valve is to perform. The special modulating disc in Johnson "streamline" valves produces throttling control and is valuable for all applications where modulating action is desirable.

BODIES AND SEATS: In the smaller sizes, valve bodies are high grade steam bronze metal with seat machined integral with the body. Large valves are cast iron with screwed-in seat ring of bronze. For high-pressure service and special applications, valves with monel metal or stainless steel trim are supplied.

FINISH: "Radiator valves" in nickel or chromium plate. Other valves, 2" and smaller, plain brass bodies with tops dull black lacquer. Larger valves, iron bodies, black lacquer, overall.

CONNECTIONS: In general, all valves of sizes 2" and smaller are for screwed connections and "radiator" types are provided with male union on outlet. Larger valves are available for either screwed or flanged connections.

DIAPHRAGM VALVES

Bulletins and Sizes		Type	Action	Service	Diaphragm
V-351 ½" to 1½"	V-352 2" to 12"	Balanced	Direct	Steam or Liquids	Sylphon
V-353 ½" to 2"	V-354 2½" to 12"	Balanced	Reverse	Steam or Liquids	Sylphon
V-175 ½" to 2"	....	Brine	Direct	Brine	Sylphon
V-93 ½" to 2"	....	Brine	Direct	Brine	Rubber
V-178 ½" to 2"	....	Brine	Reverse	Brine	Sylphon
V-91 ½" to 2"	....	Brine	Reverse	Brine	Rubber
V-135 ½" to 2"	V-136 2½" to 6"	By-pass	3-way	Liquids	Sylphon
V-99 ½" to 6"	....	By-pass	3-way	Liquids	Rubber
V-125 ½" to 2"	V-126 2½" to 6"	Mixing	3-way	Liquids	Sylphon
V-107 ½" to 2"	V-108 2½" to 10"	Mixing	3-way	Liquids	Rubber
V-110 ½" to 2"	V-112 2½" to 8"	Radiator and Coil	Direct	Steam	Sylphon
V-111 ½" to 2"	V-113 2½" to 8"	Radiator and Coil	Direct "Streamline"	Steam	Sylphon
V-101 ½" to 2"	V-102 2½" to 8"	Radiator and Coil	Direct	Steam	Rubber
V-103 ½" to 2"	V-104 2½" to 8"	Radiator and Coil	Direct "Streamline"	Steam	Rubber
V-114 ½" to 2"	V-115 2½" to 8"	Radiator and Coil	Reverse	Steam	Sylphon
V-105 ½" to 8"	....	Coil	Reverse	Steam	Rubber
V-150 ½" to 2"	V-151 2½" to 8"	Radiator and Coil	Direct	Liquids	Sylphon
V-97 ½" to 8"	....	Coil	Direct	Liquids	Rubber
V-155 ½" to 2"	V-156 2½" to 8"	Radiator and Coil	Reverse	Liquids	Sylphon
V-95 ½" to 8"	....	Coil	Reverse	Liquids	Rubber

DAMPERS

TYPES: Johnson dampers are "made to measure" in all sizes and in every known type, the most common of which are tabulated below.
Used widely for the regulation of air flow in ducts. The "proportioning louver" type of damper has been developed especially for air conditioning applications, adjacent blades rotating in opposite directions, reducing the quantity of air flowing without deflecting its course.

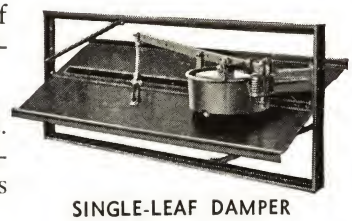
MATERIALS: Standard dampers have No. 16 gauge hot-rolled steel blades with flat steel frames and bracing sufficiently heavy to form a rigid assembly. Angle iron frames optional. Made also of galvanized iron, monel metal, aluminum, copper, rust resisting steel, etc. Blades and frames may be of different materials.

FINISHES: Standard is two coats of black lacquer. Special corrosion-resisting finishes on order.

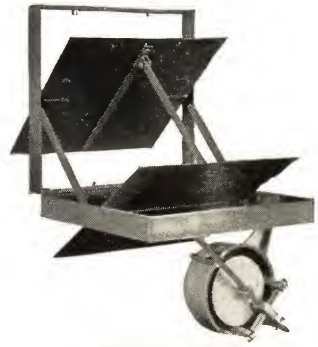
BEARINGS: Brass pins in steel bearings. Also ball bearings, all bronze, or cadmium plated steel ball races and stainless steel balls.

STOPS: Solid "lip", continuous on all sides of damper, or "pin stops," if preferred. Felted stops for quiet operation, on special order.

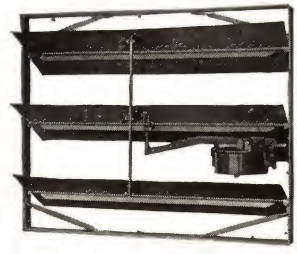
SIZES: Made to exact dimensions for each application. Louvered (multi-blade) construction recommended for all cases where single blade would exceed 12" in width. Intermediate bearing and frame-stiffener when axis exceeds 80" in length.



SINGLE-LEAF DAMPER



RIGHT ANGLE MIXING DAMPER



LOUVERED DAMPER

DAMPER MOTORS

Johnson damper motors, as simple and dependable as diaphragm valves, are capable of long service without attention of any sort.
"Sylphon" seamless metal or rubber diaphragm operates a lever attached to the damper by suitable linkage. Various types of brackets are provided, including a large variety of special patterns for all makes of unit ventilator cabinets.
The "double - diaphragm," pilot - type of damper motor can be depended upon to place a damper in a certain position and to hold it there, on each cycle of operation, for a given temperature sensed by the controlling instrument.

DAMPERS

Bulletin	Type
D-201	Double Mixing
D-203	Louvered
D-225	Proportioning Louver*
D-204	Round
D-202	Single-leaf

DAMPER MOTORS

Bulletin	Type
D-101	No. 1 & 2 "Sylphon"
D-103	No. 3 "Sylphon"
D-104	"Sylphon" Unit Ventilator
D-301	Rubber Diaphragm
D-401	Double Diaphragm Pilot Type

*Adjacent blades rotate in opposite direction for "proportioning" of air flow.



DAMPER MOTOR ("SYLPHON" DIAPHRAGM)



DOUBLE DIAPHRAGM DAMPER MOTOR (PILOT TYPE)

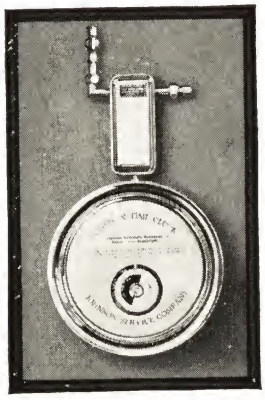
SWITCH CONTROL

Johnson pneumatic switches are made in many patterns for the operation of dampers from a remote point, for changing "Dual" thermostats from "day to night," and for placing thermostats and other devices in and out of service, as required.
Standard Johnson switchboards are made of oiled slate. Ebony asbestos, polished oak, and genuine or imitation marble are available on order. Various Johnson devices required at a central control point are mounted on such switchboards, including lever-type switches, gradual switches, clocks, air pressure gauges, recording gauges, etc.

SWITCHES

Bulletin	Type
S-101	Switchboards
S-201	Three-way Switch
S-203	Three-branch Throwover
S-205	Three-branch Three-way
S-215	Three-branch Four-way
S-217	Special Three-branch
S-209	Four-branch, Four-way
S-219	Multiple-step
S-220	Gradual
V-15	Single Solenoid for Air
V-14	Double Solenoid for Air
G-201	Air Pressure Gauges

PNEUMATIC CLOCKS



DAY-NIGHT CLOCK



SEVEN-DAY PROGRAM CLOCK



COMBINED 24-HOUR AND 7-DAY CLOCK

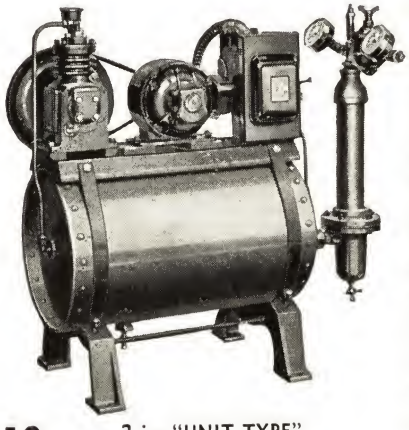
Johnson pneumatic clocks are driven by Telechron self-starting single-phase synchronous motors and are for operation by alternating current where the frequency is controlled accurately. For direct or for alternating current not properly controlled, electrically wound, spring-driven Johnson clocks are furnished. Each clock operates a pneumatic relay so that compressed air is placed in or exhausted from the "branch line" at certain intervals, for the operation of other Johnson devices. The principal use of these clocks is to change Johnson "Dual" thermostat control systems and Johnson zone control systems from day to night operation. There are many other applications where the operation of various devices is required at certain times. Johnson "Periodic Flush" systems *(Bulletin C-301)* offer remarkable economies. The "Day-Night" or 24-hour clock *(Bulletin C-302)* is used where the same operating program is repeated daily, "on" and "off." The "night" interval may be adjusted for any period between eight and sixteen hours.

The "24-hour and 7-day" clock *(Bulletin C-303)* also repeats the same program daily, but an additional dial provides interruption of the daily cycle for week-end service, for any period from 24 to 48 hours, every seven days.

The "Program Clock" *(Bulletin C-304)* permits a different operating program for each day of the week. The dial makes one revolution every seven days and is equipped with segments to allow successive operations each day at intervals of not less than fifteen minutes.

AIR COMPRESSORS

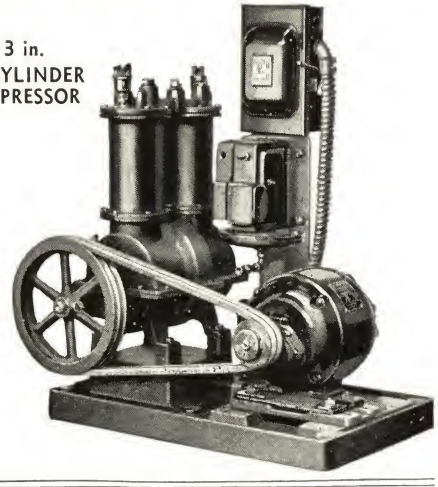
Johnson temperature control devices use compressed air at fifteen pounds pressure. Each device uses very little air, and a small compressor is amply large for an extensive control system. Johnson compressors represent the best in machine design and manufacture. They are automatic in operation and require no attention beyond ordinary care in oiling and cleaning.



2 in. "UNIT-TYPE" AIR COMPRESSOR

Each compressor is equipped with pressure governing switch, over-load time protective fuse plugs, enclosed safety knife switch, high grade electric motor, and V-belt drive. Unit-type assemblies include storage tank, pop safety valve, air filter, reducing valve, and gauges.

3 in. x 3 in. DOUBLE CYLINDER AIR COMPRESSOR



Size of Compressor	No. of Cyl.	Capacity Cu. Ft. Free Air per Min.	Storage Tank, Gallons	Horsepower of Motor	Bulletin
2"AA-5 ...	1	0.61	5*	1/8	A-303
2"A	1	0.61	10*	1/8	A-300
2"B	1	1.13	25*	1/6	A-301
3" x 3"	2	2.55	30*	1/4	A-302
4" x 4"B ..	2	4.98	†	1/2 or 3/4‡	A-307
4" x 4"C ..	2	6.31	†	3/4 or 1‡	A-307

* Made also without tank and stand. † Storage tank mounted separately. Not made in "unit-type." ‡ Larger motors when governors are set for 22 to 30 lbs.

JOHNSON ZONE CONTROL SYSTEMS

ZONE HEATING The piping system which distributes steam—or hot water—to the radiators in a building may be laid out with such mains and branches that various sections may be served independently. It is not at all unusual to find a similar arrangement of piping in existing buildings, facilitating the application of "zone control." In many buildings, a single riser or a group of adjacent risers may be considered as the steam distributing system for a "zone." In other cases, it is easy to make slight changes in the piping arrangement so that satisfactory "zoning" is had.

Many attempts have been made to utilize a single thermostat to control a group of radiators. JOHNSON, as exclusive licensees under various F. I. Raymond patents, manufactures and installs the "Duo-Stat" as the logical answer to the question, "Where shall the thermostat be placed to control an entire heating zone?"

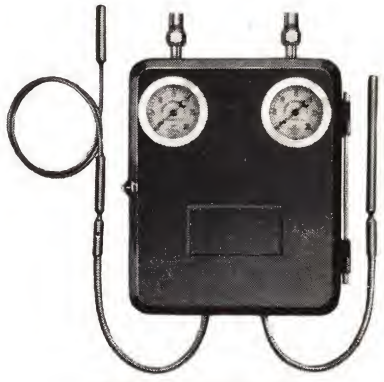
ECONOMY OF CONTROL FROM OUTDOOR TEMPERATURE

Radiators of sufficient heating capacity are provided to combat the coldest weather usually encountered in the locality. Consequently, only a part of that capacity is required during normally cold weather, and a very small fraction on mild days. Changing the amount of effective radiating surface in accordance with the outdoor temperature *has been* a difficult problem.

VARYING THE RADIATOR TEMPERATURE To illustrate the saving possible by reducing radiator temperatures as weather conditions moderate, it is safe to assume that an average outdoor temperature of about 45 degrees might be expected during the heating season in a locality where the amount of radiating surface is computed from a base temperature of 0 degrees. With a 45-degree temperature rise above zero, the required radiator temperature will be 90 degrees less than the full radiator at 210, or 120 degrees for comfortable conditions on an *average* heating day.

THE JOHNSON DUO-STAT

RADIATORS PARTIALLY FILLED The Johnson Duo-Stat operates according to the relationship between outdoor and radiator temperatures. Since the temperature of steam is approximately 210 degrees, it is not easy to produce a temperature lower than that throughout a radiator. However, the same result is accomplished if steam is kept in only a part of the radiator. It is found that the operation of any good one-pipe or two-pipe steam or vapor heating system can be controlled from a thermostatic bulb attached to one radiator in such a way that all radiators are kept partially filled with steam in mild weather. Moreover, a peculiar type of operation is obtained which tends to produce the same proportion of filling in all the radiators.



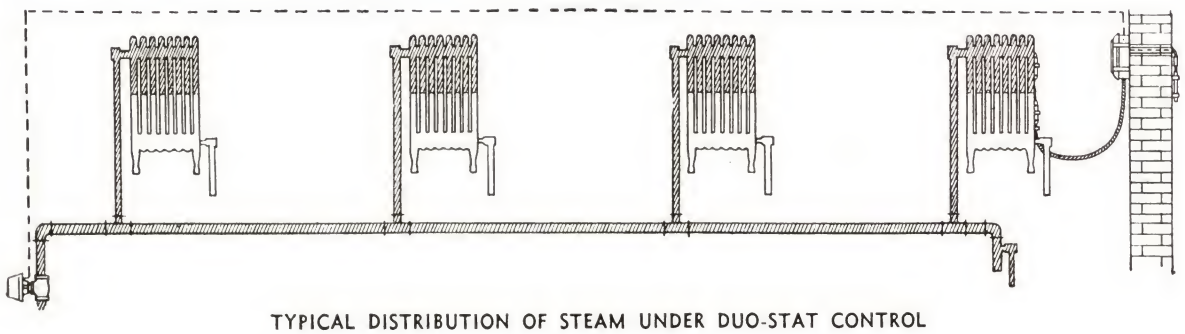
JOHNSON DUO-STAT

The Johnson Duo-Stat is equipped with two sensitive elements. One of the elements is placed outdoors. The other is clamped securely to a radiator, preferably to the last radiator at the end of the longest steam main in the particular heating zone. As a matter of fact, for steam, vapor or vacuum heating systems, the radiator bulb is divided into four sections, so that they may be placed advantageously to sense the average temperature of the heated and unheated portions of the radiator.

EVEN DISTRIBUTION OF STEAM

UNIFORM TEMPERATURE Room temperatures under Duo-Stat control are surprisingly uniform, with neither overheating nor waste of fuel. Even distribution of heat throughout each zone is possible because Duo-Stat control, from the relationship between outdoor and radiator temperatures, overcomes the disadvantage of cold steam mains by turning the steam on so often that the lines stay hot, and supplies steam to the system at sufficient pressure, whenever steam is required, to reach even the last radiators.

The booklet, "Johnson Zone Control," covers completely the applications of Johnson Duo-Stats for zone control.



TYPICAL DISTRIBUTION OF STEAM UNDER DUO-STAT CONTROL

BRANCH OFFICES

Albany, N. Y. . . . . 13 Northern Blvd.
Atlanta, Ga. . . . . 813 Bona Allen Bldg.
Baltimore, Md. . . . . 911 Cathedral St.
Boston, Mass. . . . . 20 Winchester St.
Buffalo, N. Y. . . . . 503 Franklin St.
Chicago, Ill. . . . . 1355 Washington Blvd.
Cincinnati, Ohio . . . . . 1113 Race St.
Cleveland, Ohio . . . . . 2142 E. 19th St.
Dallas, Texas . . . . . 2505 Commerce St.
Denver, Colo. . . . . 1230 California St.
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Greensboro, N. C. . . . . 105 Piedmont Bldg.
Houston, Tex. . . . . 431 Kress Bldg.
Indianapolis, Ind. . . . . 333 N. Pennsylvania St.
Kansas City, Mo. . . . . 1031 Wyandotte St.
Los Angeles, Calif. . . . . 153 West Avenue, 34
Milwaukee, Wisc. . . . . 507 E. Michigan St.
Minneapolis, Minn. . . . . 922 Second Ave., South
New York, N. Y. . . . . 28 E. 29th St.
Oklahoma City, Okla. . . . . 1100 N. W. 38th St.
Philadelphia, Pa. . . . . 2853 N. 12th St.
Pittsburgh, Pa. . . . . 1238 Brighton Road
Portland, Ore. . . . . 1312 N. W. Raleigh St.
St. Louis, Mo. . . . . 2328 Locust St.
Salt Lake City, Utah . . . . . 602 Dooly Bldg.
San Francisco, Calif. . . . . 814 Rialto Bldg.
Seattle, Wash. . . . . 514 Colman Bldg.
Washington, D. C. . . . . 300 Bond Bldg.

Johnson Temperature Regulating Company of Canada, Ltd.

Calgary, Alta. . . . . 222 Fifth Ave., W.
Montreal, Que. . . . . 4341 Melrose Ave.
Toronto, Ont. . . . . 113 Simcoe St.
Vancouver, B. C. . . . . 550 Sixth Ave., W.
Winnipeg, Man. . . . . 259 Stanley St.

JOHNSON SERVICE COMPANY

Milwaukee, Wisconsin

•

THE MERCOID CORPORATION

Complete Line of Automatic Controls

SOLE MANUFACTURERS OF THE MERCOID SWITCH

4201 Belmont Avenue, CHICAGO, ILL.
330 W. 34th Street, NEW YORK, N. Y.
25 Ivy Street, BOSTON, MASS.
3137 N. Broad Street, PHILADELPHIA, PA.
DISTRIBUTORS IN ALL PRINCIPAL CITIES

Mercoid Controls have a wide application in both the domestic and industrial fields. They are generally employed for the control of motor-driven automatic heating or refrigeration and air conditioning equipment, electric space or tank heaters, and for numerous industrial applications.

Equipped throughout with Mercoid sealed mercury contact switches—they cannot be affected by dirt or corrosion. The following are brief descriptions of several Mercoid Controls which are standard.

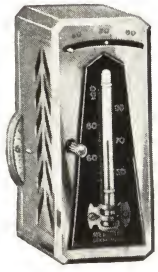
Sensatherm

A sensitive air type thermostat for low or high voltage requirements. Used for controlling automatic heating, refrigeration, or air conditioning equipment.

Furnished standard for low voltage to operate with the Mercoid Transformer-Relay. It can directly handle 20 watts or less on 110 or 220 volts without a relay. The standard range is 55° to 85° F. Other ranges are available. Total differential, 1° F. (plus or minus ½°).



Size, 3 1/8 in. high, 1 1/8 in. wide, and 2¼ in. deep. Dual Sensatherms available for day and night temperature regulation, also for heating and cooling operations.



Day-Night Sensatherm—This control meets the demand for a low priced, yet dependable day and night temperature control. It has all of the outstanding features of the regular Mercoid Sensatherm, combined with a hand wound timer mechanism that is easy to set and reliable in operation. Standard range 55° to 80° F. Total differential 1° F. (plus or minus ½°).

Standard finish: polished chromium with black enamel thermometer.

Two-Stage Sensatherm



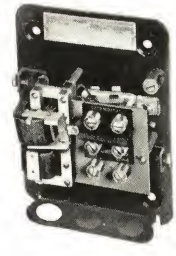
A new type thermostat designed to control high-low gas or oil burners. It may be used to provide regulation of two-speed fans on air conditioning systems. Also adaptable on stoker fired forced circulating warm air systems for eliminating temperature-overshooting.

Close differential is obtained through the use of this thermostat. It is highly recommended for all applications where a two-stage thermostat is desired.

Two sealed mercury magnetic type switches are used.

Electrical capacity 9/10 amp. at 24 volts or less.

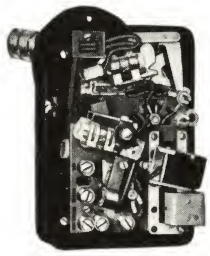
Type V Transformer-Relay



A reliable low voltage mercury contact relay, which also acts as a transformer inducing low voltage (24 volts) on the pilot circuit. Its construction does away with all hum and chatter. Equipped with carefully tapped and impregnated heavy duty coils. Has a steel cabinet.

Available for 110 or 220 volts, 60, 50 or 25 cycle. Can also be furnished as a repulsion-relay for 110 or 230 volts d-c.

Oil Burner Stack Safety and Ignition Control



Type KMI assures positive protection against flame or ignition failure on burners employing intermittent ignition. It has a closed safety circuit which prevents burner operation upon opening of any circuit. The interlocking ignition and safety mechanism checks each successive stage before every starting operation. This control also provides low voltage protection against line voltage fluctuations.

Type KMW has the same outstanding features as Type KMI excepting that the intermittent ignition switch is not present. It is used on oil burners having constant ignition.

Mercoid Stoker Control



The Stok-A-Timer is a unique combination of the Mercoid Transformer-Relay and a self-starting synchronous timer mechanism, designed to maintain the stoker fire during the periods when thermostat does not call for heat. Dials are accurately graduated and all adjustments are made by hand without the use of tools. Interval adjustment can be set for ½ or 1-hour interval. Fire maintaining period is adjustable from 30 seconds to 12 minutes. This control is compact and neat in appearance.

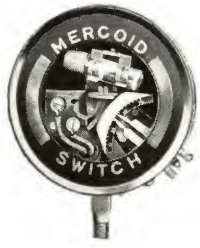
Mercoid Combined Pressure and Low Water Control Type DA-121



Protect Your Boiler at the Water Level

The Type DA-121 Mercoid Low Water and Pressure Control with the new double adjustment feature, is designed primarily for the protection of automatically fired steam boilers, to prevent the hazard of firing into dry boilers and also guard against building up excessive steam pressure.

Mercoid Limit Controls



Various types of Mercoid Limit Controls are available for steam, hot water and warm air furnaces.

Type DA-31 illustrated, is a positive safety limiting device widely used on steam boilers. It is actuated by a specially designed Bourdon tube of great strength and elasticity. Has external independent adjustments, with high and low setting, each directly indicated on a visible calibrated dial to facilitate installation work.

Type DA-36 is used for control of hot water boilers, hot water storage tanks, indirect water heater on steam boilers or for close pressure regulation of vapor-vacuum systems. Has same adjustment features as Type DA-31.

Type 115-W Immersatherm is a compact summer-winter hot water control for use with steam, vapor and hot water systems, employing indirect domestic hot water heaters.

Type M-51 limit control is used on automatically fired warm air furnaces to prevent the furnace from overheating. Type M-53 is used to control the operation of air circulating or booster fans. Type M-80 is a combined warm air furnace fan and limit control.

MINNEAPOLIS-HONEYWELL REGULATOR COMPANY

Automatic Controls and Control Systems for Heating—Ventilating—Air Conditioning and Industrial Applications
Brown Instruments for Indicating Recording and Controlling

ESTABLISHED IN 1865

2771 Fourth Ave., South
MINNEAPOLIS, MINN.

CABLE ADDRESS
MINNREG, MINNEAPOLIS

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CANADIAN

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Electric Control Systems

Pneumatic Control Systems

AUTOMATIC ● CONTROLS MH

Combination Control Systems involving Electric and Pneumatic Controls

The services this company offers Architects and Builders are listed on these two pages. A complete list of all control devices necessary to perform these services would require many pages, and each specific application would require additional pages of explanation to give capacities, wiring diagrams, settings, etc. No one understands better than an Architect or Builder the multitude of details, large and small, which make every project different from succeeding ones. Likewise, we suggest that each control application be considered as a separate problem to be dealt with individually, and we urge you to contact the nearest M-H office where a control engineer will be placed at your service. M-H is alone in the unique position of being able to give unbiased control recommendations, as we manufacture a complete line of electric, as well as pneumatic controls.

Undivided Responsibility

Minneapolis-Honeywell is ready to assume the complete responsibility for the supply and installation of automatic controls and instruments specified for any building that you design. M-H service is complete. Through our nation-wide organization, we are prepared to make complete installation, supervise installation, provide periodic service or simply deliver control equipment.

Electric—Pneumatic or Combination Systems

In the field of commercial heating and air conditioning there are two accepted methods of automatic control—pneumatic and electric—each type has its own field of application. However, neither is sufficiently comprehensive to be suited to all installations. Minneapolis-Honeywell makes available a full range of automatic controls and control systems—electric, pneumatic, or a combination of the two. In this way you are assured of the right control for every application.

Indicating and Recording Instruments

The maintenance of accurate records is your client's safeguard against inefficient operation and costly repairs. Brown indicating and recording instruments are designed for use on all types of air conditioning and industrial process installations.

Branch Offices Everywhere

Direct branch and distributing offices are located in sixty-eight cities. Engineers and mechanics in each office are factory trained to assume complete responsibility for the installation and maintenance of all types of systems.

We Suggest

1. Call the Minneapolis-Honeywell office in your city and a competent engineer will be glad to furnish complete catalog material describing and illustrating any phase of automatic control.

2. Check the following brief outline—see where the Minneapolis-Honeywell program of "unified responsibility" for all controls can be of value to you.

Residential Heating

Automatic heating systems normally include basic controls as standard equipment, but additional refinements must be specified separately. Your client will be assured of greater comfort, economy, and safety if you specify:

1. Lowered Night Temperatures
2. Humidity Control
3. Low Water Cutoff
4. Year 'Round Hot Water from the Automatic Burner
5. Zone Control

Schools and Public Buildings

In school and public building work it is frequently necessary to sub-divide the functions of heating and ventilating into multiple sub-systems. Automatic control should provide complete co-ordination of these integral parts. Some of the factors which should be considered are:

1. Direct Radiation
2. Unit Ventilators
3. Unit Heaters
4. Central Fan Systems
5. Exhaust Systems
6. Zone Control
7. Lowered Night Temperatures
8. Combustion Regulation
9. Combustion Safety
10. Indicating and Recording Instruments

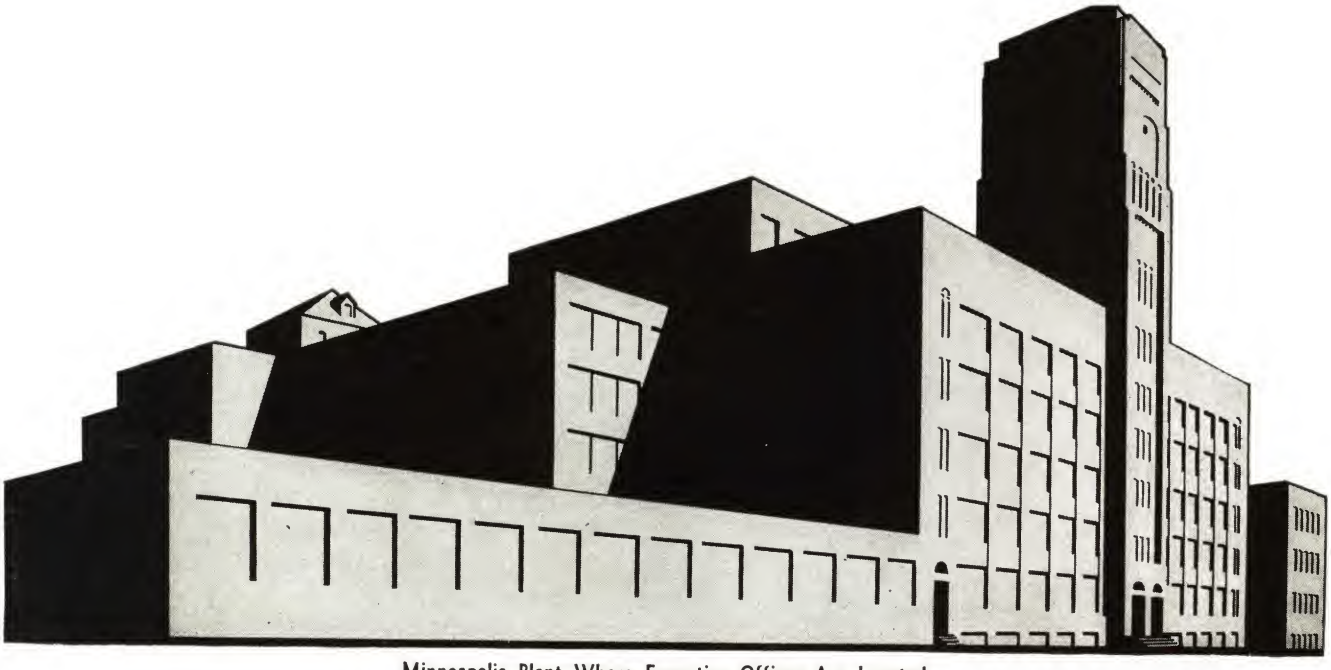
Air Conditioning

Your client rightfully expects to enjoy all of the advantages which you have made possible in the design of his system. This is possible only when all of the independent functions of the system are co-ordinated and regulated by automatic control.

To Insure the Best Results

Each system should be analyzed with reference to:

1. Ventilation Control
2. Refrigeration Control
3. Compensated Control
4. Zone Control
5. Humidity Control
6. Indicating and Recording Instruments



Minneapolis Plant Where Executive Offices Are Located
Additional Plants in Philadelphia, Pa., Chicago, Ill. and Wabash, Ind.

THE POWERS REGULATOR CO.

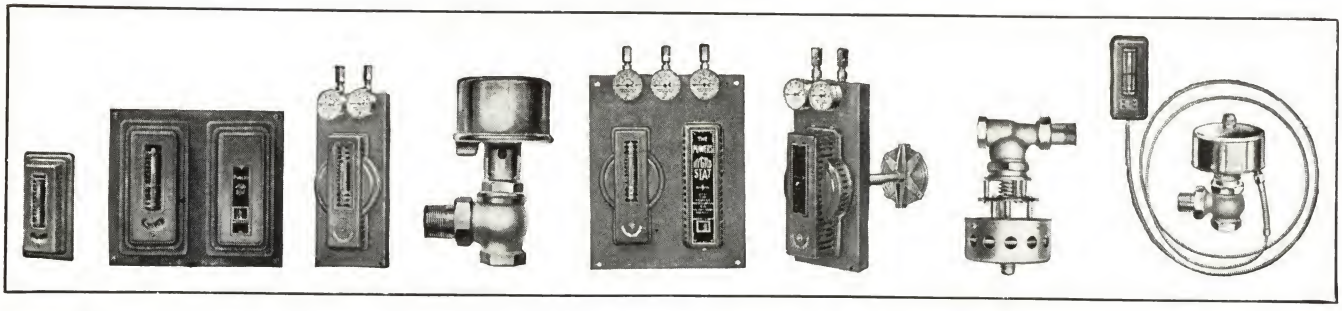
48 Years of Automatic Temperature and Humidity Control

2722 Greenview Avenue, CHICAGO, ILL.

CHICAGO, 2722 Greenview Ave.—Buckingham 7100
LOS ANGELES, 1808 W. Eighth St.—Federal 8272
NEW YORK, 231 E. 46th St.—Eldorado 5-2050
TORONTO, ONT., 195 Spadina Ave.—Elgin 7673

Offices in 47 Cities—See Your Telephone Directory

For Powers Safety Water Mixing Valves, See File Index



Products

Only a few of our very complete line of Compressed Air Operated and Self-Operating Temperature, Humidity and Air Flow Controls for automatically regulating heating, cooling, ventilating and air conditioning systems and industrial processes, are illustrated here.

We also make a complete line of Self-Operating and Compressed Air Operated Valves and Regulators for controlling steam heated hot water heaters and submerged type heaters; and for automatically mixing hot and cold water or steam and cold water, delivering a mixture at a predetermined temperature.

Also Regulators with Thermometers for controlling and indicating or recording wet and dry bulb temperatures; Dial Indicating and Recording Thermometers; High Pressure Steam Traps and Pressure Reducing Valves.

Engineering Service

Nearly 50 years of experience in furnishing and installing temperature and humidity control for every conceivable purpose in all types of buildings has given us a wealth of knowledge from which you can draw in selecting the proper type of control for any purpose.

Outstanding Users of Powers Control

The United States Capitol (the largest air conditioning installation in the world); Radio City, 6 buildings; Sears Roebuck & Co., over 20 buildings; Ford Motor Co., over 10 buildings; Harvard University; Massachusetts Institute of Technology; Chrysler and Empire State Bldgs.; Hotel New Yorker; The Palmer House; Madison Square Garden; New York World's Fair, Administration Bldg.; and thousands of other prominent schools, hospitals, office and industrial buildings.

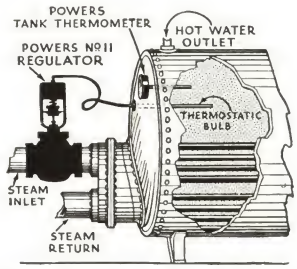
Catalogs and Bulletins

Describing any or all of our products furnished upon request. Telephone or write our nearest office. See your telephone directory.

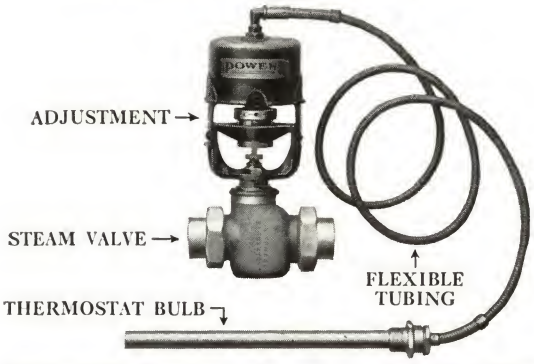


POWERS TEMPERATURE REGULATORS FOR STEAM HEATED HOT WATER HEATERS

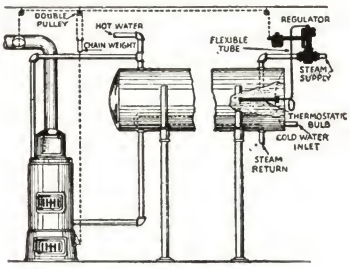
SELF-OPERATING REGULATORS



Powers Self-Operating No. 11 Regulator



Self-Operating No. 11 Regulator—Spring Adjustment Type



Powers No. 12 Regulator

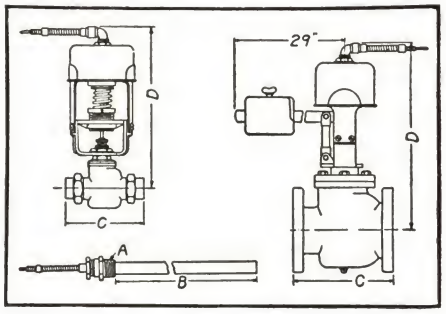
Used on steam heated hot water service in hotels, apartment buildings, offices, schools, shops, hospitals, factories, laundries, etc. Because this regulator prevents overheated water, it saves fuel and prolongs the life of faucets, valves and packing. Self-operating; easily installed.

In ordering, always give valve size, steam pressure, standard or stainless steel trimmed valve, operating temperature, range of adjustment, type of adjustment, length of flexible tubing, and whether bulb will be installed horizontally, vertically pointing upward or vertically pointing downward.

The spring adjustment regulator is commonly used for this work, except in sizes larger than 4 in., when lever and weight adjustment is used. Smaller sizes will be furnished in lever type if specified.

The regulator will be furnished to operate at 160° F., with adjustability 20° above and below that point, unless otherwise specified.

The flexible connecting tubing is 6 ft. long for sizes 1½ in. and smaller; 8 ft. for 2 to 4 in., inclusive; and 10 ft. for larger sizes. Additional lengths of tubing will be furnished at extra cost.



Valves ¼ and ⅜ in. are of the single seat type, all other sizes are of the double seated or balanced type. Companion flanges can be furnished at market prices. Flanged valves will be drilled standard unless otherwise ordered.

Specify standard valve for steam pressures up to 75 lb. and stainless steel trimmed valve for steam pressures above 75 lb.

Specification—In connection with the (steam heated) hot water storage tank, furnish and install Powers No. 11 Tank Regulator with .... inch [standard] [stainless steel trimmed] valve with .... feet of flexible tubing. Regulator shall maintain the temperature of the water at .... degrees with steam pressure at .... lb.

Powers Nos. 12 and 13 Regulators

Where installation is to control steam coil and auxiliary coal burning heater, specify Powers No. 12 Regulator with chains, pulleys, etc., for the control of dampers on auxiliary heaters.

For coal burning heaters without steam coils, use Powers No. 13 Regulator.

PRINCIPAL DIMENSIONS OF NO. 11 TANK REGULATOR

Valve size ..... in.	¼	⅜	½	¾	1	1¼	1½	2	2½	3	3½	4	5	6	8
Style of body	Union	Union	Union	Union	Union	Union	Union	Screwed	Screwed	Screwed	Flanged	Flanged	Flanged	Flanged	Flanged
Material of body	Bronze	Bronze	Bronze	Bronze	Bronze	Bronze	Bronze	Iron	Iron	Iron	Iron	Iron	Iron	Iron	Iron
Dimension A ..... in.	1	1	1	1	1	1	1	1	1	1	1	1	1¼	1¾	1¼
" B ..... in.	8	8	10	10	12	14	14	16	16	18	20	20	24	24	24
" C ..... in.	4⅛	4⅛	5⅝	6	6 11/16	6⅞	7⅞	8	9¼	9¼	10¾	10¾	12	13	16¾
" D ..... in.	10 7/16	10 9/16	11 3/4	11 9/16	11 7/8	12 3/16	12½	15¼	15 5/8	15 5/8	15⅞	15⅞	21½	23	24

COMPRESSED AIR AND WATER OPERATED REGULATORS



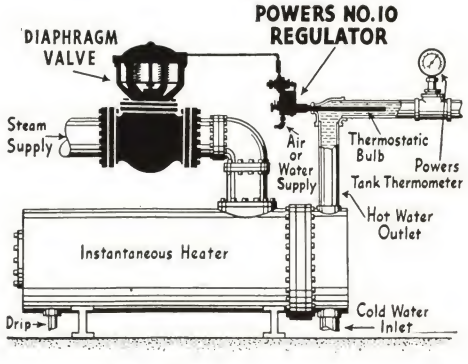
Powers No. 10 Compressed Air or Water Operated Regulator



All Metal Diaphragm Valve

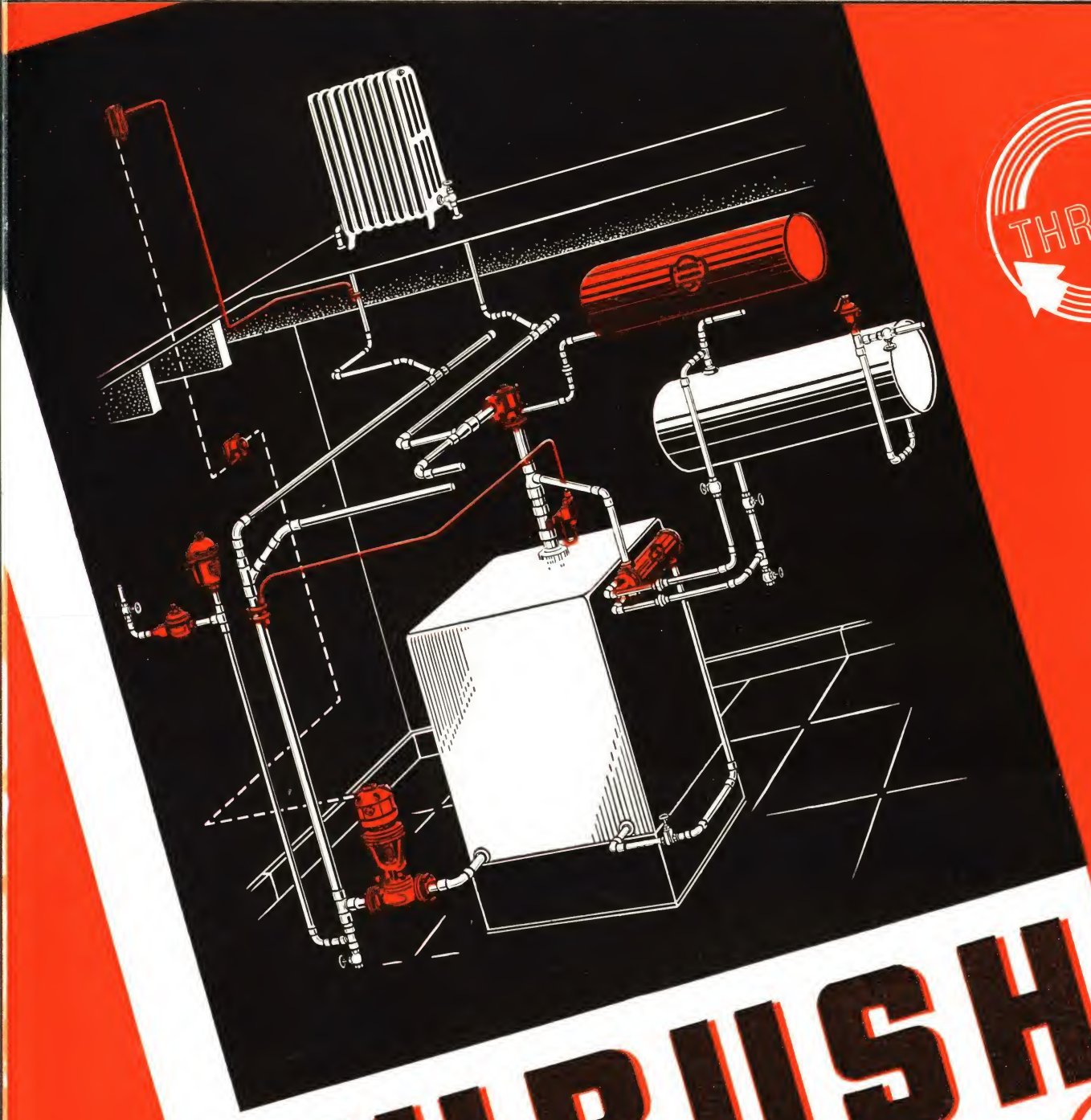


Rubber Diaphragm Valve



A compressed air or water operated regulator for the control of hot water heaters where accurate control of a large valve is required. Regulator can be supplied with either all metal or rubber diaphragm valves up to 10 in. in size.

Specification—In connection with the (steam heated) [hot water storage tank] [instantaneous hot water heater] furnish and install Powers No. 10 Regulator with .... in. [metal diaphragm] [rubber diaphragm] valve. Regulator shall maintain the temperature of the water at .... degrees with steam pressure at .... lb.



THRUSH

THRUSH

FLOW *Control*

FOR AUTOMATICALLY FIRED

HOT WATER HEAT

THRUSH . . . . . FLOW CONTROL SYSTEM FOR

26
43

THE COMPLETE SYSTEM

The complete Thrush Flow Control System consists of a Thrush Water Circulator, a Thrush Flow Control Valve, a No. 201 Thrush Radiant Heat Control (thermostat), a No. 203 Modulating Water Temperature Control, a No. 198 Relay Transformer, a No. 12 Thrush Pressure Reducing Valve, a No. 4 Thrush Differential Pressure Relief Valve, a special air-tight Pressure Tank, a Thrush Water Heater and Thrush Combination Gauge and Thermometer.

The Thrush System is a closed pressure system with automatic filling of the boiler, automatic relief of excess pressures, adequate provision for expansion when the water is heating and complete mechanical control of circulation.

When this system is used the heating plant becomes completely automatic, flexible and quick to respond to the slightest need for heat.

Makes Hot Water Heating Quick Heating—There is no overheating and fuel waste when the Thrush Flow Control System is installed. It makes hot water heating "quick heating"—quicker than steam heating.

Thrush Flow Control System of Hot Water Heating assures a continuous flow of radiant heat, reduces fuel consumption, and provides domestic hot water for bath, kitchen and laundry the year around. A reservoir of hot water is kept available for distribution when heat is needed. The No. 201 Thrush Radiant Heat Control automatically controls circulation of water in the system by starting and stopping the Thrush Water Circulator, which quickly forces water through the Thrush Flow Control Valve into every radiator in every room. Room temperature is maintained within a fraction of a degree.

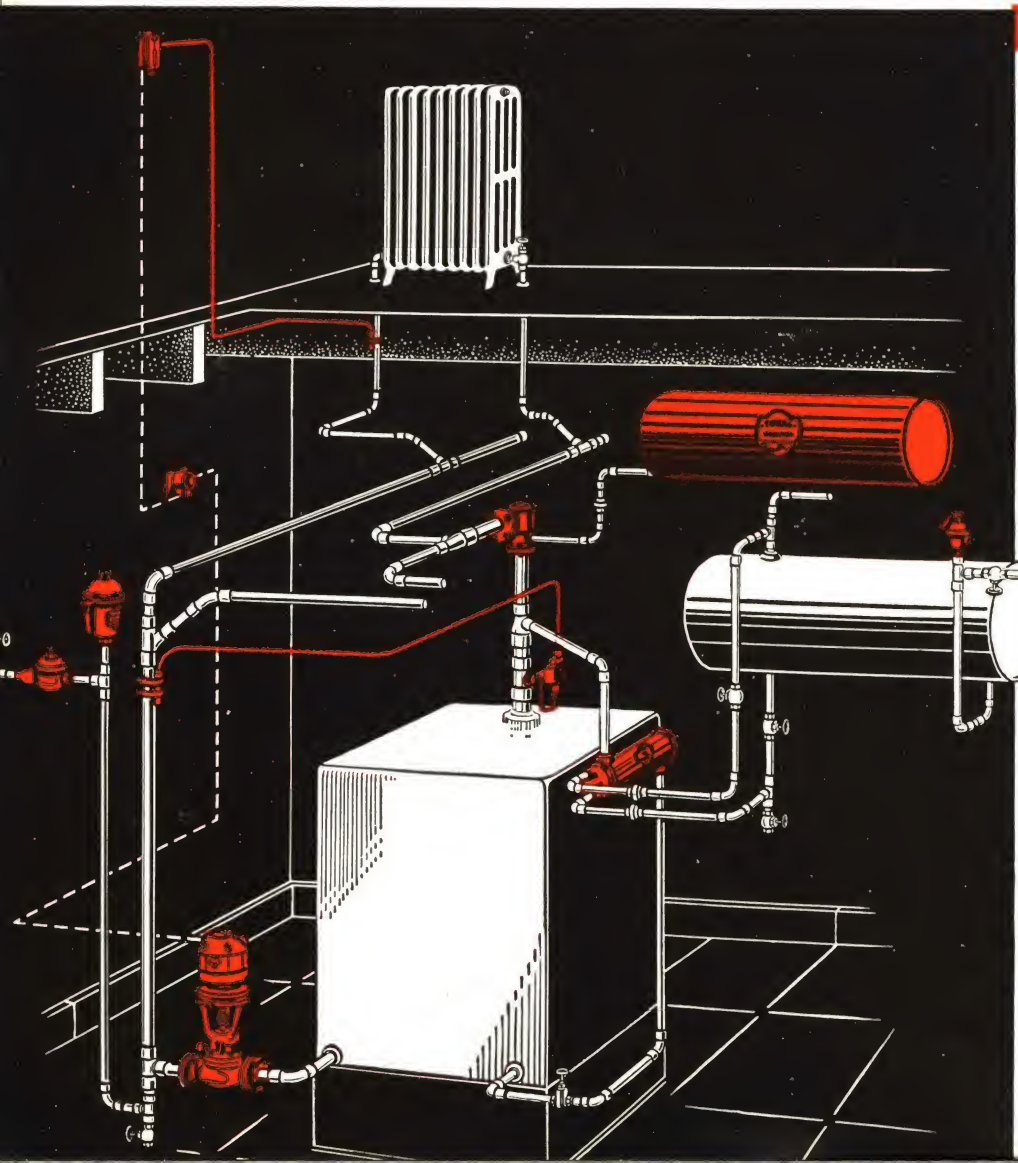
2

Entirely Automatic—Thrush Flow Control System is entirely automatic for summer-winter use. Nothing at all need be done to the job for summer operation. The patented Thrush Flow Control Valve shuts off all circulation through the building when heat is not needed but if heat is needed on an occasional chilly morning, Thrush System will provide it without a thought on the part of the tenant.

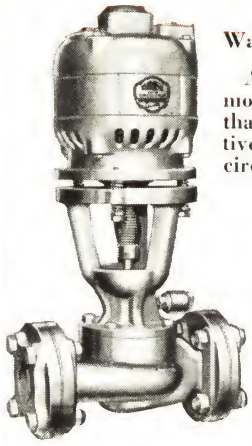
No matter what type of automatic firing device is used with a hot water job, Thrush Flow Control System will increase its efficiency and economy and give it a chance to really demonstrate its advantages.

Thrush Flow Control maintains absolutely uniform temperatures by No. 201 Thrush Radiant Heat Control anticipating outside weather changes. It reduces the running time of the firing device, saves 15 to 30 per cent of the yearly fuel bill and supplies hot domestic water service at nominal cost.

Can Be Quickly Installed—Every automatically fired hot water heating plant should be equipped with Thrush Flow Control System. It can be installed quickly and economically on old or new heating plants. The saving in cost of smaller pipe and valves made possible by the use of this system on a new installation offsets the cost of Thrush equipment.



A BRIEF DESCRIPTION OF

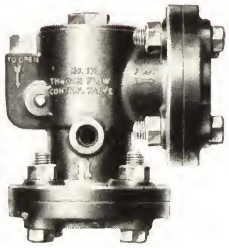


Water Circulator

A silent, electric motor driven unit that assures positive, uniform, forced circulation.

Flow Control Valve

A dependable all-year-round unit that prevents overheating and waste of fuel. It provides complete control of circulation, without any supervision.





Pressure Relief Valve

A dependable automatic Relief Valve that safely protects the hot water heating system from excessive pressure.

AUTOMATICALLY FIRED HOT WATER HEAT

—AND YOU GET THESE 10 ADVANTAGES

1. **Easy Installation**—Thrush Flow Control System is very easy and inexpensive to install. Refer to the diagrams—count the number, kind and cost of fittings—and you will be surprised at the extreme simplicity of Thrush.

2. **Less Labor Costs**—The labor cost of installing a Thrush System is surprisingly low. There are no large pipes to cut and thread.

3. **Economical—Fuel Saving**—Thrush Flow Control saves fuel by reducing the running time of the firing device and eliminating the fuel and the cost of equipment otherwise required for domestic hot water.

4. **Complete—Balanced**—Thrush Flow Control System of Automatic Hot Water Heating is a complete, balanced, forced circulating pressure system with completely automatic flow control scientifically engineered—developed through years of practical experience and continuous use.

5. **Automatic Operation**—The operation of this system is fully automatic. It maintains uniform temperature without thought of the home owner from the beginning of the year to the end.

6. **Forced Throughout**—Forced circulation puts hot water into every radiator—in every room, quickly. Circulation is stopped when room temperature is recovered so that there is no overheating.

7. **Zone Control**—Thrush Flow Control System is ideal where zone control is required. It is simply a matter of installing two or more Flow Control Valves, Circulators and Radiant Heat Controls.

8. **Summer-Winter Hook-ups**—Thrush Flow Control is ideal for summer-winter hook-up because nothing whatever need be done to the system at any time. It will automatically provide heat in the home when heat is needed but in summer when heat is not desired in the radiators, none reaches them. Yet the automatic firing device continues to supply domestic hot water without interruption.

9. **Permits Reduced Pipe Sizes**—Thrush Flow Control System permits the use of greatly reduced pipe sizes and requires smaller valves and fittings.

10. **Company Responsibility**—H. A. Thrush & Company takes full responsibility for the satisfactory operation of a Thrush Flow Control System installed according to instructions—and its reputation and integrity makes that acceptance of responsibility valid.

THE UNITS OF THE STANDARD THRUSH FLOW CONTROL SYSTEM

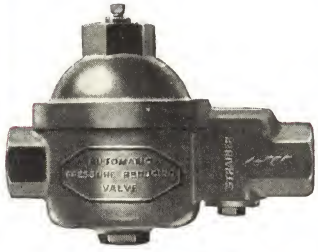


Pressure Tank

Thrush tanks are absolutely air tight, tested under pressure and fully guaranteed. Adds to safety of installation and makes it more efficient.

Pressure Reducing Valve

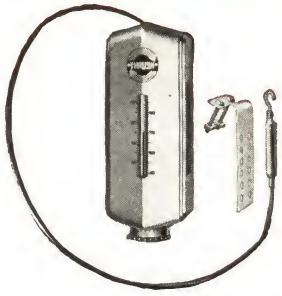
This valve provides automatic filling of the system and assures maintenance of proper water supply in the system at all times.





Water Heater

The straight tube Thrush Water Heater operates at less cost than other automatic sources of hot water. There need be no "conserving" of hot water for laundry, kitchen and bath.

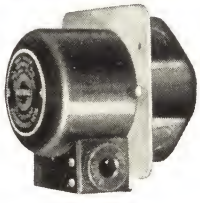


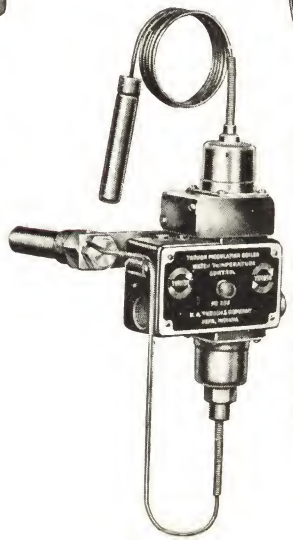
Radiant Heat Control

Automatically maintains room temperature within a fraction of a degree. It controls both room temperature and water temperature in the radiators, compensating to prevent heat variation in rooms.

Relay Transformer

A simple, compact, self-contained unit to be used with the low voltage Radiant Heat Control. It provides line voltage current to the Thrush Water Circulator.





Modulating Water Temperature Control

Automatically raises or lowers boiler water temperature to meet demands. It also maintains any desired minimum temperature to provide domestic hot water.



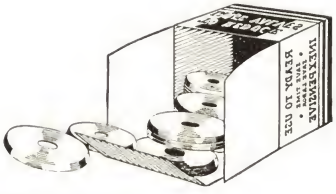
Gauge and Thermometer

Indicates pressure, altitude and temperature of water in a hot water heating system.

No. 75 Relief Valve

Is used to safely protect hot water storage tank and plumbing fixtures from excess pressure.

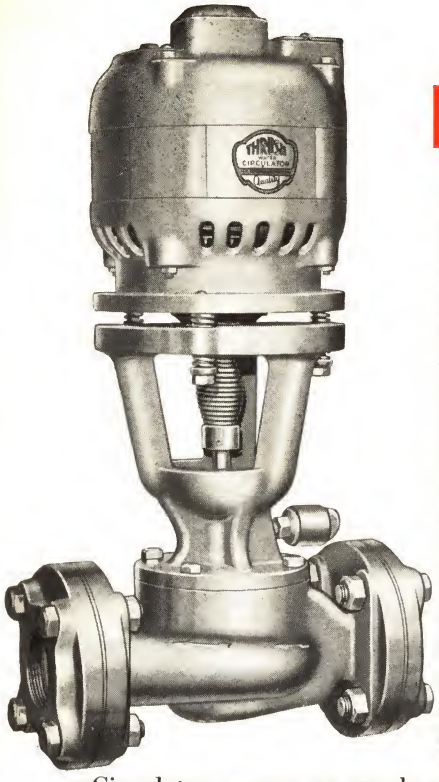




Orifice Inserts

Used to balance circulation through radiators in old, big pipe conversion jobs to assure uniform heat in every radiator. Available in 6 standard sizes.

Description THAT MAKE THRUSH

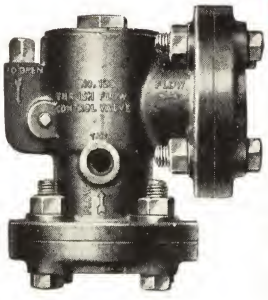


WATER CIRCULATOR

The Thrush Water Circulator is a noiseless, electric motor operated water circulating pump designed and used for three distinct purposes. For Flow Control Systems, the Thrush Water Circulator used in conjunction with a Thrush Flow Control Valve provides perfect circulation control. With a Thrush Tank-in-Basement System, this Circulator, by providing forced circulation, increases heating efficiency and overcomes sluggish circulation and other heating troubles. For use with a Domestic Water Supply System, the Circulator assures an ample supply of really hot water at every faucet. Greatly increases heat exchanger efficiencies.

Smaller Pipes Are Practical—The Thrush Water Circulator assures quicker heating on any Hot Water Heating System, because mechanical circulation distributes heat units throughout the plant much more rapidly than thermal circulation ever can do it. Therefore it is possible, on new jobs, to reduce pipe sizes which reduces labor and material costs enough to completely offset the cost of the Circulator.

Low Operating Cost—Thrush Water Circulators are correctly designed to lift the load of cold returns, and assure instantaneous heat delivery. They are sturdily built, durable and highly efficient, with quiet motors and flexibly connected, stainless steel drive shafts. They use a very small amount of electric current.



FLOW CONTROL VALVE

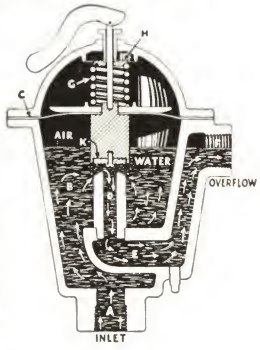
It has an opening below the seat that provides for expansion and elimination of air and gases into Thrush Pressure Tank. Manually operated set screw permits opening permanently but is NOT necessary for normal operation. Thus it assures ample expansion for water in the system without permitting any heat to get into the radiators when it is not wanted. As air and gases are liberated from water in the boiler they are diverted into the pressure tank instead of to the radiators. Only one valve is required that makes the entire function simple and practical.

The patented Thrush Flow Control Valve is made in 6 sizes ranging from 1 in. to 3 in. nominal pipe diameters.



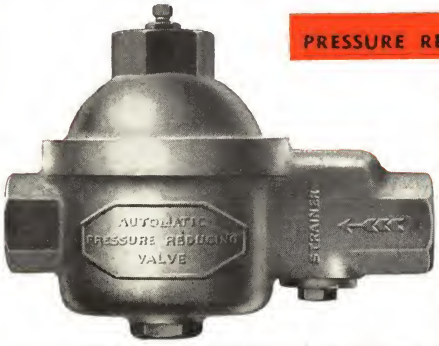
PRESSURE RELIEF VALVE

The No. 4 Thrush Differential Pressure Relief Valve is positive in action and dependable in operation. It has a large metal diaphragm which actuates the movement of a free-working member—no tight fitting guide. It is set to open at 28 pounds pressure making it suitable for 1, 2 or 3 story buildings. Adjustment up to 35 pounds may be made for individual special requirements. This valve is tested, approved and listed as standard by the Underwriters' Laboratories, complies with the A. S. M. E. code requirements and is unconditionally guaranteed when properly installed.



Method of Operation—The valve is installed vertically, the water entering the valve at A, filling the entire valve chamber B to a level above the valve seat, which keeps it submerged. At top of water line a slight air cushion is present, which maintains a flexible pressure against diaphragm C. As pressure is built up against C, spring G is compressed until valve seat K lifts upwards off the seat when water passes through opening D and completely fills water seal E, follows opening F where overflow takes place.

It will be seen that valve seat K is completely submerged at all times, with no possibility of corrosion. The valve member has absolute freedom of action, cannot stick or fail to open.



PRESSURE REDUCING VALVE

Low Pressure Thrush Reducing Valves are pressure regulating valves for use with either water or air to maintain predetermined pressure automatically. The strainer is an integral part of each valve. Movement is actuated by flexible bronze metal diaphragms. These valves are made in 5 sizes indicated as follows, No. 9—¼ in., No. 9A—⅜ in., No. 10—½ in., No. 11—½ in. and No. 12—¾ in. nominal pipe diameters. All working parts are red brass, and all housings are of brass except No. 12 which is cast iron. The standard pressure setting is 45 lbs. initial pressure, 12 lbs. delivery pressure, which is suitable for 1, 2 and 3 story buildings. If different pressures are desired—specify initial and delivery pressures. Nos. 10, 11 and 12 are designed for automatic filling and maintenance of proper water supply in a Hot Water Heating System. Every Thrush Low Pressure Reducing Valve is guaranteed against defects in material and workmanship.

STRAITUBE WATER HEATER

The straight tube construction eliminates scale formation. Straight tubes provide the largest amount of tube surface in the smallest space. It is easily accessible for inspection or cleaning through removable headers—if it ever requires cleaning. Made in sixteen sizes, for hot water or steam—high or low pressure.



of the Parts

FLOW CONTROL SYSTEM

RADIANT HEAT CONTROL

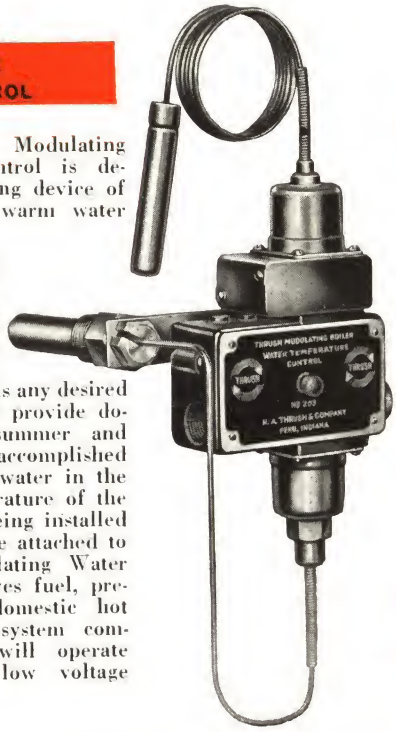


The No. 201 Thrush Radiant Heat Control (thermostat) entirely eliminates "cold 70." It automatically maintains room temperature within a fraction of a degree, controlling both room temperature and water temperature in the radiators. In addition it has a compensating feature to prevent variation in room temperatures or a lack of radiant heat. Therefore it eliminates a common fault found in many ordinary room thermostats.

In addition to being a conventional thermostat, this Radiant Heat Control includes an element which is clamped to the return branch of the nearest radiator, and by this contact maintains water temperature in the radiators within a few degrees of the radiator temperature required to maintain the desired room temperature.

The No. 201 Thrush Radiant Heat Control is shipped complete with 35 ft. of two-wire cable, mounting screws and staples, clamp and two bolts and nuts for bulb, 20 ft. of flexible tubing, and complete installation instructions. Controls with extra length tubing net extra. Two wire low voltage control.

MODULATING WATER TEMPERATURE CONTROL



The No. 203 Thrush Modulating Water Temperature Control is designed to control the firing device of the automatically fired warm water heating system.

The unit automatically raises or lowers boiler water temperature to meet the demands placed on the heating system by changes of outdoor temperature. It also maintains any desired minimum temperature to provide domestic hot water in summer and winter. Operation is accomplished both by temperature of water in the flow riser and by temperature of the return main, one bulb being installed in the flow main and one attached to the return. The Modulating Water Temperature Control saves fuel, prevents overheating of domestic hot water and makes the system completely automatic. It will operate from either line or low voltage current.

PRESSURE TANK



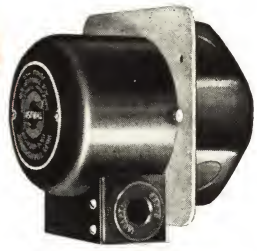
All Thrush Systems are closed systems, using an air-tight Thrush Pressure Tank to provide for the expansion of water in the boiler when heated. As the water expands into the tank, the air is compressed.

The tank is a vital part of the system as it conserves hot water and saves fuel. In the ordinary open gravity or tankless system, this water overflows and is wasted. Cold water must be added and of course it takes fuel to raise the temperature of the new water. With a Thrush Pressure Tank, water when expanded goes into the tank and is returned to the system when it cools.

This tank also serves another important function. Air which would ordinarily get into the radiators and cause trouble in the system is diverted into this tank and held there to act as a cushion, keeping water in the system under continuous pressure.

Thrush tanks are made in four sizes that take care of systems up to 3,000 square feet of radiation. For larger jobs tanks of proper capacity are added.

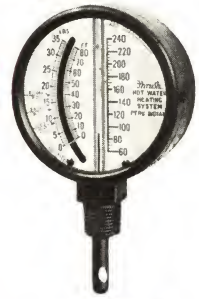
RELAY TRANSFORMER



The Relay Transformer is used with the sensitive low voltage No. 201 Radiant Heat Control to furnish line voltage current to the circulator motor.

It is a simple, compact self-contained unit and includes a standard 4 in. junction box.

GAUGE AND THERMOMETER



A sensitive instrument for accurately indicating pressure, altitude and temperature of water in a hot water heating system. Stationary hands on face of gauge show proper filling point for 1, 2, 3, or 4 story building.

RELIEF VALVE No. 75

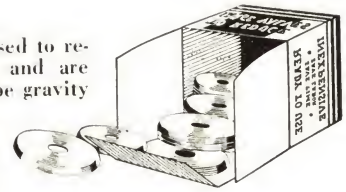


A good pressure relief valve is an absolute necessity with a domestic hot water supply system. The relief valve is made to protect hot water supply boilers, range boilers, gas storage heaters, etc., from excess pressure. They will positively prevent cracking or bursting of the boiler.

All Thrush relief valves are soundly engineered, have large water passages and are built without tight fitting working parts.

The angle type Thrush Relief Valve No. 75 illustrated at right is one of the best that can be bought. It is a safe and dependable pressure relief valve of the finest quality. The No. 75 is a gray iron valve ½ in. tapping, and has brass working parts, metal diaphragm and testing lever. Standard setting is for 85 lbs. pressure, though they can be adjusted at the factory for any pressure from 35 to 150 lbs. pressure. If other than the standard setting is desired it must be specified at time of ordering.

ORIFICE INSERTS

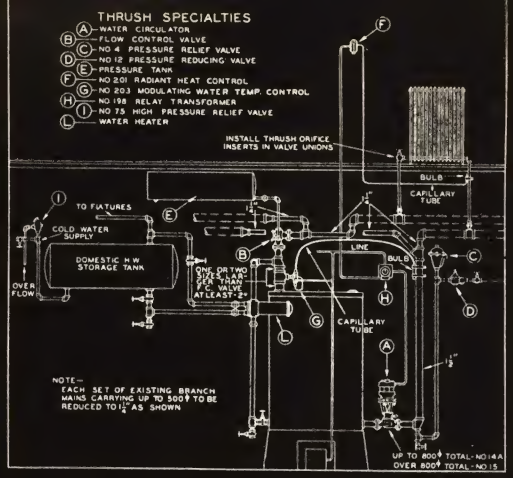


Thrush Orifice Inserts are used to reduce radiator valve openings and are designed for use in old, big pipe gravity jobs which are being converted to forced circulating systems. Large valves unbalance circulation and cause uneven heating of the radiators. Unusually large valve openings to hot water radiators also unbalance circulation and sometimes prevent other radiators from heating at all.

Thrush Orifice Inserts will insure substantially the same water temperature in every radiator. They are made of soft brass to fit the union connections of radiator valves or ells in six standard sizes—½ in., ¾ in., 1 in., 1¼ in., 1½ in. and 2 in., and will fit any make of radiator valve.

These Inserts are ready to use and easy to install.

Typical Installations

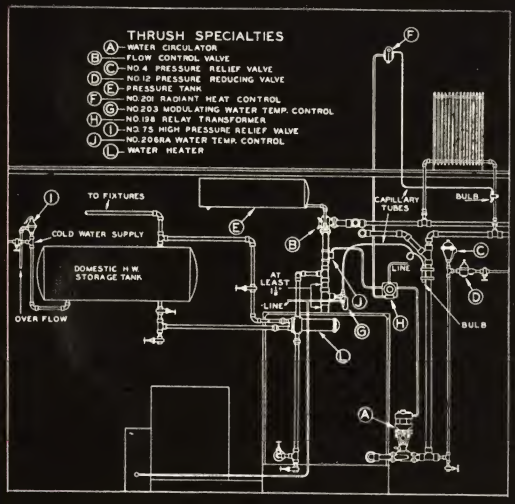


CONVERSION INSTALLATION

Having Two Flow and Return Mains

A Widely Used Installation

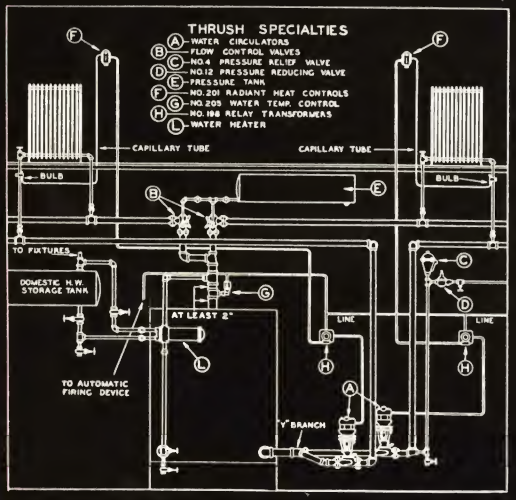
Average installation showing conventional method of main reduction in accordance with pipe size tables given on page 9. This can usually be accomplished with nipples and fittings, and minimum of pipe work and labor. In addition to main reductions, Thrush Orifice Inserts should be installed in radiator valves to balance flow through large branch connections.



STOKER FIRED INSTALLATION

That Insures Constant Room Temperature

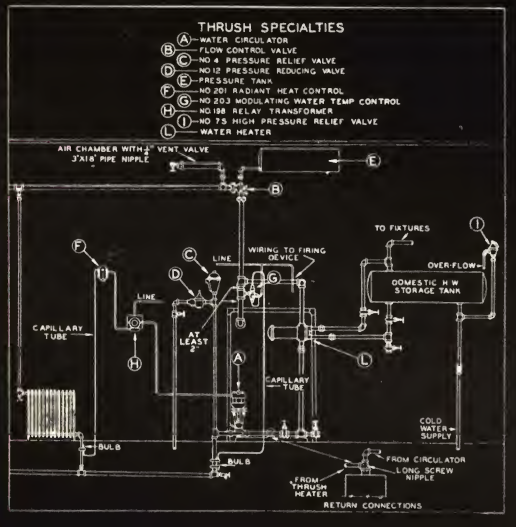
Shows proper installation of Thrush Flow Control System with soft coal stoker fired boiler. Stoker is controlled by No. 203 Thrush Modulating Water Temperature Control G. The No. 206 Control J is wired to Thrush Circulator and will start Circulator if boiler temperature should override to 220 degrees. Will operate Circulator just long enough to reduce boiler temperature. If stoker does not have some form of draft control to reduce natural draft, then it is advisable to place a swing check damper in draft chamber ahead of blower. This will prevent high boiler temperature between stoker operations. The No. 201 Thrush Radiant Heat Control F operates Thrush Circulator only to maintain constant room temperature.



ZONE CONTROL INSTALLATION

Will Maintain Different Temperatures in Different Locations

Shows proper application of Thrush Flow Control equipment for two zone installation. A Thrush Flow Control Valve and Circulator, with separate No. 201 Thrush Radiant Heat Control, makes each zone a separate heating plant. Insures perfect temperature control to meet individual demand of each unit. Any desired temperature can be maintained in each zone, making it unnecessary to overheat one portion of a building in order to properly heat another part. Any number of zones can be heated from one boiler, eliminating the additional boilers that would be required to furnish individual heating for two or more tenants. Particularly recommended for apartments, row houses, or store buildings having several tenants.



ARCOLA TYPE INSTALLATION

Where Flow Is Overhead and Return Under Floor

Shows correct installation of complete Thrush Flow Control System for Arcola type systems where flow main is carried overhead and return under floor.

Provides summer-winter domestic water supply and all the advantages of larger Flow Control installations.

Thrush Pressure Tank provides for expansion of boiler water. Air chamber is required to vent the flow main.

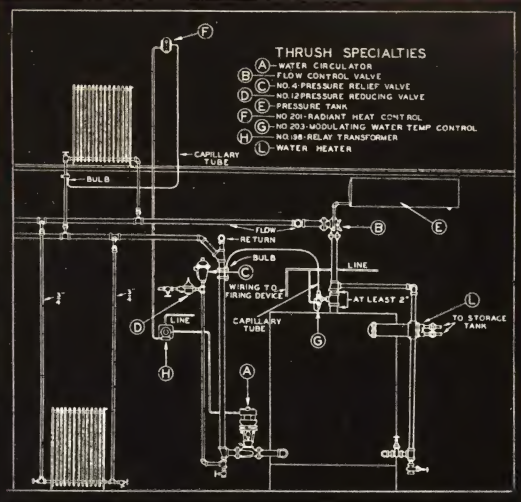
of THRUSH Systems

BASEMENT RADIATION INSTALLATION

Typical Installation With Connections for Radiator

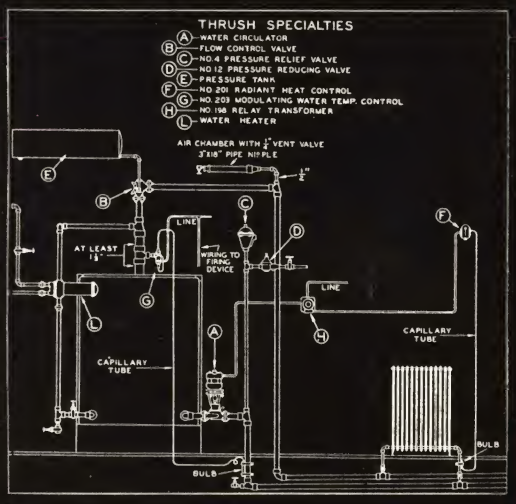
Saves Running a Separate Return

Shows method of circulating basement radiation with flow and return branches dropping down from mains on basement ceiling. Saves running separate return around wall at floor level. In buildings having no basement all of the radiators can be on the same level of the boiler and the flow and return mains carried above the radiators as shown. Domestic water connections are also shown.



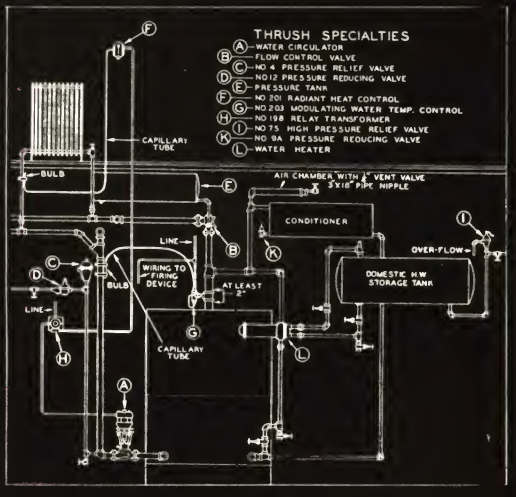
TYPICAL INSTALLATION FOR BUILDINGS WITHOUT BASEMENT

In localities where conditions prohibit excavating for basements, this detail shows how Thrush Flow Control System can be adapted. The boiler can be on the first floor level, or slightly lower, and both the flow and return mains carried under the first floor. Sizing of mains and branches is the same as for conventional system.



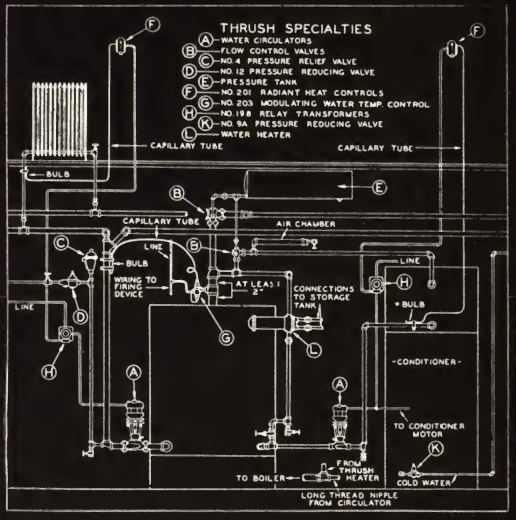
THRUSH FLOW CONTROL SYSTEM WITH WINTER CONDITIONER

This installation shows the complete Thrush Flow Control System in conjunction with a winter conditioner for cleaning and humidifying the air in living and sleeping rooms. The entire heating system is by hot water radiators sensitively controlled by the No. 201 Thrush Radiant Heat Control. Year around domestic water supply is also an additional advantage for this type of heating and conditioning system.



THRUSH FLOW CONTROL SYSTEM WITH SUMMER-WINTER CONDITIONER (Split System)

Where it is desired to heat as well as condition some rooms with the conditioner, this detail shows proper application of Thrush Flow Control System. It is not desirable to recirculate air from certain rooms (such as garages, servants' quarters, kitchens and baths). This installation provides zone control of the radiator system with the conditioner on a separate zone. Year around domestic water supply is an important feature of this system as shown. Thrush engineers recommend hot water heating for the entire building with air conditioning for part of the building, if desired.



The following B.t.u. method for figuring radiation is simple enough to be of practical value. Through the use of this method you will be assured that ample radiation is being provided. The tables give basic factors which can be used to accurately determine the amount of radiation or heat required to maintain any desired room temperature under practically all conditions. These tables are followed by an example which gives explanation for their use.

TABLES OF BASIC HEAT LOSS CO-EFFICIENTS

MASONRY WALLS

Masonry Thickness (inches)	Type of Wall	Interior Finish: Plain — No Finish	Plastered — ½" Thick	Plastered — On Lath—furred	Plastered — On ½" rigid ins.—furred	Plastered — On 1" rigid ins.—furred	Plastered — Lath—furred Alum. Foil	Plastered — Lath—furred 15/8" ins. fill
8	Solid Brick	.50	.16	.32	.22	.16	.23	.12
12		.36	.34	.25	.19	.14	.19	.11
16		.28	.27	.21	.16	.13	.17	.10
8	Hollow Tile	.40	.37	.27	.20	.15	.20	.11
10		.39	.37	.27	.19	.15	.20	.11
12	Stucco	.30	.29	.22	.17	.13	.18	.10
8	Limestone or Sandstone	.71	.64	.39	.25	.18	.26	.13
12		.58	.53	.34	.23	.17	.24	.13
16		.49	.45	.31	.22	.16	.20	.12
6	Concrete	.79	.70	.42	.26	.19	.27	.13
10		.62	.57	.37	.24	.18	.25	.13
16		.48	.44	.31	.21	.16	.22	.12
20		.41	.39	.28	.20	.15	.21	.12
8	Cinder Block	.42	.39	.28	.20	.16	.21	.12
12		.37	.35	.26	.19	.15	.19	.11
8	Concrete Block	.56	.52	.34	.23	.17	.24	.12
12		.49	.46	.32	.22	.16	.23	.12

MASONRY WALLS WITH VENEER

Type of Wall: Facing	Backing (inches)	Interior Finish: Plain — No Finish	Plaster — ½" Thick	Plaster — On Lath—furred	Plaster — On ½" rigid ins.—furred	Plaster — On 1" rigid ins.—furred	Plaster — Lath—furred Alum. Foil	Plaster — Lath—furred 15/8" ins. fill
4 in. Brick or Cut-Stone Veneer	6 Hollow Tile	.37	.35	.26	.19	.16	.19	.11
	8	.36	.34	.25	.19	.14	.19	.11
	10	.35	.33	.25	.18	.14	.19	.11
	12	.28	.26	.21	.16	.13	.19	.10
	6 Concrete	.61	.56	.36	.24	.17	.24	.13
	10	.51	.47	.32	.22	.16	.22	.12
	16	.41	.38	.28	.20	.15	.20	.11
	8 Cinder Block	.35	.33	.25	.18	.14	.19	.11
	12	.31	.30	.23	.17	.14	.18	.11
	8 Concrete Block	.44	.42	.30	.21	.16	.21	.12
	12	.40	.38	.28	.20	.15	.20	.11

PLASTERED FRAME WALLS WITH VARIOUS EXTERIORS

Type of Wall: Exterior Finish	Sheathing Inches	Interior Finish: Studs and Lath	Studs and ½ in. rigid insul.	Studs and 1 in. rigid insul.	Studs and Lath with insul. fill	Studs and Lath with Alum. Foil
Wood Siding or Shingles	Wood 1	.30	.22	.17	.12	.25
	Rigid ins. ¾	.28	.21	.16	.12	.24
Stucco	Wood 1	.35	.25	.18	.13	.28
	Rigid ins. ¾	.33	.23	.18	.13	.27
Brick Veneer	Wood 1	.32	.23	.17	.12	.26
	Rigid ins. ¾	.30	.22	.17	.12	.25

PARTITIONS

Construction	Plain	Finished one side	Finished both sides
Studs, lath and plaster	.....	.62	.34
4 in. Clay Tile	.45	.42	.40
4 in. Gypsum Tile	.30	.28	.27
4 in. Clay Brick	.50	.46	.43

Concrete Floors and Ceilings

Type of Ceiling	Inches Thick	Type of Finish Flooring: Bare	Wood on Sleepers: Single	Wood on Sleepers: Double	Tile or Terrazzo
No Ceiling	4	.65	.40	.31	.61
	6	.59	.37	.30	.56
	8	.53	.35	.28	.51
Plaster direct to Concrete	4	.59	.38	.30	.56
	6	.54	.35	.28	.52
	8	.50	.33	.27	.47
Suspended Lath (or Plaster Bd.) & Plaster	4	.37	.28	.23	.36
	6	.35	.26	.22	.34
	8	.33	.25	.21	.32
Suspended ½ in. Rigid Insulation & Plaster	4	.24	.20	.17	.24
	6	.23	.19	.17	.23
	8	.22	.18	.16	.22
1½ in. Corkboard & Plaster	4	.15	.13	.12	.14
	6	.14	.13	.12	.14
	8	.14	.12	.11	.14
No Ceiling Floor on Ground	4	1.07	.35	.28	.98
	6	.90	.33	.27	.84
	8	.79	.32	.26	.74

FRAME FLOOR AND CEILINGS

Type of Ceiling	Type of Flooring: None	Pine	Pine on ½ in. Rigid Insul.	Maple or Oak on Pine
No Ceiling	.....	.55	.32	.40
Lath and Plaster or Plaster Bd.	.73	.33	.24	.28
Lath, Plaster and 4 in. Rock Wool	.11	.10	.....	.09
1½ in. Corkboard and Plaster	.19	.14	.....	.13

Plastered Ceilings with Unheated Attic, Shingles or Composition Roof on Wood Sheathing

Insulation Between Ceiling Joists	Attic Finish: No Floor — On lath (or Plaster Bd.)	No Floor — On ½" Rigid Insul.	No Floor — On 1" Rigid Insul.	1" Pine Floor — On lath (or Plaster Bd.)	1" Pine Floor — On ½" Rigid Insul.	1" Pine Floor — On 1" Rigid Insul.
None	.30	.22	.16	.21	.16	.12
Alum. Foil	.23			.19		
½" Flexible	.20			.15		
1" Flexible	.16			.11		
3⅝" Rock Wool	.11			.09		

FLAT ROOFS

Type of Roof Deck — To be covered with built-up roofing	No Ceiling: No Insul.	Rigid Type Insulation: ½ in. Fibre	1 in. Fibre	1 in. Cork	1½ in. Cork	2 in. Cork	Lath (or Plaster Board) and Plaster Ceiling: No Insul.	Rigid Type Insulation: ½ in. Fibre	1 in. Fibre	1 in. Cork	1½ in. Cork	2 in. Cork
Concrete 2 in.	.82	.37	.24	.22	.16	.13	.42	.26	.19	.18	.14	.11
Concrete 4 in.	.72	.34	.23	.21	.16	.12	.40	.25	.18	.17	.13	.11
Concrete 6 in.	.64	.33	.22	.21	.15	.12	.37	.24	.18	.17	.13	.11
Wood 1 in.	.49	.28	.20	.19	.14	.12	.32	.21	.16	.15	.12	.10
Wood 1½ in.	.37	.24	.18	.17	.13	.11	.26	.19	.15	.14	.11	.10
Wood 2 in.	.32	.22	.16	.16	.12	.10	.24	.17	.14	.13	.11	.09
Flat Metal	.95	.39	.25	.23	.17	.13	.46	.27	.19	.18	.14	.11
Bare Cor. Iron	1.50	.....	.....	.....	.....	.....	1.10	.....	.....	.....	.....	.....

Windows, Skylights and Doors: Single Windows or Skylights	Double Windows or Skylights	Doors
1.35	.60	.69

Air Changes in Room: Changes per hour	½	1	1½	2	3	4
	.009	.018	.027	.036	.054	.072

AIR CHANGES TO BE USED UNDER NORMAL CONDITIONS

Type of Room or Building	Air Changes per Hour
Rooms having walls protected from outdoor air (basement rooms, etc.)	½
Rooms having 1 side exposed	1
Rooms having 2 sides exposed	1½
Rooms having 3 or 4 sides exposed, bathrooms, public rooms (stores, churches, etc.) and residence entrance halls	2
Entrance halls or lobbies to public buildings	3 or 4

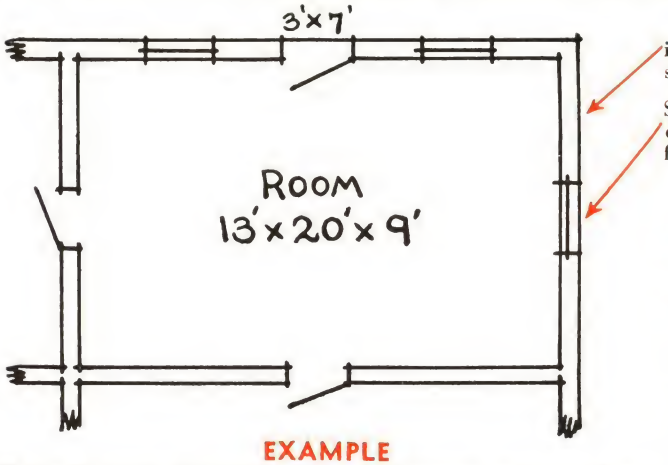
Add ½ air change to rooms on side or corner of prevailing wind and also those with fireplace.

OUTDOOR DESIGN TEMPERATURE

In selecting an outdoor temperature to arrive at the required temperature it is not necessary to use the lowest outdoor temperature nor should the average winter temperature be used. A temperature of at least 40 deg. below the average winter temperature in or near your locality, taken from the Weather Bureau Records, is recommended.

RADIATOR HEAT EMISSIONS

Average Water Temp. in Radiators	Approximate Emission per Hour per Sq. Ft. of Direct Radiation
180° F.	170 B.t.u. (recommended for regular Thrush gravity systems).
190° F.	180 B.t.u.
200° F.	200 B.t.u. (recommended maximum for Thrush Flow Control Systems).



Frame wall—wood siding, 1-in. wood sheathing, studs, lath and plaster.

Single glass windows, double hung, 3 ft. x 5 ft. frames.

EXAMPLE

Maple Floor on pine sub-flooring with Basement under, no Basement ceiling.
Ceiling has attic space above with pitched roof and 1-in. pine floor.

FIRST

Determine B.t.u. or heat loss through all exposed or cold surfaces. *EXPOSED WALL:* There is a net surface of 231 sq. ft. and the basic heat loss factor for this construction will be found in the table to be .30 B.t.u. The room temperature to be maintained in this example is 70 deg. F. and the outdoor temperature zero, giving a temperature difference of 70 deg. Therefore 70 deg. x .30 B.t.u. per sq. ft. = 21 B.t.u.: 21 B.t.u. x 231 sq. ft. = 4851 B.t.u. loss per hour through exposed wall.

In like manner the loss through WINDOWS, CEILING AND OUTSIDE DOOR can be found. These losses will be found to be 4252 B.t.u., 3822 B.t.u. and 1014 B.t.u., respectively.

FLOOR LOSS: The basement under this floor is closed to the outside air and is partially heated by the mains so therefore assume its temperature to be 50 deg. in zero weather, making a temperature difference of 20 deg. between the two sides of floor. The basic heat loss factor for each degree of difference is .40 B.t.u. Therefore 20 deg. x .40 B.t.u. = 8 B.t.u.: 8 B.t.u. x 260 sq. ft. = 2080 B.t.u. required for floor.

SECOND

Determine B.t.u. required to heat air entering room by infiltration which results from chimney drafts, opening of doors, leakage through cracks, etc.

Cubical contents are 2340 cu. ft. and since the air in this room will change approximately 1½ times each hour select the basic factor from the table which is .027 B.t.u. 70 deg. x .027 B.t.u. = 1.89 B.t.u.: 1.89 B.t.u. x 2340 cu. ft. = 4423 B.t.u. required for air entering room by infiltration.

THIRD

Determine the direct cast iron or equivalent radiation requirement for this room.

Take the total B.t.u. requirement found in the first and second steps of this example, which is 20,442 B.t.u. and divide same by any desired heat emission for each sq. ft. of radiating surface which will be found above this example. For regular Thrush Systems in which gravity or natural circulation is to be used, we would recommend a heat emission of 170 B.t.u. per sq. ft. 20,442 ÷ 170 = 120 sq. ft. of radiation, or its equivalent required to heat this room. We would recommend a maximum heat emission of 200 B.t.u. for Thrush Flow Control and forced circulating systems which would make this room require 102 sq. ft.

Sizes

**RADIATOR VALVE AND RISER SIZES TO ALL FLOORS

	Steel Pipe
0—100 sq. ft. radiation	½″
over 100 sq. ft. radiation	¾″
	Copper Pipe
0— 60 sq. ft. radiation	*⅜″
60—125 sq. ft. radiation	½″
over 125 sq. ft. radiation	¾″

*Where ⅜″ lateral branches are over average length, increase to ½″ between mains and vertical risers.
**Down feed branches and valves, for radiators on basement floor, to be increased one size.

RISERS TO TWO OR MORE RADIATORS ON UPPER FLOORS

	Steel Pipe	Copper Pipe
0— 75 sq. ft. total radiation	½″	½″
75—110 sq. ft. total radiation	¾″	½″
over 110 sq. ft. total radiation	¾″	¾″

MAIN SIZES

STEEL PIPE

Sq. Ft. of Radiation	Size and Number of Mains
0- 300	one 1″
301- 500	one 1¼″ or two 1″
501-1000	one 1½″ or two 1¼″
1001-1500	one 2″ or two 1½″
1501-2500	one 2½″ or two 2″
2501-5000	one 3″ or two 2½″

2½″ and 3″ mains may be reduced to 2″ at proper radiation intervals.

COPPER PIPE

Sq. Ft. of Radiation	Size and Number of Mains
0- 300	one ¾″, over 50′ long, 1″
301- 500	one 1″ or two ¾″
501- 800	one 1¼″ or two 1″
801-1250	one 1½″ or two 1¼″
1251-2000	one 2″ or two 1½″
2001-3500	one 2½″ or two 2″
3501-7000	one 3″ or two 2½″

Mains smaller than 2″ should be carried full size to terminating radiator, whether copper or steel pipe.
2″, 2½″, and 3″ mains may be reduced at proper radiation intervals to 1½″.
Mains of unusual length or those meeting a special condition should receive special consideration.

B.T.U. HEAT EMISSION FACTORS

Per Square Foot per Hour for Various Average Water Radiator Temperatures

170 B.t.u.	for 180° F. average
180 B.t.u.	for 190° F. average
200 B.t.u.	for 200° F. average

It is reconciled as satisfactory in consideration of practical operation a maximum B.t.u. emission factor of 200 for calculations in Thrush Flow Control Systems.

Installation Data and Specifications

26
43

FOR THRUSH FLOW CONTROL SYSTEM CONVERSION JOBS

Reduce flow and return mains at the boiler to same sizes as shown in tables, using reducing elbows or couplings and connect reduced return mains with Y fittings. Old jobs having ¾ in., 1 in., 1¼ in., 1½ in., or 2 in. radiator valves should be reduced to proper sizes with Thrush Orifice Inserts.

Mains should terminate in first floor radiators where possible. Mains should pitch up from boiler to terminating radiator in the average upfeed installation.

Net boiler sizes should be determined from the total B.t.u. requirement, divided by 150, which is conventional method of boiler ratings. Boiler should be chosen on this basis of rating for standing radiation equivalent.

FLOW CONTROL VALVE SIZES

	Steel Pipe Sq. Ft. Rad.	Copper Pipe Sq. Ft. Rad.
No. 111—1″	Up to 300	Up to 500
No. 111A—1¼″	Up to 500	Up to 750
No. 115—1½″	Up to 1,000	Up to 1,250
No. 120—2″	Up to 1,500	Up to 2,000
No. 125—2½″	Up to 2,500	Up to 3,500
No. 130—3″	Up to 5,000	Up to 7,000

†CIRCULATOR SIZES FOR FLOW CONTROL

No. 11—1″	Up to 500 sq. ft. radiation
No. 11A—1¼″	Up to 800 sq. ft. radiation
No. 15—1½″	Up to 1,500 sq. ft. radiation
No. 22—2″	Up to 2,500 sq. ft. radiation
No. 23—3″	Up to 5,000 sq. ft. radiation

*TANK SIZES FOR FLOW CONTROL SYSTEM

No. 0.	Up to 500 sq. ft. radiation
No. 1.	Up to 1,000 sq. ft. radiation
No. 2.	Up to 2,000 sq. ft. radiation
No. 3.	Up to 3,000 sq. ft. radiation

*Above sizes for 1 or 2 story buildings. Use one size larger tank for 3 or 4 story buildings.

†Capacities apply to average installations. Whenever mains are unusually long for their size or when some other special condition is to be overcome, increase circulator one size.

Specifications

SPECIFICATIONS FOR A THRUSH FLOW CONTROL HOT WATER HEATING SYSTEM

BOILER—Furnish and erect on substantial foundation having a guaranteed capacity of...sq. ft. radiation. Boiler to be supplied with drain cock and all the usual and necessary attachments and connections.

SMOKE FLUE—Owner to provide an adequate and properly located chimney flue of good draft and of sufficient area for use of boiler exclusively. If chimney or flue shall be found in any respect defective, owner shall make the necessary correction at his own expense.

SMOKE PIPE—Contractor will connect boiler to chimney with a galvanized iron pipe breeching of size not smaller than the smoke hood outlet at boiler.

HEATING SURFACE—The total heating surface to consist of ....square feet of....radiation. Location of radiators to be arranged as best will suit the condition and space of each room and hall, and as owner or architect may direct. The distribution of radiation to conform to the schedule herewith attached. The radiators shall be the type as the owner or architect may determine.

RADIATOR VALVES AND AIR VALVES—Each radiator shall be fitted with one hot water radiator valve of the latest half-turn open and shut pattern, and an air valve of improved design, same to have detached key.

FLOOR AND CEILING PLATES—All pipes where they pass through floors and ceilings or walls will be supplied with neat, tight-fitting ceiling and floor plates.

PIPES AND FITTINGS—The supply and return piping will be of sizes necessary for easy and complete circulation. All pipes used for this work to be standard weight and sizes. Fittings to be of standard weight and free from imperfections.

HANGERS—Main pipes and principal branches in basement will be supported by hangers of neat design. Hangers to be of a type which will hold the pipe in perfect alignment and will permit of adjustment.

THRUSH FLOW CONTROL SYSTEM—Will furnish and properly install in basement Thrush Flow Control Hot Water Heating System, consisting of the following equipment: No....Thrush Water Circulator, No. .... Thrush Flow Control Valve, No. 4—¾″ Thrush Differential Pressure Relief Valve, No. .... Thrush Pressure Tank, No. 12—¾″ Thrush Pressure Reducing Valve, No. .... Thrush Water Heater, No. 201 Thrush Radiant Heat Control, No. 198 Thrush Relay Transformer, No. 203 Thrush Modulating Water Temperature Control, Thrush Combination Gauge and Thermometer, all of which will provide for the expansion of boiler water with summer and winter hook-up for the domestic hot water supply from the heating boiler without permitting circulation or expansion of the boiler water into the supply mains during the summer months, or when heat in the radiators is not required, with use of Thrush Flow Control Valve having air tapping provided underneath the seat of valve as means for expansion and air elimination.

DOMESTIC WATER SUPPLY—Will furnish and properly install attached to boiler indirect heater of proper size as manufactured by.....with suitable.....storage tank of.....gallons capacity, and necessary pipe and fittings together with one No. 75 Thrush Domestic Pressure Relief Valve to complete summer-winter domestic hot water supply.

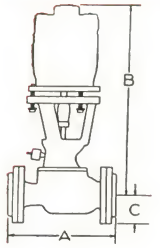
PAINTINGS—Will paint radiators and all exposed pipes with first grade of materials and will paint all exposed pipes in the basement.

OWNER—Owners to provide boiler space to have all openings in buildings, i. e., windows, doors, etc., made reasonably tight, to prevent undue loss of heat.

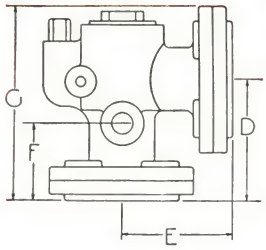
GENERAL REQUIREMENTS—Contractors will cut all passages through the walls and through all floors and ceilings, and complete all and every part of said work required to make this apparatus in all of its parts complete in every detail. All work will be executed in the very best and substantial manner, equal in every resect to that which the best skilled mechanic can execute.

GUARANTEE—When this Thrush Flow Control System is complete.....guarantee it to be capable to maintain, in all rooms and halls where radiators are placed, a temperature of .....degrees Fahrenheit, when the outside temperature is..... degrees.....zero.

ROUGHING-IN DIMENSIONS & WIRING DIAGRAM



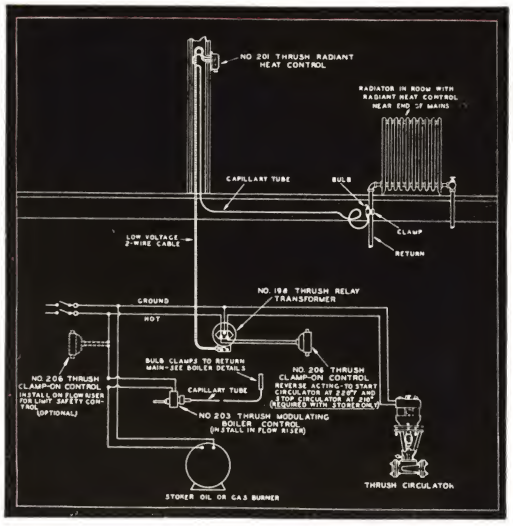
Thrush Water Circulator



Thrush Flow Control Valve

Circulator No.	Size, in.	A In.	B In.	C In.
14	1	$9\frac{3}{4}$	$16\frac{3}{4}$	$1\frac{1}{4}$
14A	$1\frac{1}{4}$	$10\frac{1}{2}$	$16\frac{3}{4}$	$1\frac{1}{2}$
15	$1\frac{1}{2}$	$10\frac{1}{2}$	$16\frac{1}{4}$	$2\frac{9}{16}$
22	2	$10\frac{1}{8}$	$18\frac{3}{4}$	$2\frac{9}{16}$
23	3	$11\frac{3}{8}$	20	$3\frac{3}{8}$

Flow Control Valve No.	Size, in.	D In.	E In.	F In.	G Overall, in.
114	1	$2\frac{3}{16}$	2	1	$4\frac{1}{16}$
114A	$1\frac{1}{4}$	$4\frac{1}{8}$	$3\frac{3}{4}$	$2\frac{3}{4}$	$6\frac{3}{8}$
115	$1\frac{1}{2}$	$4\frac{5}{8}$	$4\frac{1}{8}$	$3\frac{1}{8}$	$6\frac{7}{8}$
120	2	$4\frac{3}{4}$	$4\frac{1}{16}$	$3\frac{1}{8}$	$7\frac{3}{8}$
125	$2\frac{1}{2}$	$5\frac{1}{4}$	$4\frac{3}{8}$	$3\frac{1}{4}$	$8\frac{1}{4}$
130	3	$6\frac{1}{2}$	$5\frac{7}{8}$	$3\frac{3}{8}$	$9\frac{3}{4}$



COMBINATION HIGH PRESSURE AND TEMPERATURE RELIEF VALVES

No.	Size	Made of	Weight
76	$\frac{1}{2}$"	Iron	3 lbs.
78	$\frac{1}{2}$"	Brass	3 lbs.
87	$\frac{3}{4}$"	Iron	4 lbs.
89	$\frac{3}{4}$"	Brass	4 lbs.

Similar in construction and for same purposes as high pressure relief valves, but with additional feature—temperature relief. A fusible plug melts from excessive temperature. Can be furnished from factory set at any pressure up to 150 lbs. Standard setting 85 lbs. Specify when ordering if other than 85 lbs. setting required.

THRUSH LOW PRESSURE (See No. 30)

Relief Valves

Thrush Relief Valves for hot water heating plants are made in a range of types, sizes, and prices, to meet varying conditions. All have all-brass working parts and can be supplied from the factory set for any relief pressure up to 35 lbs. The standard relief setting is 28 lbs.

No.	Size	Made of	Weight
1	$\frac{3}{4}$"	Iron	12 lbs.
30	$\frac{1}{2}$"	Iron	4 lbs.
35	$\frac{1}{2}$"	Brass	3 lbs.
40	$\frac{1}{2}$"	Iron	3 lbs.

Reducing Valves

Pressure regulating valves to maintain predetermined pressure automatically. All working parts are brass. Bronze metal diaphragm operated. Standard factory pressure setting for delivery pressure of 12 lbs., with an initial pressure of 45 lbs. Specify when ordering if different pressure setting desired.

No.	Size	Made of	Weight
9	$\frac{1}{4}$"	Brass	2 lbs.
9A	$\frac{3}{8}$"	Brass	2 lbs.
10	$\frac{1}{2}$"	Brass	4 lbs.
11	$\frac{1}{2}$"	Brass	5 lbs.
12	$\frac{3}{4}$"	Iron	7 lbs.

THRUSH HIGH PRESSURE (See No. 75)

Relief Valves

All are metal diaphragm operated Relief Valves with all-brass working parts, soundly designed to protect safely hot water supply boilers, range boilers, and gas storage heaters. Can be supplied from factory set at any pressure up to 150 lbs. Standard setting 85 lbs. Specify when ordering if other than 85 lbs. pressure setting required.

No.	Size	Made of	Weight
45	$\frac{1}{2}$"	Iron	3 lbs.
75	$\frac{1}{2}$"	Iron	3 lbs.
77	$\frac{1}{2}$"	Brass	3 lbs.
55	$\frac{3}{4}$"	Iron	4 lbs.
85	$\frac{3}{4}$"	Iron	4 lbs.
86	$\frac{3}{4}$"	Iron	4 lbs.
88	$\frac{3}{4}$"	Brass	4 lbs.

Reducing Valves

Plumbing fixtures are automatically guarded against excessive water supply line pressures by these time-tested, metal diaphragm operated Reducing Valves that have all-brass working parts. Standard factory pressure setting for delivery pressure of 45 lbs., with initial pressure of 150 lbs. If different setting desired, specify both initial and delivery pressures when ordering.

No.	Size	Made of	Weight
20	$\frac{1}{2}$"	Brass	4 lbs.
50	$\frac{3}{4}$"	Iron	7 lbs.
60	$\frac{3}{4}$"	Brass	6 lbs.
70	1"	Brass	11 lbs.

THRUSH DUAL CONTROL UNITS

Thrush Dual Control Units are made in three types. Standard and Master are constructed of brass, and No. 67 has brass working parts with cast iron housing.

These Units fill the system automatically with the proper amount of water, also automatically relieve excessive pressure. All are equipped with built-in strainer and are guaranteed against defects in workmanship and material.

The Master Unit is bigger and has larger waterways for quicker filling.

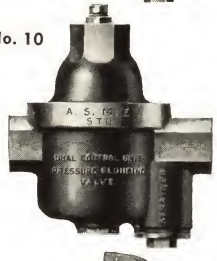
For more efficient operation install a Thrush Pressure Tank in conjunction with a Thrush Dual Unit.

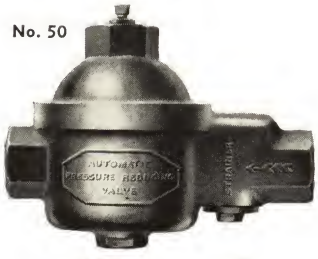
All Thrush relief valves comply with A.S.M.E. code requirements and are tested, approved and listed as standard by Underwriters Laboratories, Inc.







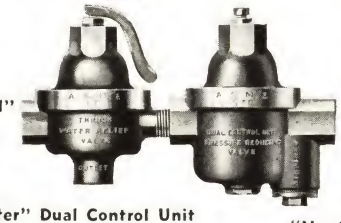




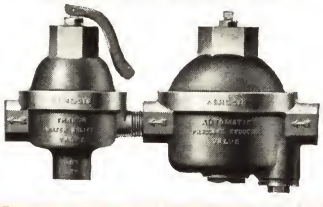




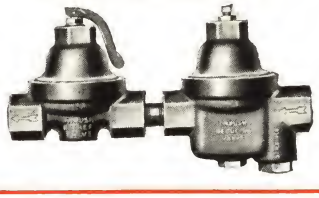
"Standard" Dual Control Unit



"Master" Dual Control Unit



"No. 67" Dual Control Unit



thrush



HOT WATER HEATING SYSTEM FLOW CONTROL

H. A. THRUSH & CO., PERU, IND.

ESTABLISHED 1888 • PIONEERS OF VACUUM STEAM HEATING

Webster Systems of Steam Heating

WARREN WEBSTER & COMPANY • CAMDEN, NEW JERSEY

Improved Systems 2

Central Controls 3

Radiator Valves 4

Metering Orifices 7

Radiator Traps 7

Drip Traps 8

Dirt Strainers 9

Vacuum Specialties 9

Process Steam Traps 9

Boiler Return Traps 10

Boiler Protectors 10

Concealed Radiation 11

Unit Heaters 12

Sales Offices 14

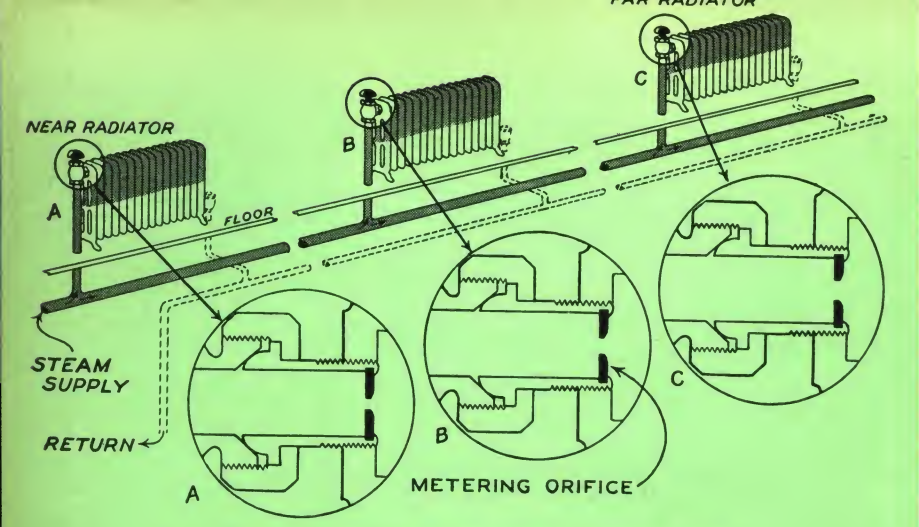


Fig. 1. Diagrammatic Sketch of the Improved Webster System

Showing how "pressure drop" is *equalized* or *balanced* by installation of standard metering orifices of proper size. While cast-iron radiation is illustrated the *same heating result* is attained with convection heating units

IMPROVED WEBSTER SYSTEMS OF STEAM HEATING

THE Improved Webster Systems are two-pipe vacuum or "vapor" systems of steam circulation *with the addition* of accurately sized metering orifices at the radiator supply connections, and, in such installations as require it, intermediate metering orifices at points in branch mains. Metering orifices, when properly selected and installed, effect even distribution of steam to all parts of the heating system and permit the successful application of a centralized control.

How Even Distribution Is Accomplished

In the older types of systems the nearest radiators become warm first while the farthest radiators do not begin to get warm until the others are filled. Now, in the Improved Webster Systems, *all radiators get steam at the same time and substantially in proportion to the need for steam.* In Fig. 1 it can be seen that the metering orifice in radiator A is quite small. When steam reaches this radiator the amount that can enter is therefore restricted. As a result the remaining steam quickly flows on through the piping to the next radiator B. Here the opening is slightly larger because the pressure of the steam by the time it reaches radiator B is lower. So it goes, radiator by radiator, to the farthest point. The "pressure drop" to each radiator has been equalized or balanced by installation of the correctly sized metering orifice. The result is that each radiator receives a proportionate amount of steam. When radiators are completely filled with steam Webster Thermostatic Traps close to prevent escape of steam into returns.

Flexible in Application

Improved Webster Systems are basic systems of steam circulation and use steam from boilers, engine or turbine exhaust, street lines, etc. They can be used with almost all types of direct radiation generally employed in steam heating practice.

Webster Radiator Valves and Thermostatic Return Traps are used on all radiators and heating units, and Webster Drip Traps where necessary on mains and risers. Webster Boiler Return Trap Equipment (see page 10) is used in open return and gravity installations, except where power driven condensation pumps are necessary. Steam or electric driven vacuum pumps are used on the returns of vacuum systems.

Improved Systems Are Controllable

An Improved Webster System without any control will be worthwhile because of its solution of distribution problems. But, to assure steam consumption economy, together with maximum comfort, *control of heating system operation* is the vitally important factor. The mere installation of a so-called "key-room" thermostat to open a burner or valve does not give adequate control of operation. To start with, the *system* must be *controllable.* The Improved Webster Systems are controllable by the application of a single, central control which assures economy of steam consumption and *moderates* excesses of over-heating and under-heating.

Where definite temperature control is desired at each individual radiator, temperature control equipment may be used in conjunction with Improved Webster Systems.

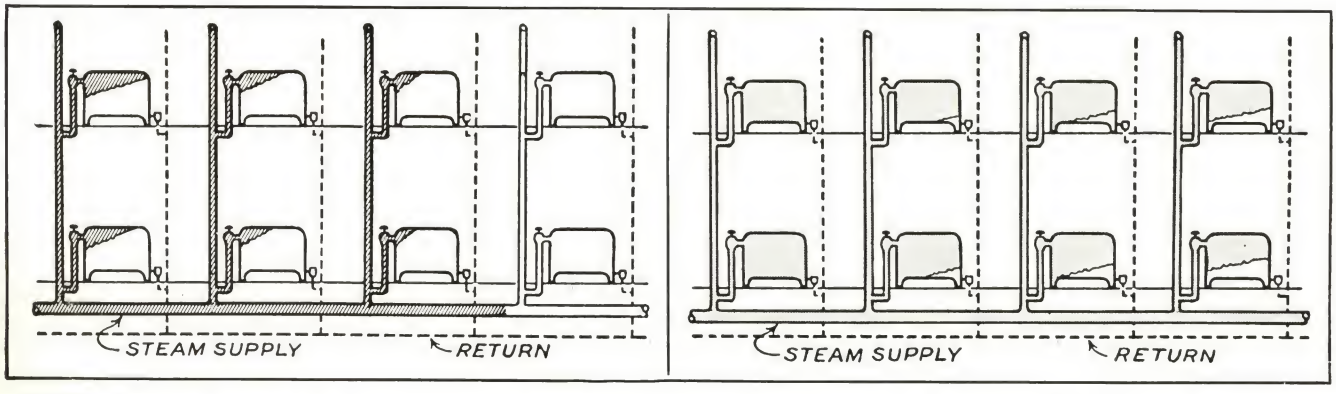


Fig. 2. *Unorificed* systems often result in uneven steam distribution as shown in the two sketches above. During mild weather (see sketch at left) radiators near the source of supply receive most of the steam while far radiators get little or none. Even in colder weather (see sketch at right) when pressure is increased, far radiators may not be completely filled although near radiators are filled and overheating. *The Improved Webster Systems using Webster Metering Orifices correct these faults and all radiators are evenly filled as shown in Fig. 1 at top of page.*

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WEBSTER CENTRAL CONTROLS

Service Bulletins giving complete mechanical details, and operation and maintenance instructions are available to supplement the brief descriptions on this page. See paragraphs below for bulletin numbers.

Webster Central Controls provide adequate means for throttling steam delivery from a convenient point to conform to the need for heat. Of necessity, heating systems are designed for the coldest weather which may occur but a few days yearly. Unless some means is provided to control heat delivery, you have overheating and underheating often resulting in discomfort, low human efficiency, and health hazards. With overheating, which happens more frequently, there comes excessive heating costs.

Webster Central Controls are provided in several types for use with Improved Webster Systems of Steam Heating. All types give these advantages:

(1) Provide real heating comfort by preventing the excesses of overheating and underheating characteristic of uncontrolled heating systems and of systems having ordinary "on-and-off" controls.

(2) Prevent discomfort of so-called "cold 70°" by providing practically continuous heat delivery from radiators with either open return or vacuum operation.

(3) Low temperature in mild weather when steam supply is throttled. See Fig. 3.

(4) Eliminate loss due to careless or excessive window opening. With adequate control the need for window opening other than for a little ventilation disappears. When windows are opened, steam consumption will not increase.

(5) Give heating economy by providing the means for proper operation under a definite yet flexible operating schedule.

Proof that these results are being obtained is given in "Performance Facts," copy of which will be sent upon request.

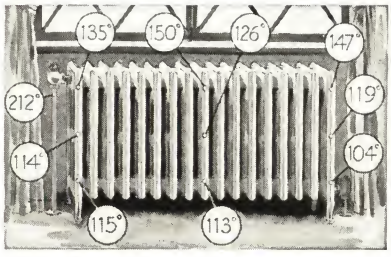


Fig. 3. Low Radiator Temperatures Obtained in Cast Iron Radiators with Webster Moderator Systems Throttling Steam During Mild Weather.

These low temperatures are produced by "jet" effect of orifice and resulting turbulence which causes steam and air in radiator to mix. Average radiator temperature is 125° F.

Webster Moderator Systems

Webster Moderator Control Systems use an *outdoor Thermostat* which automatically varies the amount of steam supplied to the entire heating system in accordance with changes of outside temperature. Why *outside* temperature? First, because it is the most important influence on heat loss. Secondly, it is common to the entire building or group of buildings. Third, heat loss is anticipated—there is no lag in keeping inside temperatures within the comfort range.

Each type Moderator System includes one or more *Variators*, manual devices to vary steam supply for quick heating-up, reduced night load, and unusual weather conditions. They can be located at any convenient point in the building so that the operator can readily follow the schedule of operation provided. The Variators provide sufficient steam for quick heating-up—control valves are not full or wide open, a condition which often brings damage to radiator valves and traps because of excessive pressures.

With Webster Moderator Systems, actual control of steam is obtained through one or more motorized Webster Control Valves in supply mains. These are semi-balanced, double-seated disc valves of the throttling type using a standard induction type reversing motor. See Fig. 5. Under certain conditions, Moderator Systems can be used to effect control by varying boiler pressure through directly controlling stoker motors, or motor-operated draft dampers and blowers on hand-fired coal boilers.

Webster E-3 Moderator System is an electrically-operated, continuous flow control system which accomplishes control by changing the pressure difference in the heating system. An Outdoor Thermostat, Variator and Control Cabinet work together to position the Control Valve motor, causing it to move in the closing direction when less steam is required and in the opening direction when more steam is required. Unbalancing changes in pressure difference, due to fluctuations in boiler pressure, in vacuum, in heating load, etc., are compensated automatically by a pressure-actuated mercury tube in the Control Cabinet which adjusts the throttling Control Valve. The Type E-3 Moderator System is generally installed as a single valve arrangement where occupancy conditions are uniform throughout the building. Two valves may be provided with an arrangement consisting of a dual-type Outdoor Thermostat, two Variators, and two Control Cabinets. *Write for Service Bulletin S-951.*



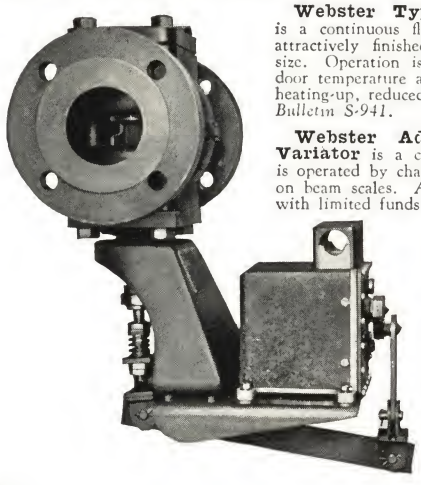
Fig. 4. Automatic Outdoor Thermostat Used with Webster Moderator Controls Is 8⅞ In. Diameter by 11½ In. High

Webster Air Moderator System is a continuous-flow, central control system employing both compressed air and electricity as mediums for operation. Applicable chiefly to large zoned buildings or groups of buildings using two or more Main Steam Control Valves. One or more Control Valves can be controlled from each Variator, adjustment of which changes steam flow to entire zone in same proportion. Unbalancing pressure fluctuations in supply and return mains are compensated automatically by Valve Operators. *Write for Service Bulletin S-970.*

Webster EH Moderator System is an electrically-operated control system by which steam is admitted into the heating system in pulsations of varying length but at uniform pressure difference. Control is accomplished by changing the length of the pulsations. The heating of any number of buildings or zones served from a single steam source may be controlled from a single central operating station. It is therefore advantageous for colleges and universities, hospitals, religious and public institutions, housing projects, etc. Undue fluctuation in boiler pressure or in rate of return of condensate to boiler is avoided by synchronizing the operation of the several Main Control Valves. *Write for Service Bulletin S-961.*

Webster Hylo Systems

Webster Hylo Control Systems are *simple, rugged* and *dependable* control systems for the smaller buildings. They provide the same features as the Moderator Controls except for omission of the automatic Outdoor Thermostat. Adjustment for changes in outdoor temperature is accomplished manually. Schedule clock for automatic shut-off or indoor thermostat for automatic overheat limit shut-off are optional. Generally operate motorized Webster Control Valve illustrated in Fig. 5. May also be applied with minor modifications to directly control stoker motors, motor-operated draft dampers on hand-fired coal boilers, or blowers.



Webster Type SP Hylo Variator is a continuous flow control, contained in an attractively finished cabinet 14x14x9½ in. in size. Operation is by two dials: one for outdoor temperature and the other, a Variator, for heating-up, reduced load, etc. *Write for Service Bulletin S-941.*

Webster Adjustable-Weight Hylo Variator is a continuous flow control which is operated by changing position of two weights on beam scales. A simple control for buildings with limited funds. *Write for Bulletin B-910A.*

Fig. 5. Webster Type E-1M Control Valve for Low-Pressure Steam Service. Used with Webster Central Controls or Separately for Shut-Off Service by Switch and Thermostat. Made in 2½ In. to 8 In. Sizes. Type E-1 for 10 In. and 12 In. Sizes

WEBSTER SYSTEM EQUIPMENT

Used as needed in Webster Systems of Steam Heating and includes the following:

Webster "Three-Point" and Type "W" Radiator Valves

The finest Webster Radiator Valve, the "Three-Point," incorporates sleeve orifice feature with choice of *open-shut* operation or "three-point" providing *shut, normal* and *excess* positions. *Excess* position permits 140% of normal heat in installations with Webster Central Controls.

In the Type "W," the "Three Point" features are omitted and slotted sleeve or plug included to provide "modulation" in either orificed or unorificed installations.

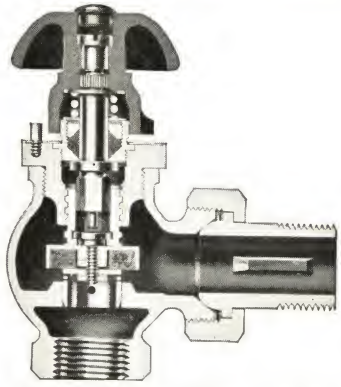


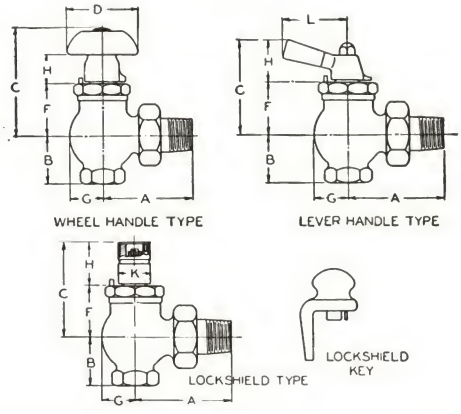
Fig. 6. Webster "Three-Point" Valve. In the Type "W" a Modulation Sleeve or Plug Replaces the Orifice Sleeve in the Valve Seat

Features are quick-opening non-rising stem, special die-molded ring packing gland which meets usual "packless" specification requirements. Body of high grade cast steam brass and of ample section throughout, no skimping. Nipples in most-used ½, ¾ and 1-inch sizes are machined from solid brass bar stock with strong integrally broached lugs. Union nuts in these sizes also machined from solid brass. Nuts and nipples in little used 1¼-inch size are of cast brass. Renewable Jenkins composition disc in self-centering disc holder.

The "Three-Point" is available in angle, right-corner, left-corner and straightway (*single union only*) models with bakelite wheel handle, or lever, lockshield or extended steam fixtures as shown in Table X and Fig. 10 (except flush handle). Sizes ¾ and 1 inch only. Dimensions same as corresponding sizes of Webster Type "W" Valves. The Type "W" is available in sizes and models listed in Tables I, II, and III, with wheel, lever, lockshield, chain wheel or extension stem handles.

TABLE I. Dimensions of Webster Type "W" Valves

Angle Body with Wheel (Standard), Lever, and Lockshield Handles

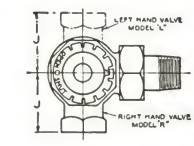


Size	Symbol	All types				Wheel handle		
		A	B	F	G	C	D	H
½"	202H	2 13/16	1 1/4	1 1/2	1	3 5/16	2 1/4	1 5/16
¾"	203H	2 15/16	1 1/2	1 11/16	1 1/8	3 7/16	2 1/4	1 5/16
1"	204H	3 3/16	1 3/4	1 7/8	1 5/16	4 3/16	3	1 1/4
1¼"	205H	3 9/16	2	2 1/8	1 1/2	4 7/16	3	1 1/4

Size	Symbol	Lever handle			Lockshield		
		C	H	L	C	H	K
½"	202H	3	1 1/2	2 3/16	2 7/8	1 7/16	1
¾"	203H	3 3/16	1 1/2	2 3/16	3 1/16	1 7/16	1
1"	204H	3 3/4	1 7/8	2 5/16	3 11/16	1 13/16	1 1/8
1¼"	205H	4	1 7/8	2 5/16	3 15/16	1 13/16	1 1/8

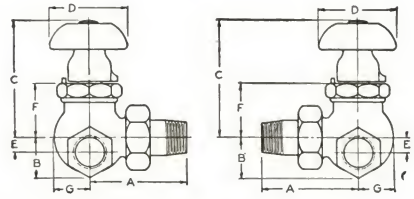
All dimensions in inches and subject to slight variation.

TABLE II. Dimensions of Webster Type "W" Valves



Right-corner and Left-corner Bodies with Wheel Handle

See Table I for dimensions of lever and lockshield handles.



Size	Symbol		A	B	C	D	E	F	G	J
	Right	Left								
½"	212R	222L	2 13/16	1 1/8	3 7/16	2 1/4	3/8	1 5/8	1	1 1/2
¾"	213R	223L	2 15/16	1 1/4	3 9/16	2 1/4	7/16	1 13/16	1 1/16	1 5/8
1"	214R	224L	3 3/16	1 1/2	4 3/8	3	1/2	2 1/16	1 5/16	2

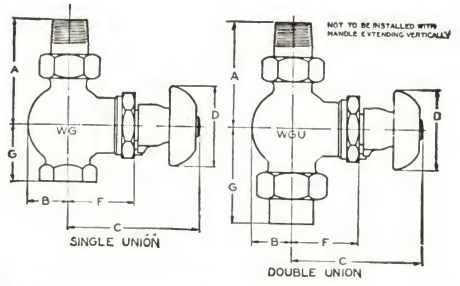
All dimensions in inches and subject to slight variation.

TABLE III. Dimensions of Webster Type "W" Valves

Straightway Bodies with Wheel Handles

See Table I for dimensions of lever and lockshield handles.

Single and Double Union Types

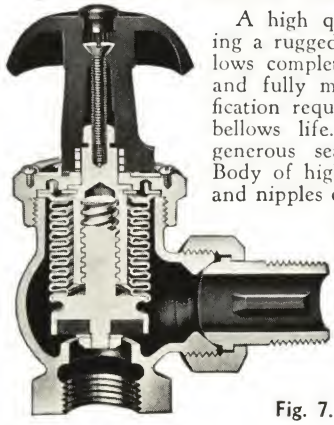


To be installed as shown above with bodies in vertical position

Size	Symbol	A	B	C	D	F	G
Single Union							
½"	232G	2 7/8	1 5/16	3 9/16	2 1/4	1 3/4	1 1/2
¾"	233G	3	1 1/16	3 11/16	2 1/4	1 7/8	1 5/8
1"	234G	3 1/8	1 5/16	4 1/2	3	2 3/16	2
Double Union							
¾"	243GU	3	1 1/16	3 11/16	2 1/4	1 7/8	2 5/16
1"	244GU	3 1/8	1 5/16	4 5/8	3	2 5/16	2 7/8

All dimensions in inches and subject to slight variation.

Webster Sylphon Packless Radiator Valve

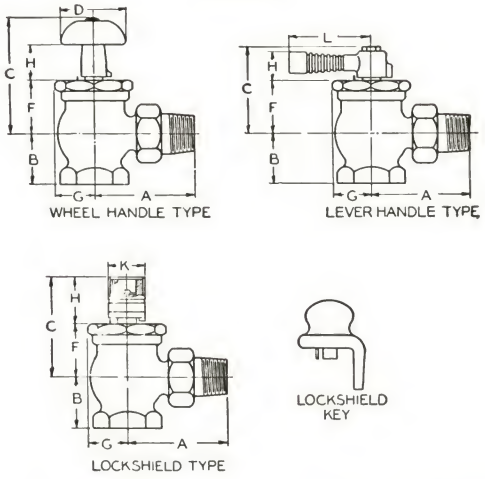


A high quality radiator valve incorporating a rugged, flexible laminated Sylphon bellows completely enclosing a non-rising stem and fully meeting "bellows packless" specification requirements. Low lift assures long bellows life. Renewable composition disc, generous seat dimensions. Quick-opening. Body of high grade cast steam brass. Nuts and nipples of cast brass. Available in angle, right-corner, left-corner and straightway single union models with choice of wheel, lever, lockshield, chain wheel or extension stem handles. Available in the sizes and models listed in Tables IV, V and VI.

Fig. 7. Webster Sylphon Packless Valve

TABLE IV. Dimensions of Webster Sylphon Packless Valves

Angle Body with Wheel (Standard), Lever, and Lockshield Handles

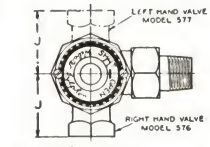


Size	Symbol	All types				Wheel handle		
		A	B	F	G	C	D	H
1/2"	575H	2 5/16	1 1/4	1 9/16	1	3 1/2	2 1/8	1 1/8
3/4"	575H	2 3/4	1 3/8	1 5/8	1	3 9/16	2 1/8	1 1/8
1"	575H	3 1/8	1 3/4	2 1/8	1 5/16	4 5/16	2 5/8	1 3/16
1 1/4"	575H	3 5/8	1 7/8	2 1/8	1 5/16	4 5/16	2 5/8	1 3/16
1 1/2"	575H	3 7/8	2 3/16	2 5/16	1 1/2	4 7/8	3	1 1/2
2"	575H	4 3/8	2 7/16	2 5/16	1 1/2	4 7/8	3	1 1/2

Size	Symbol	Lever handle			Lockshield		
		C	H	L	C	H	K
1/2"	575H	2 9/16	1 3/16	2 1/8	2 13/16	1 1/4	1 5/16
3/4"	575H	2 11/16	1 3/16	2 1/8	2 7/8	1 1/4	1 5/16
1"	575H	3 3/16	1 3/16	2 7/16	3 3/8	1 1/4	1 5/16
1 1/4"	575H	3 3/16	1 3/16	2 7/16	3 5/16	1 1/4	1 5/16
1 1/2"	575H	3 3/8	1 3/16	2 5/8	3 9/16	1 1/4	1 5/16
2"	575H	3 3/8	1 3/16	2 5/8	3 9/16	1 1/4	1 3/16

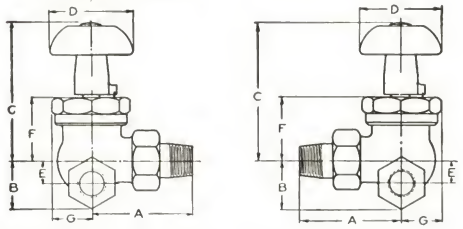
All dimensions in inches and subject to slight variation.

TABLE V. Dimensions of Webster Sylphon Packless Valves



Right-corner and Left-corner with Wheel Handles

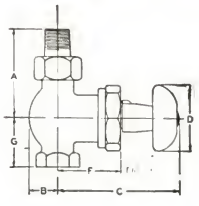
See Table IV for dimensions of lever and lockshield handles.



Size	Symbol		A	B	C	D	E	F	G	J
	Right	Left								
1/2"	576R	577L	2 5/8	1 1/4	3 9/16	2 1/8	9/16	1 5/8	1	1 3/8
3/4"	576R	577L	2 3/4	1 9/16	3 5/8	2 1/8	1 1/16	1 11/16	1	1 3/4
1"	576R	577L	3 1/8	2	4 3/8	2 5/8	1 1/16	2 3/16	1 5/16	2 1/16

All dimensions in inches and subject to slight variation.

TABLE VI. Dimensions of Webster Sylphon Packless Valves



Straightway Bodies with Wheel Handles

See Table IV for dimensions of lever and lockshield handles.

Single Union Type

To be installed only as shown here with body in vertical position

TABLE VI—Continued

Size	Symbol	A	B	C	D	F	G
1/2"	578G	2 13/16	7/8	3 7/8	2 1/8	1 15/16	1 9/16
3/4"	578G	2 7/8	1	4 1/16	2 1/8	2 1/8	1 3/4
1"	578G	3 9/16	1 1/4	5 1/8	2 5/8	2 5/16	2 1/4

All dimensions in inches and subject to slight variation.

Webster Type "B" Radiator Valve

A good quality radiator valve. Quick-opening, non-rising stem, molded ring packing gland meets usual "packless" specification requirements. Steam brass body with forged or cast brass cap. Union nuts and nipples made from bar stock in 1/2, 3/4 and 1-inch sizes; of cast brass in larger sizes. Renewable composition disc securely fastened in disc holder.

Made in angle, left-corner, right-corner, straightway single union and double union body models. Bakelite wheel, lever, lockshield or extended stem handles. Available in sizes listed in Tables VII, VIII and IX.

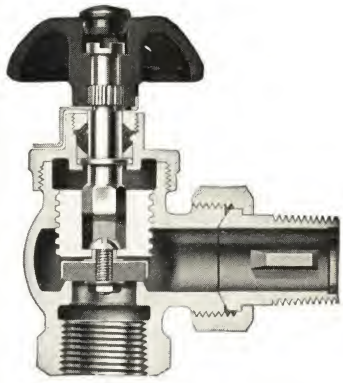
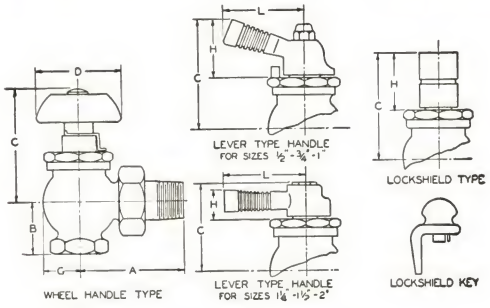


Fig. 8. Webster Type "B" Radiator Valve

TABLE VII. Dimensions of Webster Type "B" Valves

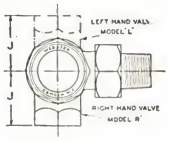
Angle Body with Wheel (Standard) Lever and Lockshield



Size	Symbol	Wheel handle					Lever handle			Lockshield	
		A	B	C	D	G	C	H	L	C	H
1/2"	402H	2 3/4	1 3/8	3	2 1/4	1 5/16	2 3/4	1 7/16	2 3/16	2 9/16	1 3/4
3/4"	403H	2 3/4	1 3/8	3	2 1/4	1 5/16	2 3/4	1 7/16	2 3/16	2 9/16	1 3/4
1"	404H	3 1/8	1 3/8	3 1/4	2 1/4	1 1/16	3 1/16	1 7/16	2 3/16	2 7/8	1 3/8
1 1/4"	405H	3 5/8	1 7/8	4 5/16	3	1 5/16	4	1 5/16	2 7/16	3 7/8	1 5/16
1 1/2"	406H	3 7/8	2 3/16	4 3/4	3	1 5/8	4 3/16	1 5/16	2 7/16	4 1/16	1 5/16
2"	408H	4 3/8	2 7/16	4 3/4	3	1 3/4	4 3/16	1 5/16	2 7/16	4 1/16	1 5/16

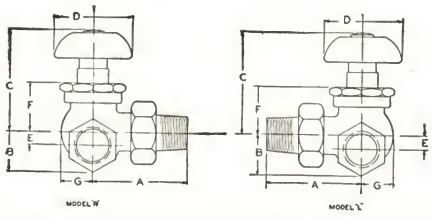
All dimensions in inches and subject to slight variation.

TABLE VIII. Dimensions of Webster Type "B" Valves



Right-corner and Left-corner Bodies with Standard Wheel Handle

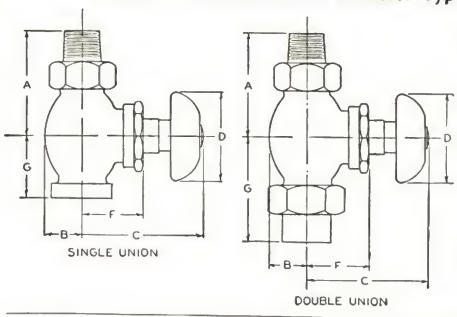
See Table VII for dimensions of lever and lockshield handles.



Size		Symbol		A	B	C	D	E	F	G	J
Inlet	Outlet	Right	Left								
3/4"	1/2"	412R	422L	2 3/4	1 3/16	3	2 1/4	3/8	1 5/16	1 5/16	1 9/16
3/4"	3/4"	413R	423L	2 3/4	1 3/16	3	2 1/4	3/8	1 5/16	1 5/16	1 9/16

All dimensions in inches and subject to slight variation.

TABLE IX. Dimensions of Webster Type "B" Valves



Straightway Bodies with Standard Wheel Handle

See Table VII for lever and lockshield dimensions

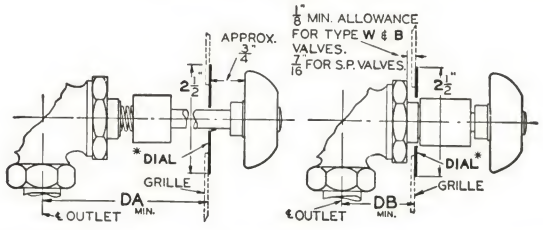
Single and Double Union Types

Install only as shown with bodies in vertical position

Size Inlet	Size Outlet	Symbol	A	B	C	D	F	G
Single Union								
¾"	½"	432G	3	1	3 1/4	2 1/4	1 9/16	1 5/8
¾"	¾"	433G	3	1	3 1/4	2 1/4	1 9/16	1 5/8
1"	1"	434G	3 1/4	1 1/8	3 3/8	2 1/4	1 5/8	1 7/8
Double Union								
¾"	¾"	443GU	3	1	3 1/4	2 1/4	1 9/16	2 11/16
1"	1"	444GU	3 1/4	1 1/8	3 3/8	2 1/4	1 5/8	2 13/16

All dimensions in inches and subject to slight variation.

TABLE X. Dimensions of Special Long Stem Handles for All Types of Webster Supply Valves



*STANDARD DIAL has plain satin finish without marking. Special graduated dial made up on order at extra cost.

Size	Minimum Distance for DA — Model (see below) H	G & GU	R & L	Minimum Distance for DB — Model (see below) H	G & GU	R & L
"W" and "Three-Point" Valves						
½"	3 3/16	3 7/16	3 5/16	1 5/8	1 7/8	1 3/4
¾"	3 3/8	3 9/16	3 1/2	1 13/16	2	1 15/16
1"	3 13/16	†4 1/8	4	2	†2 5/16	2 3/16
1¼"	4 1/16	...	...	2 1/4	...	...
"B" Valve						
½" & ¾"	2 13/16	3 1/16	2 13/16	1 7/16	1 11/16	1 7/16
1"	3	3 1/8	...	1 5/8	1 3/4	...
1¼"	4 3/16	...	...	2 7/8	...	...
1½" & 2"	4 3/8	...	...	3 1/16	...	...
Sylphon Packless Valve						
½"	2 7/8	3 1/4	2 1/16	2	2 3/8	2 1/16
¾"	2 15/16	3 7/16	3	2 1/16	2 9/16	2 1/8
1"	3 1/16	4 1/4	3 1/2	2 1/16	3 3/8	2 5/8
1¼"	3 7/8	...	...	2 1/16	...	...
1½"	3 5/8	...	...	2 3/4	...	...
2"	3 5/8	...	...	2 3/4	...	...

All dimensions in inches and subject to slight variation.
†On 1-in. Type W Valves, Model GU, the minimum DA is 4¼-in. and the minimum DB is 2 7/8-in.
Model H is angle body; Model G is straightway single union; Model GU straightway double union; Model R is right-corner; Model L is left-corner.



Fig. 9. Chain Wheel Handle

Supply Valve Handles

The wheel ("mushroom") handle of Bakelite is furnished with Webster Supply Valves unless another type is specified. Lever handle or lockshield cover will be furnished upon request.

Special attachments include a chain wheel with a 6 ft. chain drop for radiators installed beyond reach (see Fig. 9). For certain types of enclosed radiation, Special Long Stem Handles or Extended Stem Fixtures are used.

The Long Steam Handle (Table X) is rigid and is used chiefly where handle must be at a short distance from valve. Available in wheel, lever or lockshield types. The Extended Stem Fixture (Fig. 10) will operate to a maximum of 15 degrees from vertical and is used chiefly where handle is on top of radiator enclosure. In Fig. 10, view 1, is the wheel handle, 2 and 3 are top and side views of the flush-type handle, 4 and 5 are the key and lockshield cover, while 6 is the lever handle.



Fig. 10. Extended Stem Fixtures for Webster Supply Valves

Radiator Valve Handle Symbols

To indicate choice of handle, prefix symbols in Tables I to IX incl., with letter "W" for wheel handle, "L" for lever handle, "LS" for lockshield, "C" for chain wheel (Fig. 9). For Long Stem Type (Table X) use "ES" and for Extended Stem (Fig. 10) use "E" in addition to symbol for handle, i.e., ESW402H.

TABLE XI. Ratings of UNORIFICED Webster Supply Valves in St. Ft. E. D. R.

Valve size, in.	Residences, small buildings, Type "R" system — Press. diff.—4 oz.	Large buildings, schools, apartments, factories, Type "R" or Vacuum System — Press. diff.—8 oz.
½	35 sq. ft.	50 sq. ft.
¾	80 sq. ft.	110 sq. ft.
1	130 sq. ft.	185 sq. ft.
1¼	225 sq. ft.	315 sq. ft.
1½ & 2	320 sq. ft.	450 sq. ft.

TABLE XII. Ratings of ORIFICED Webster Supply Valves in Sq. Ft. E. D. R.

Valve size, in.	A—Standard Sq. ft. E. D. R.	B—Optional Sq. ft. E. D. R.
½	0–50	0–35
¾	Above 50–110	Above 35–80
1	Above 110–185	Above 80–130
1¼	Above 185–315	Above 130–225
1½ & 2	Above 315–450	Above 225–320

Direct Radiators—With Orificed Systems, the supply valves of radiators are provided with a cup, push-seat, nipple or sleeve-orifice, the latter as in the "Three-Point" Valve. Valves should be selected of such size that practically no pressure drop occurs through the valve itself. Steam delivery then depends upon the size of the orifice and the pressure difference across it. The suggested sizes in Table XII-A can be used for most installations.

There may be applications where it is desirable to have valve sizes larger. Occasionally a larger valve may be preferred for appearance. In such cases, Table XII-B may be used.

Pressures—Webster Radiator Valves are for use with low pressure Webster Systems of Steam Heating where boiler pressures do not generally exceed 2 lbs. per sq. in. However, Webster Valves will not be detrimentally affected by occasional pressures up to 25 lbs. per sq. in.

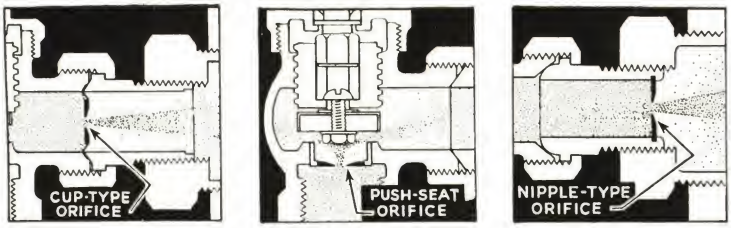


Fig. 11. Webster Metering Orifices used in Radiator Supply Valves. A is cup-type inserted between union nut and nipple. B is push seat type. C is nipple type permanently knurled in end of valve nipple. Special types for concealed radiation are also available.

WEBSTER LOW PRESSURE THERMOSTATIC TRAPS

Highly perfected thermostatic traps designed, (1) to effectively discharge all condensate and air from radiation without permitting passage of steam, and (2) for long life. All Webster Thermostatic Traps are *fully compensated for pressure* within their operating range, which means efficient operation regardless of whether pressure in radiator is 5 pounds, atmospheric, or 15 inches of vacuum. High quality construction throughout: hot forged brass cap, nipple from solid brass bar stock, fully machined nut from hot brass forging, renewable sharp-edged seat of stainless steel, and stainless steel 60 degree cone valve piece. Individually factory adjusted and tested. Made in ½, ¾ and 1 inch sizes. *See Table XIII for ratings.*

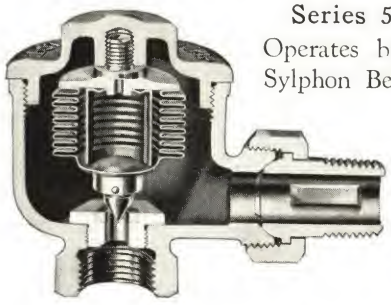


Fig. 12. Webster 502 Sylphon Trap

Series 5 Sylphon Type—Operates by liquid-filled genuine Sylphon Bellows, extremely sensitive yet rugged. For normal operating pressures not exceeding 15 lb. per sq. in. Maximum pressure 25 lb. per sq. in. *See Tables XIV and XVI for sizes.*

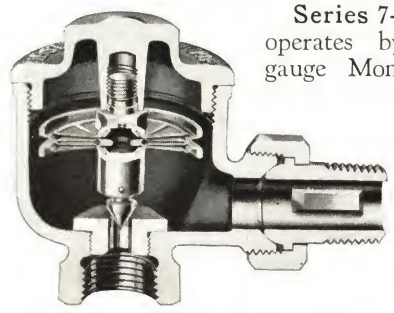
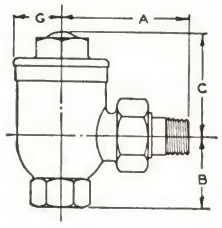


Fig. 13. Webster Size 702M Trap

Series 7-M Diaphragm Type operates by liquid-filled, heavy gauge Monel Metal diaphragm. Designed particularly for long service. For normal operating pressure up to 25 lb. per sq. in. Maximum pressure 50 lb. per sq. in. Series 7 with phosphor bronze diaphragm is also available for use when normal operating pressures do not exceed 15 lb. per sq. in., maximum pressure 25 lb. per sq. in. *See Tables XV and XVI for sizes.*

TABLE XIV. Dimensions of Webster Sylphon Traps

Angle Bodies (Symbol H)



Size	A	B	C	G
½"—502	2 3/4	1 1/8	1 15/16	1 3/16
*½"—502HS	2 3/4	1 5/16	1 15/16	1 3/16
½"—512	3 1/8	1 5/8	2 3/8	1 1/8
¾"—503	3 3/16	1 9/16	1 15/16	1 3/16
¾"—513	3 1/16	1 3/4	2 3/8	1 1/8
¾"—523	3 5/16	1 7/8	3 9/16	1 5/16
1" —534	4	2 5/8	3 3/16	1 3/4

All dimensions in inches and subject to slight variation.
*Has ¾-in. outlet.

TABLE XIII. *Recommended Ratings of Webster Low Pressure Traps

*These are conservative ratings and not full flooded capacities. Webster Representatives will assist in determining when conditions are favorable to use of higher ratings. Select trap by rating, not by pipe size. For Improved Webster Systems using metering orifices, it is recommended that the selection of traps be based on ¼ lb. per sq. in. pressure difference.

Size	Symbol	Press. diff. in lb. per sq. in. across trap									
		1/10	¼	½	1	1½	2	5	10	15	25*
Sylphon and Series "7" Traps in Sq. Ft. E.D.R.											
½"	502, 702 and 702-M	55	85	120	165	200	235	370	530	640	840
¾"	503, 703 and 703-M	55	85	120	165	200	235	370	530	640	840
½"	512, 712 and 712-M	105	165	230	330	400	465	730	1050	1300	1640
¾"	513, 713 and 713-M	105	165	230	330	400	465	730	1050	1300	1640
¾"	523, 723 and 723-M	185	290	410	580	700	810	1280	1840	2300	2900
1"	534, 734 and 734-M	315	500	710	1005	1200	1420	2270	3110	3900	5070

*Capacities at 25 lbs. pressure difference apply to Series "7-M" Traps only.
In above table ratings are given Equivalent Direct Radiation (E.D.R.) based on 240 B.T.U. per sq. ft. per hour.

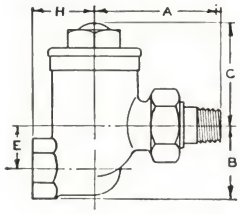
Series 26 Heavy Duty Drip Traps in Lbs. Water per Hour

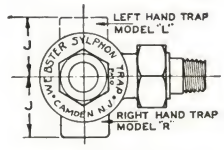
¾"	00026-T and O	50	75	100	145	170	200	285	370	430	....
1"	0026-T and O	160	250	350	500	600	700	1000	1300	1500	....
1¼"	026-T and O	330	510	660	920	1030	1200	1500	1850	2250	....
1½"	126-T and O	540	840	1200	1720	2060	2400	3800	5400	6700	....
2"	226-T and O	1080	1720	2450	3500	4300	5000	7800	11100	13600	....

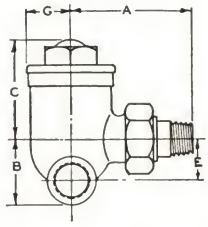
No allowance made for pressure drop in the connecting piping between radiation and trap or from trap through run-out to return.
CONVERSION FACTORS: To convert ratings given in lb. per hour of water to sq. ft. E.D.R. at 240 B.T.U., multiply by 4. To convert ratings given in sq. ft. E.D.R. at 240 B.T.U. to lb. per hour of water, divide by 4.

TABLE XIV (Continued)

Right-corner (R), Left-corner (L) and Straightway (G) Bodies







All dimensions in inches and subject to slight variation.

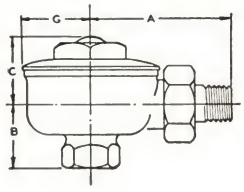
See Table XVI for Vertical Body Models.

Size	A	B	C	E	G	H	J
½"—502	2¾	1½	1 13/16	¾	1 3/16	1 13/16	1⅝
†½"—502S	2¾	1½	1 13/16	¾	1 3/16	1 13/16	1⅝
½"—512	3⅛	1 11/16	2⅜	1	1⅛	1½	1½
¾"—503*	3 5/16	1⅝	1⅝	⅞	1⅛	1 13/16	...
¾"—523*	3 5/16	2 3/16	3 9/16	1¼	1 5/16	1⅞	...

*Made in straightway (G) body only. †Has ¾-in. outlet.

TABLE XV. Dimensions of Webster Series "7" and "7-M" Traps

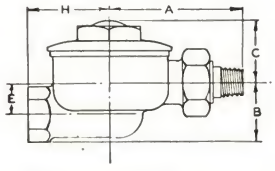
Angle Bodies (Symbol H)

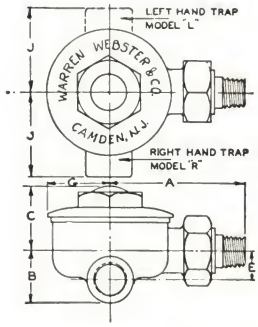


Size	A	B	C	G
½"—702	2 3/4	1 1/8	1 1/4 16	1 3/16
*½"—702HS	2 3/4	1 5/16	1 13/16	1 3/16
½"—712	3 5/16	1 7/16	1 9/16	1 5/8
¾"—703	3 3/16	1 9/16	1 13/16	1 3/16
¾"—713	3 5/8	1 7/16	1 5/8	1 5/8
¾"—723	3 13/16	1 5/8	2 1/16	1 7/8
1" —734	4 9/16	2	2 5/16	2 1/8

All dimensions in inches and subject to slight variation.
*Has ¾-in. outlet.

Right-corner (R), Left-corner (L) and Straightway (G) Bodies





All dimensions in inches and subject to slight variation.

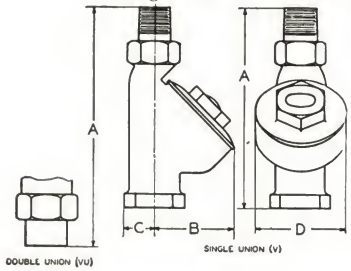
See Table XVI for Vertical Body Models.

Size	A	B	C	E	G	H	J
½"—702	2¾	1 9/16	1 13/16	¾	1 3/16	1 13/16	1⅝
†½"—702S	2¾	1 9/16	1 13/16	¾	1 3/16	1 13/16	1⅝
½"—712	3 5/16	1 7/16	1 9/16	¾	1⅝	2⅛	2⅛
¾"—703*	3 3/16	1⅝	1⅝	⅞	1⅛	1 13/16	...
¾"—723*	3 13/16	1¾	2 1/16	1 3/16	1⅞	2¼	...

*Made in straightway (G) body only. †Has ¾-in. outlet.

TABLE XVI. Dimensions of Webster Vertical Traps

Single Union (V), Double Union (VU)



Size	A	B	C	D
½"—502V	5	2 1/16	¾	2 5/16
½"—702MV	5	2	¾	2 5/16
½"—502VU	5⅞	2 1/16	¾	2 5/16
½"—702MVU	5⅞	2	¾	2 5/16

Webster Series 26 Heavy Duty Drip Traps

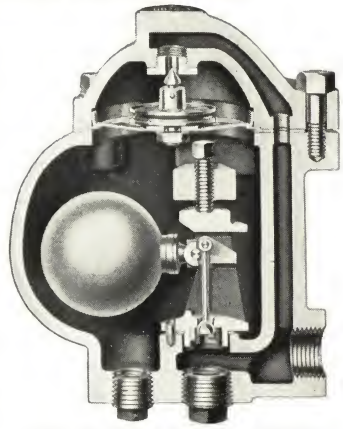
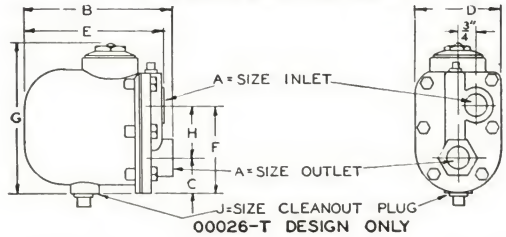


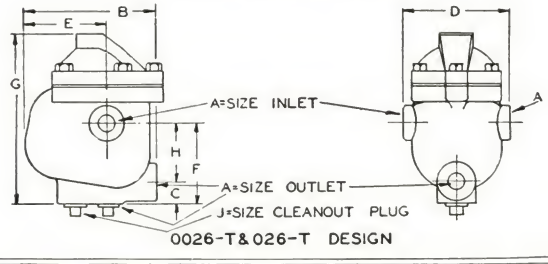
Fig. 14. Webster Size 0026-T Heavy Duty Drip Trap

Series 26-T — Heavy duty traps, capable of handling large volumes of condensation and air, and at the same time compact and light in weight. Suited for drips of mains, blast radiation, unit heaters, hot water generators, fan heater coils, and similar applications. The specification calling for a heavy duty, float-type trap is fully met, while the advantages of the thermostatic element and ease of installation are both retained. Side outlet opening of ample size permits the discharge of water, or water and air. In the bottom of the trap are plugged clean-out openings. The most used sizes (00026, 0026, 026) incorporate the *outward opening* discharge valve—a feature which permits the valve to open when excessive pressures prevail, and thus prevent water-logged piping or equipment.

Series 26-O—Similar to the Model 26-T Drip Trap but without thermostatic element. Used where concentration of air does not occur. Provision is made for external air by-pass.

TABLE XVII. Roughing-in Dimensions of Webster Series 26 26 Heavy Duty Drip Traps





Symbol	A	B	C	D	E	F	G	H	J
00026-T	¾	6 5/8	1 1/2	3 3/4	6 1/8	3 7/8	6 5/8	2 3/8	1½
00026-O	¾	6 5/8	1 1/2	3 3/4	6 1/8	3 7/8	6 5/8	2 3/8	1½
0026-T	1	6 3/8	1 1/8	4 1/2	3 15/16	3 15/16	8 1/8	2 13/16	1
0026-O	1	6 3/8	1 1/8	4 1/2	3 15/16	3 15/16	7 1/16	2 13/16	1
026-T	1¼	8 1/8	2 1/2	5 1/8	4 7/8	5 5/8	9 13/16	3 1/8	1¼
026-O	1¼	8 1/8	2 1/2	5 1/8	4 7/8	5 5/8	8 7/16	3 1/8	1¼

All dimensions in inches. Subject to slight variation.

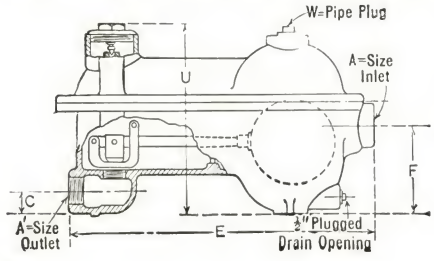


TABLE XVIII. Dimensions of Webster Heavy Duty Traps, Sizes 126 and 226

TABLE XVIII—Continued

Symbol	A-A[1]	C	E	F	U	W
126-T	1 1/2	1 3/8	15	4 5/8	10 1/2	1
126-O	1 1/2	1 3/8	15	4 5/8	9	1
226-T	2	1 5/8	18 3/8	5 1/2	12	1 1/4
226-O	2	1 5/8	18 3/8	5 1/2	11 3/8	1 1/4

All dimensions in inches and subject to slight variation.

Webster Dirt Strainers and Pockets

Placed in return lines of steam heating systems to catch dirt, rust, scale and other particles, preventing them from impairing the tightness of traps. More dependable than pockets made of pipe and fittings, cost less to install, and are more readily cleaned.

Where the probability of dirt is greater than normal, Series 18 Dirt Strainers should be used in place of Series 26 Dirt Pockets.



Fig. 15 Size 526 Dirt Pocket

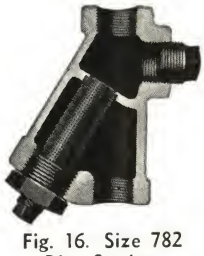


Fig. 16. Size 782 Dirt Strainer

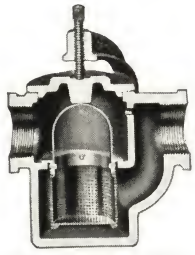


Fig. 17. Size 118 Dirt Strainer

Maximum working pressure, 15 lb. per sq. in., except Series "78," which is 125 lb. per sq. in.

TABLE XIX. Dimensions of Webster Series 18 Dirt Strainers

Symbol	A	B	C	E	F	G
018-B	1/2 or 3/4	4 1/4	6	2 3/4	2 3/4	2 1/2
118-B	1 or 1 1/4	5 1/2	7 5/16	3 1/2	3 1/2	3 1/4
218-B	1 1/2 or 2	7 1/4	9 5/16	4 3/4	4 3/4	4 1/4

All dimensions in inches and subject to slight variation.
Sizes 1/2, 1, and 1 1/2 inch are same as next larger size but provided with bushings.

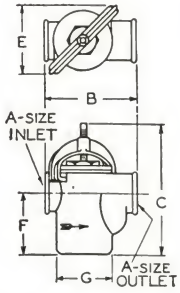
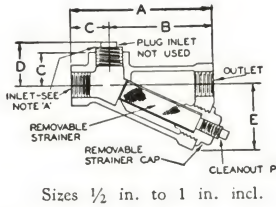
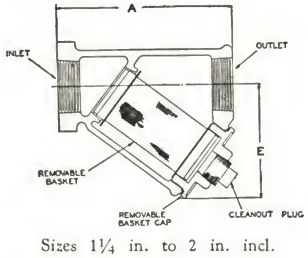


TABLE XX. Dimensions of Webster Series "78" Dirt Strainers

Maximum working pressure 125 lbs. per sq. in.



Sizes 1/2 in. to 1 in. incl.

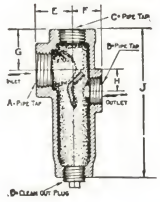


Sizes 1 1/4 in. to 2 in. incl.

Symbol	Tappings		Dimensions				
	Inlet	Outlet	A	B	C	D	E
782	1/2	1/2	4 1/2	3 3/8	1 1/8	1 1/2	2 1/4
*782-B	1/2	1/2	4 1/2	3 3/8	1 1/8	1 11/16	2 3/16
783 and 783-B	3/4	3/4	4 13/16	3 1/2	1 5/16	1 13/16	2 3/4
784 and 784-B	1	1	5 9/16	4 1/8	1 1/16	2 1/16	3 1/16
785 and 785-B	1 1/4	1 1/4	5 1/2	Provided on straight run only.			3 11/16
786 and 786-B	1 1/2	1 1/2	6 1/4				4 1/16
788 and 788-B	2	2	7 1/8				4 5/8

*Available also with 3/8 in. inlet and outlet.
B Models have cast brass body, nickel-plated all over, polished trim. Other models have painted cast-iron bodies.

TABLE XXI. Dimensions of Webster Series "26" Dirt Pockets



Symbol	A	B	C	D	E	F	G	H	J
526	1 1/4	1	1	3/4	1 3/4	1 3/8	1 7/8	1	6 7/8
826	2	1 1/4	1 1/4	1	2 1/8	1 5/8	2 5/16	1 1/2	7 7/8
1026	2 1/2	1 1/4	1 1/2	1 1/4	2 5/8	1 3/4	2 3/4	1 5/8	9 1/4
1226	3	1 1/4	1 1/2	1 1/4	2 3/4	1 3/4	3 1/16	1 7/8	10 5/8

All dimensions in inches and subject to slight variation.

Webster Lift Fittings

The improved design of Webster Lift Fittings makes possible quicker starting of the lift and retains all the advantages of the earlier design.

Used in pairs where condensation is to be lifted to a higher level. More efficient than "lifting pockets" made of standard fittings; require less time, and cost less to install.

Sizes 3/4 to 8 in. Made of cast iron. Maximum working pressures 15 lb. per sq. in. or 29 in. of vacuum. **Write for Bulletin B-713C.**

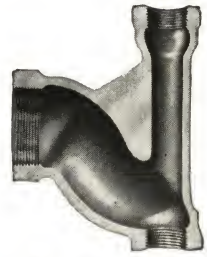


Fig. 18. Webster Lift Fitting

Webster Suction Strainers

Installed ahead of vacuum pump to prevent dirt and scale, brought down with condensation from heating system, from damaging pump with resultant troubles.

A tapping is provided for introduction of cold water make-up when that is desired; another for connection to a vacuum gauge. Made of heavy cast iron with flanged connections. Companion flanges included as standard. Clean-out cover is bolted on with rubber gasket joint. Screen basket is made of sheet brass with No. 4 holes (.045 in. dia.), 225 holes per sq. in. and is easily removable for cleaning. Maximum working pressure, 15 lb. per sq. in. **Write for Bulletin B-709B.**

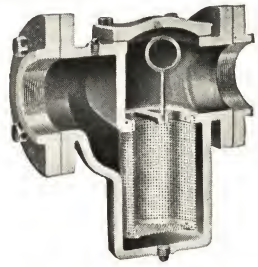


Fig. 19. Webster Suction Strainer

Webster Type "Y" Strainer

For use on water lines to remove sediment, hair, leaves, etc., and thus protect pumps and other machinery. Used extensively for swimming pools and supply lines of railroad water tanks. Exact duplicate of Suction Strainer except screen basket which is of heavier material and has No. 11 holes (0.1 in. dia.) and 49 holes per sq. in. **Write for Bulletin B-709B.**

Webster Traps for "Process Steam"

Series "78"—A Thermostatic trap used to discharge air and water from heating coils and any apparatus using steam at process pressures, i. e., 10 to 125 lb. per sq. in. Built in four sizes: 3/8, 1/2, 3/4 and 1 in. There are two classes: Class 2 for pressures of 10 to 60 lb. and Class 3 for pressures of 60 to 125 lb. Steam brass body and cover. Nickel plated with polished trim. Monel metal diaphragm. Stainless steel valve piece and seat insert.

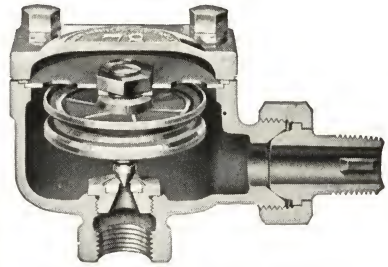


Fig. 20. Webster Size 782 Trap

TABLE XXII. Rated Capacities of Webster Series "78" Traps

Class 2—Working pressures up to 60 lb. per sq. in.

Size of trap	Pressure differential, lb. per sq. in.										
	1	5	10	20	30	40	50	60	80	100	125
	Lb. water per hour										
3/8"—780	6	20	33	53	70	88	100	120	145	170	200
1/2"—782	14	40	64	100	130	158	180	205	245	283	330
3/4"—783	31	90	142	225	290	350	400	460	550	640	740
1"—784	70	200	315	490	640	770	900	1000	1204	1400	1620

TABLE XXII—Continued

Class 3—Working pressures up to 125 lb. per sq. in.

⅜"—780	4	13	22	36	48	60	70	80	99	115	135
½"—782	11	32	51	80	105	128	148	165	200	230	270
¾"—783	25	72	112	178	230	280	325	360	440	500	580
1" —784	56	162	255	402	530	640	730	830	1000	1170	1350

*Pressure differentials given in this table refer to pressure at inlet of trap and in return line. Select trap to handle maximum condition. For normal working pressures up to 60 lb. per sq. in., use Class 2 Traps even though occasional pressures may go above 60 lb. For normal pressures between 60 lb. and 125 lb., use Class 3 Traps. In this table ratings are given *above* 60 lb. for Class 2 Traps and *below* 60 lb. for Class 3 Traps merely to show performance at these special pressures.

TABLE XXIII. Rated Capacities of Webster Series "79" Traps in Lb. Water per Hour

Symbol	Pressure differential in lb. per sq. in.										
	1	5	15	25	30	40	50	60	80	90	100	125
Class 2A—Working pressures 15 to 30 lb. per sq. in.												
794-T-2A	460	1030	1790	2280	2540							
Class 2B—Working pressures 30 to 60 lb. per sq. in.												
794-T-2B	260	590	1020	1270	1440	1660	1860	2020				
Class 3A—Working pressures 60 to 90 lb. per sq. in.												
794-T-3A	130	290	510	650	720	840	940	1020	1200	1260		
Class 3B—Working pressures 90 to 125 lb. per sq. in.												
794-T-3B	68	150	260	350	370	450	500	520	640	660	700	759

Important Note—A very complete engineering data book on process steam application and use of Webster Series "78" and "79" Traps is available to supplement the brief description above. Write for Webster Bulletin B-1200D.

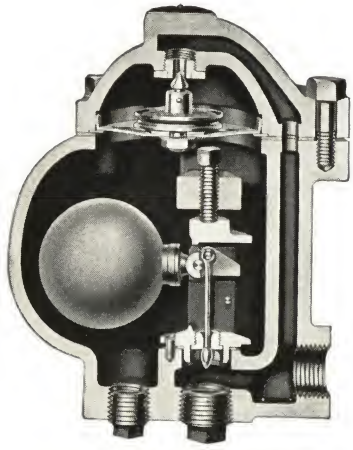


Fig. 21. Webster 794-T Trap

Series "79" Traps— Float-and-thermostatic traps designed for normal working pressures between 15 and 125 lb. per sq. in. For use where large volumes of very hot condensate must be handled more quickly than is possible by thermostatic traps alone. Condensate is passed through float-controlled outward opening valve while air is discharged into return piping through thermostatic vent and integral bypass. Compact and light and readily mounted in a pipe line without other support.

Cast iron body, copper-asbestos gasket, and cover are bolted together with steel cap screws. Valve piece and stem are Monel Metal while seat is Stainless Steel. Air vent unit is thermostatic element of Webster 780 Trap.

Made in four pressure classifications as shown in Table XXIII, the only difference being in the size of the float-controlled valve seat opening. Model 794-O without thermostatic vent is available.

Roughing-in dimensions same as Size 0026-T Trap in Table XVII. Available with either ¾ in. or 1 in. inlet and outlet.

WEBSTER TYPE "R" SYSTEM EQUIPMENT

Service Bulletin S-650D giving complete mechanical details of the Webster Type "R" System is available to supplement the brief description on this page. Popular "Don Graf" Data Sheets are also available for those desiring information in that form.

Quick circulation, despite variations in boiler pressures, is assured in Webster Type "R" Systems through the combination of the Webster Boiler Return Trap and Vent Trap. Air escapes from the system through the Webster Vent Valve. Water returns direct to the boiler by gravity at low pressures. An increase of pressure causes the Webster Boiler Return Trap to fill and operate, equalizing the pressure and making positive the prompt return of water to the boiler. Units are made to provide five sizes of the Webster Boiler Return Trap and Vent Trap combination, having the range of capacities given in Table XXIV.

Each Type "R" Combination should include a Webster Series 78 Dirt Strainer and (2) Webster 45° Check Valves.

TABLE XXIV. Data and Ratings for Webster Type "R" System Basement Equipment (Refer to Fig. 22)

Rating sq. ft. dir. rad.	Size Boiler Return Trap	Tappings E	Tappings O	Tappings S	Size Vent Trap	Number of ½-in. Vent Valves	Tappings R	Tappings U	Tappings V	Dimension H	Size Dirt Strainer	Size Check Valves (2 Req'd)
0– 1500	0023	½	1¼	¾	0023A	†	1	1		14	783	1¼
1501– 2500	023	½	1½	1¼	123A	1	1¼	1½*	½	17	785	1½
2501– 4000	123	½	2	1¼	123A	1	1¼	2	½	19	785	2
4001– 8000	223	¾	2½	1½	223A	2	1¼	2½	¾	23	786	2½
8001–16000	323	¾	3	1½	323A	3	1¼	2½	1	26	786	3

*Bushed—2"x1½". †Integral Vent Valve. Size 0023 with separate Vent Valve is optional at slight extra cost.

All dimensions in inches and subject to slight variation.

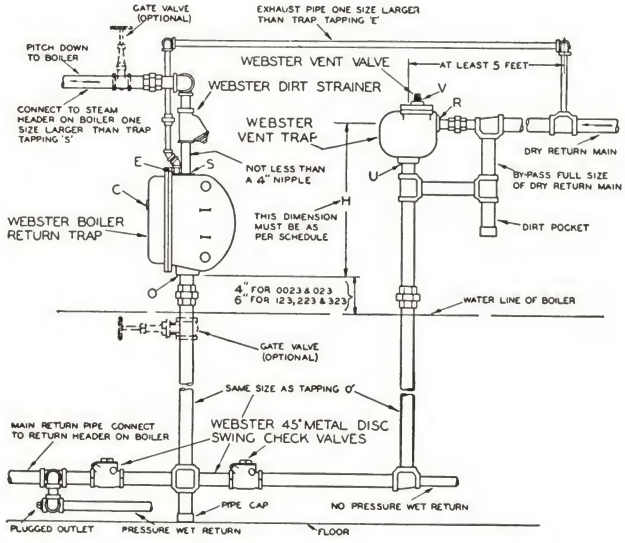


Fig. 22. Conventional Arrangement of Webster Type "R" System Equipment. Gate Valves Are Optional

Webster Boiler Protector

Provided to prevent breakage in low pressure cast iron boilers when the water level becomes inadequate. Automatically feeds to boiler when water level drops to 1 in. above bottom of gauge glass. Body is made of cast iron with three principal parts bolted together. Interior parts of copper, brass or Monel Metal to withstand corrosion. Seamless float actuates Monel Metal cone pilot valve on sharp-edged Monel Metal seat. Water valve with special Jenkins composition disc actuated by difference in water pressure between exterior and interior of Syphon Bellows.

Adapted to almost all types of low pressure heating boilers where maximum pressure will not exceed 15 lb. per sq. in. Maximum cold water main pressure should not exceed 150 lb. per sq. in.; minimum must not be less than 25 lb. per sq. in.

Made in one size, Model 34 with ¾-in. connections. Also Model 34C-1 with electrical cut-out switch.

Catalog B-727C and instruction bulletin available on Webster Boiler Protection.

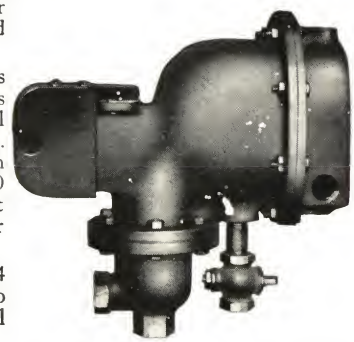


Fig. 23. Model 34C-1 Webster Boiler Protector, with Electrical Cut-out Switch

WEBSTER SYSTEM RADIATION
Concealed Non-Ferrous Type

A complete catalog is available to supplement the brief description shown here. It includes complete descriptive information, illustrations, details on results in installations, complete dimension data and certified rated capacities. Ask for Bulletin B-1500B.

Webster System Radiation is used *exclusively* with Webster Systems of Steam Heating. It *cannot* be used with hot water heating or one-pipe vapor or steam systems. There are two parts to each Webster System Radiator. One is a sturdy furniture steel enclosure with suitable grilles or openings, available in a number of standard forms. The other part, the "heart" of the Webster System Radiator, provides *in a single integral unit,* a light-weight non-ferrous heating element of high efficiency with an orificed Webster Radiator Supply Valve built into one header and a genuine Webster Radiator Return Trap built into the other header. Each unit also includes solid brass union connections.

This integral construction, together with the unique angle positioning of the heating surface, reduces space requirements to a minimum, thus making available *the maximum possible heat output per unit of space occupied.* It also simplifies installation, as the installer need only provide two "stub-ups" through the floor for connection to the unit. This integral construction also places the responsibility for the correct functioning of all of these closely related items in the hands of one well-established manufacturer. Finally, and of utmost importance, the design of Webster System Radiation, both heating elements and enclosures, permits the ready removal of the entire heating element assembly without damage to plaster or other structural materials.

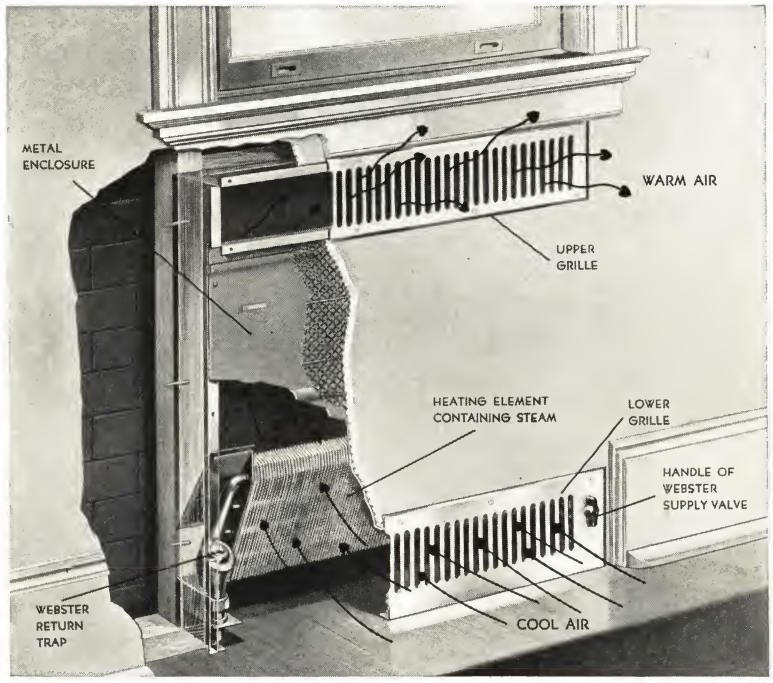


Fig. 24. How Webster System Radiation Heats the Room by Natural Circulation
Air from room is drawn in through lower grille and passes upward over heating element. As its temperature is raised air ascends and re-enters room through upper grille. As warm air gives up its heat by contact with objects in room and by mixture with cooler air, its temperature drops and it falls to floor level where it re-enters lower grille. Note supply valve handle outside lower grille, enabling room occupant to turn on or completely shut off heat
(*Type AK Radiator Illustrated*)

Specification

Enclosures are of heavy gauge, cold rolled (furniture) steel finished in baked prime coat. Provided with holes for nailing to studding. May be installed back of any wall surface. No special framing or furring required. Length of enclosure is total length of recess—unnecessary to add for valve and trap connections. Fixed support for heating element integral with enclosure eliminates necessity for adjustment or legs.

Heating Element—Entirely non-corrosive materials. Designed for complete drainage. Flat surfaced fins prevent lodging of dust and dirt. Element installed on an angle to provide maximum heat per unit of space occupied. Tubes and headers connected by Mueller Streamline Joints.

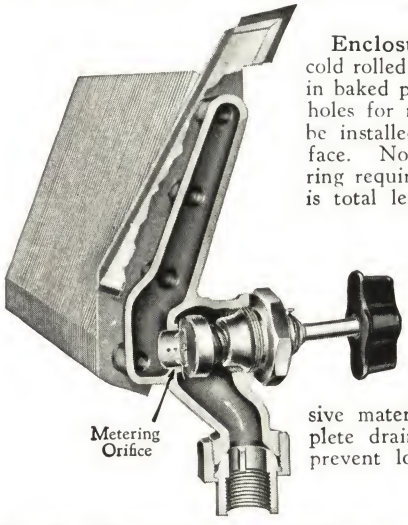


Fig. 25. Cut-away View of Supply Header
Showing Webster "Three-Point" Valve including metering orifice

Webster Three-Point Supply Valve with Sleeve-Type Metering Orifice incorporated in each unit. For detailed description of these features see pages 2 and 4.

Union Connections—For both steam and return are furnished as part of the radiator. Units furnished left-hand or right-hand *but not convertible.*

Metal Grilles—Of pleasing bar type, either conventional or streamline design.

Webster Trap—Built into return header. Phosphor bronze diaphragm, removable sharp-edged seat, 60° cone valve piece.

Ease of Installation—The combination of supply valve, heating element and return trap in a single unit eliminates considerable roughing-in work, simplifies piping and reduces installation labor cost.

Enclosures

The requirements of widely varied architectural treatments and building construction are met without preparation of special architectural detailed drawings by one of the following types of Webster System Radiation:

(1) *Type AK*—For concealing within plaster, panel, tile, marble, stone, and other surfaced walls.

(2) *Type AKT* — Similar to Type AK Enclosure except having a No. 12 gauge, ¾ in. square mesh, horizontally positioned top outlet grille.

(3) *Type AM*—Metal cabinet for enclosing within wall but having metal panel cover.

(4) *Type AE* — Free standing exposed cabinet.

(5) *Type AEH* — Hung type exposed cabinet.

Other types such as special institutional enclosures are available. Information upon request.

Provision has been made in all types of enclosures for positive control of heat by extending Webster Supply Valve handle through lower grille or opening. The handle is of pleasing shape and has been placed in an inconspicuous location yet is easily operable if room occupant desires to turn on or shut off heat.

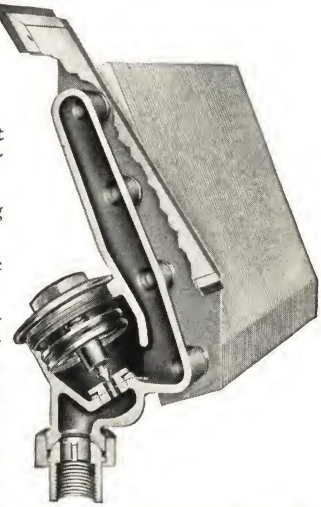


Fig. 26. Cut-away View of Return Header
Complete drainage from all tubes provided for by raceways around valve seat.

WEBSTER-NESBITT UNIT HEATERS

PROPELLER-FAN TYPE



Fig. 27. Propeller-Fan, Ceiling Suspension Type Webster-Nesbitt Unit Heater

Webster-Nesbitt Unit Heaters are manufactured by John J. Nesbitt, Inc., Holmesburg, Philadelphia, Pa., and are distributed solely through Warren Webster & Company, Camden, New Jersey.

Webster-Nesbitt Propeller-Fan Unit Heaters provide a method of heating small and medium-sized enclosures such as stores, offices, garages, factories, and other structures having comparatively low ceilings. For the heating of large spaces the Webster-Nesbitt Centrifugal-Fan Giant Heater is recommended.

Webster-Nesbitt Unit Heaters are designed to circulate large volumes of air at comparatively low temperatures. By this method the heated air is mixed thoroughly with the room air to reduce overheating in upper areas and temperature stratification, and to assure quick heating, low fuel costs, and great comfort for room occupants.

Selection

Unit heaters should always be selected on the basis of large air volume delivered at relatively low final temperatures. This produces more rapid turnover of the air within the enclosure and reduces the possibilities of stratification or accumulation of excess heat in the upper part of the building. Consideration must be given to the entering air temperatures and steam pressure available at the unit. The higher either or both of these factors, the higher the leaving air temperature.

Sizes

Webster-Nesbitt Propeller-Fan Unit Heaters are designed to circulate large volumes of air at low temperatures and are built in seven casing sizes with three radiator sizes available for each casing, making a total of twenty-one sizes from which selection can be made. The different size radiators makes it possible to select units with reasonably low final temperature for all conditions of entering air temperature and steam pressure.

Capacities

Under basic ratings of 60° entering air and 2 pound steam pressure and at maximum fan speeds, capacities range from 19,800 BTU/hr., 495 CFM, 97° F.T., to 313,000 BTU/hr., 4580 CFM, 123° F.T. Additional capacities can be secured by the use of lower constant-speed motors, two-speed or four-speed motors.

For complete rating tables, dimensions and application data, communicate with the nearest Webster sales office or send for Publication W-N-100.

Some Points of Advantage of Webster-Nesbitt Propeller-Fan Unit Heaters

Quiet Fans of four-blade type. Series 10, 12, 16, and 20 units have exceptionally wide overlapping blades of gradual pitch for especially quiet service.

Discharge Louvres, individually adjustable, may be locked in position after setting.

Steam and Return Headers of heavy, seamless steel tubing, with steel couplings and tube bosses are welded to header body.

Center Steam and Return Connections, permitting especially the four smaller size units to be suspended direct from steam piping, without additional hangers, and to be adjusted for direction after installing.

Modern Casing Design. Heavy furniture steel, die-formed and welded, all corners rounded. Black featherweave finish, stainless steel trim.

All-Copper Heating Element of die-formed copper fins forced over ¾-inch seamless, hard-drawn copper tubes. Tubes and headers joined by compression unions. Assembly tested, rated, and guaranteed for working steam pressures of 150 pounds per square inch.

Rubber-Mounted Motors, to prevent transmission of motor hum or vibration.

SERIES F UNIT HEATERS

For use in offices, stores, halls, showrooms, restaurants, vestibules, and similar locations.



Fig. 28. Webster-Nesbitt Series F Unit Heater

The Webster-Nesbitt Series F Unit Heater is designed for use where quietness and appearance are prime requirements. This unit employs low-speed, multiblade, multispeed, centrifugal fans mounted on extended motor shafts. Motors are of special design and are equipped with variable speed control.

Attractive casing of heavy stock furniture steel, with black featherweave finish. Removable front panel for access to motor and heating coil. Steam and return piping concealed at ends of casing. Access doors provided for valve and motor regulation. Recirculating grille in front, at base, and discharge grille in top of casing. Provides circulation, quick heating up and even distribution.

Built in four casing sizes, with two radiator sizes available for each casing, making a total of eight sizes from which to make selection. Furnished both for floor or horizontal ceiling mounting.

Capacities based on 60° entering air and 2 pounds steam range from 94 square feet EDR to 423 square feet EDR—282 CFM to 1355 CFM.

For complete engineering details communicate with the nearest Webster office or write for Publication W-N-105.

WEBSTER-NESBITT UNIT HEATERS

BLOWER-FAN TYPE

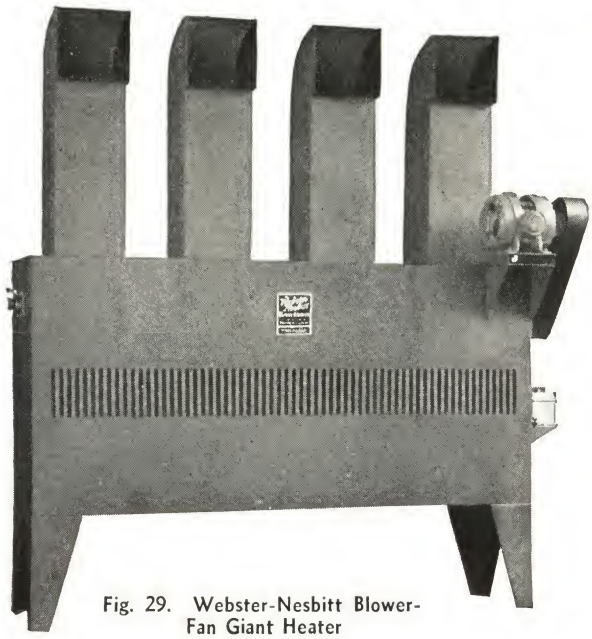


Fig. 29. Webster-Nesbitt Blower-Fan Giant Heater

THE WEBSTER-NESBITT GIANT

Standard (Non-Thermadjust) Type

Used principally where heating is by recirculation only, and where constant heat output is desired during period of operation. Start and stop control may be manual or through thermostat.

Thermadjust Type

Employs dampers in front of casing and over face of heating element to provide mixing of tempered and heated air, producing heat output in accordance with requirement, and continuous circulation of air volume. Mixing dampers may be manually or automatically controlled through thermostat operating damper motor. Saves steam, prevents spotty heating, provides constant air circulation and even heat distribution.

Valve Controlled Type

Unit is of standard casing arrangement but equipped with Nesbitt Heating Surface with Steam Distributing Tubes which allows for automatic control of heat output by modulation of steam supply. Eliminates stratification of outlet temperatures and prevents coil from freezing when subjected to sub-freezing incoming air temperatures. Admirably adapted on problems involving ventilation.

Types of Mounting

Webster-Nesbitt GIANT Unit Heaters can be furnished in any of four types, Floor-Mounted, Horizontal-Suspended, Wall-Mounted, and Inverted, and can be had with either V-Belt Drive or Direct Drive.

Sizes

Webster-Nesbitt GIANT Unit Heaters are designed to handle large air volumes at comparatively low final temperatures, and are built in nine different casing sizes, with four radiators available for each casing, making a total of thirty-six sizes from which selection can be made. High outlet discharge velocities, 1700 to 2100 feet per minute, make it possible to distribute heated air over large areas with few units. The different size radiators make it possible to select units of reasonably low final temperature for all conditions of entering air and steam pressure.

Capacities

Under basic ratings of 60° entering air and 2 pounds steam pressure and at maximum fan speeds, capacities range from 125,000 BTU/hr., 3330 CFM, 96.5° F.T., to 1,008,000 BTU/hr., 16,000 CFM, 124° F.T. Many other capacities can be obtained from each size unit by reduction in motor horse power required.

For complete rating tables, dimensions and application data, communicate with the nearest Webster sales office or send for Publication W-N-104.

Some Points of Advantage of Webster-Nesbitt GIANT (Blower-Fan) Unit Heaters

Casing—End sheets are formed of No. 11 gauge and side sheets of No. 14 gauge furniture stock steel, securely braced with No. 11 gauge cross channels, all joints welded. Front panels are attached by self-tapping screws and are removable for access to fans, dampers, and heating element.

Fans—Forward-curve multiblade type with blades welded to hub plate and outer ring; entire assembly accurately balanced.

Housings—Double-inlet type with streamline die-stamped inlet cones. Separate housing for each fan.

Fan Shaft—Cold-rolled steel of extra large diameter to prevent whipping, with ends journaled for operation in bearings.

Bearings—Wall-type ball bearings rigidly fastened to end sheets and provided with grease gun connection.

Heating Elements—Heating surface for Standard and Thermadjust Giants constructed of ½ in. seamless copper condensing tubes with flat extended copper fins.

Headers—Heavy-wall seamless copper tubing with extruded tube collars, silver brazed into condensing tubes—producing a joint that is stronger than the tube itself. Complete heating element including header designed and guaranteed for all steam pressures up to 200 lb. per sq. in. gauge.

Motor Drive—Motor mounted on suitable motor bracket attached to unit casing and arranged for either V-belt drive or direct connection to fan shaft, as may be required. Heavy removable belt guards furnished with belt-drive units.

Thermadjust Dampers—All sizes and types may be equipped with Thermadjust By-pass Dampers for either hand or automatic operation.

Types—All units available in four types—Floor-Mounted, Horizontal-Suspension, Wall-Mounted, and Inverted.

Special Features—All sizes and types, both with and without Thermadjust dampers, may be equipped with recirculating and outside air connections, mixing boxes, dampers, and wall boxes.

STANDARD RATINGS

All Webster-Nesbitt Unit Heaters are rated on the basis of tests made in acordance with the Standard Test Code of the Industrial Unit Heater Association and the American Society of Heating and Ventilating Engineers.

WARREN WEBSTER & COMPANY

FACTORY AND MAIN OFFICE—CAMDEN, N. J.

Cable Address: DELPHIC, U. S. A.

Darling Brothers, Ltd., P. O. Box 187, Montreal, Canada, Licensees and Manufacturers

WE solicit consideration for Webster Systems, Controls and Equipment by architects, engineers and building owners on the basis of an enviable record of service, backed by 51 years of experience (since 1888), an ample modern plant and resources, and sales and service offices in over 60 United States cities and in Canada. Webster Systems have been specified by fully one-third of the country's leading architects, and installed in more than 75,000 outstanding structures by more than 2,800 heating contractors. The greater portion of the Company's business consists of repeat orders. Webster engineers are prepared and able to co-operate effectively with architects.

Products and Services

"A Heating System for Every Need and Purpose" including Improved Webster Vacuum and Type "R" Systems of Steam Heating.

Effective central controls for Heating Systems including Webster MODERATOR Controls ("Control-by-the-Weather") and Webster HYLO Controls.

Webster System equipment including Concealed non-ferrous Radiation, Radiator Supply Valves, Return Traps, Drip and Heavy Duty Traps, Dirt Strainers, Boiler Return Traps, Vent Traps, Boiler Protectors, Damper Regulators, Lift Fittings, Expansion Joints, Vacuum Governors, Air Separating Tanks, etc. Series "78" and "79" Traps for process pressures (10-125 lbs. per sq. in.). Unit Heaters.

Webster Systems of Steam Heating

Webster Systems of Steam Heating are complete systems of *steam circulation*. WARREN WEBSTER & COMPANY manufacture for use in these systems, the products previously listed. It should be noted, however, that the Company does not manufacture, sell or assume responsibility for combustion equipment (oil burners, stokers, etc.), boilers, piping or other equipment not of its own manufacture. These should be selected and specified by the architect in the usual way.

A Heating System for Every Need and Purpose

Heating requirements vary so widely that no one type of heating system or no one control can be expected to provide comfort, economy and maximum investment return for all types and sizes of buildings. Realizing this, WARREN WEBSTER & COMPANY have consistently developed an entire group of Webster Systems of Steam Heating together with effective central controls—each built to meet certain conditions, each a combination of service, experience, equipment and engineering methods for the heating requirements of the individual installation.

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DAYTON, OHIO, 1249 U. B. Building
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LOS ANGELES, CAL., 320 Crocker Street
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NEWARK, N. J., 20 Washington Place
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RICHMOND, VA., 16½ N. Ninth St.
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SECTION 26

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ROCKWOOD SPRINKLER CO.

WORCESTER, MASS.

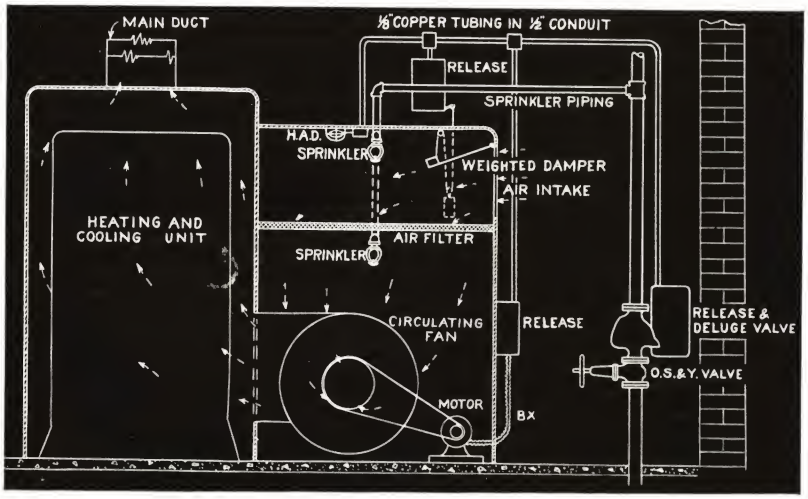
BRANCH OFFICES AND PLANTS

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ST. LOUIS, MO.
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Sole Agents for Canada: WORCESTER FIRE EXTINGUISHER CO., LTD., Montreal and Toronto

For Automatic Sprinkler Systems—see File Index

AUTOMATIC FIRE CONTROL FOR AIR CONDITIONING INSTALLATIONS



(Left) *Basic* Rockwood *Dualguard Automatic Fire Control* applied to typical air conditioning system. Heat from fire starting in the air filter is instantaneously detected by Heat Actuated Device (marked H.A.D.). Expansion of air in H.A.D. causes a pneumatic impulse to be transmitted through copper tubing to each of three Dualguard Release Devices. One of these shuts down fan motor. Another closes weighted damper at air intake. The third release trips Deluge Valve filling sprinkler system over air filter with water ready for release when fire melts fusible link in sprinkler.

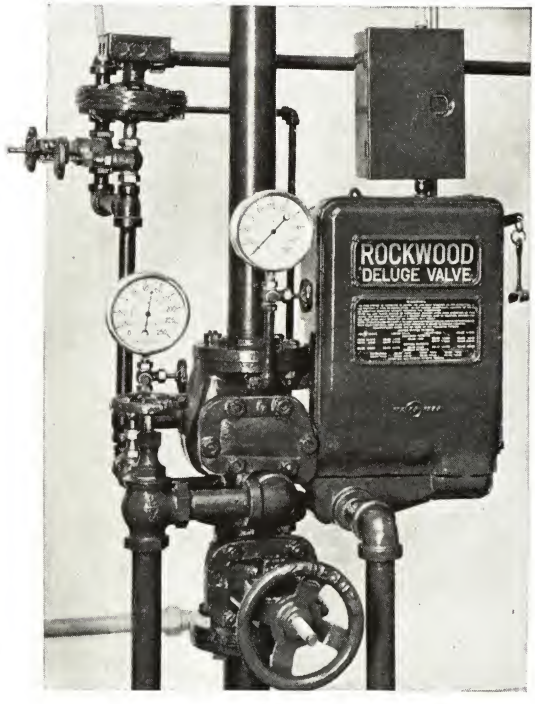
Air conditioning has transformed many buildings into more comfortable occupancies the year round. It has also created serious new fire hazards in many properties where no particularly bad hazard previously existed.

These hazards are present in two forms in nearly every air conditioning installation. First, filters and motors within the system itself are inherent *breeders* of fires. Second, the very nature of an air conditioning installation makes it a potential *spreader* of fire because fire starting within the air conditioning system is quickly fanned to dangerous proportions and spread to other parts of the property. Also, sparks and smoke from a fire in an adjoining building may be drawn into the air conditioning system thru the air intake. Even where there is no spread of flames, smoke and fumes can do considerable damage to furnishings and merchandise. And, of even greater danger is the possibility of smoke and fumes creating a panic in a theatre, auditorium, school, department store or any other building where large numbers of people are likely to be gathered.

Fifteen fires in air conditioning systems were reported to the National Fire Protection Association during a recent eighteen month period. The monetary loss involved in five of these fires was not reported, but in the remaining ten the loss ran over $285,000 — an average loss of $28,500 per fire.

Analysis of these fires shows that virtually 100% of them originate in air filters. Laboratory experiments have shown that many filters (even those of spun glass and steel wool) impregnated with the oil used to catch dust being drawn through the filter, will burn violently with a draft against them.

Rockwood's *Dualguard Automatic Fire Control System* was developed specially for air conditioning installations. This system operates on the rapid acting but extremely reliable *Rate-of-Rise* principle of fire detection. The amount of equipment required in a *Dualguard Automatic Fire Control System* depends upon the size of the air conditioning installation and the extent of the fire control operations desired as described in the typical specifications on the next page.

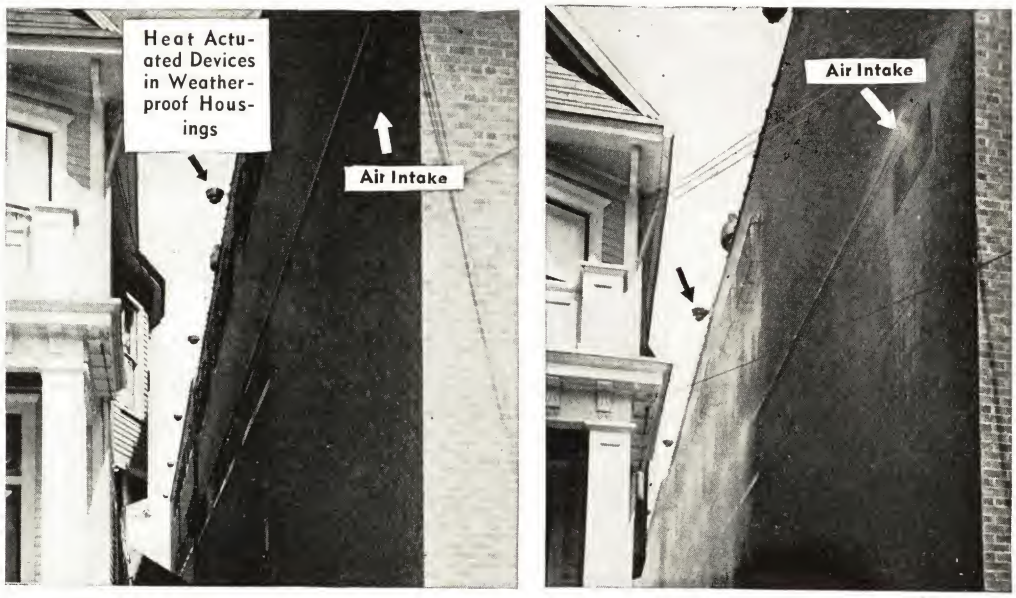


Typical Dualguard Deluge Valve, with Release mounted alongside, controls the flow of water to sprinklers installed on both sides of filters in air conditioning system. Upon receiving an air pressure impulse from Heat Actuated Device this valve produces water at sprinklers with amazing speed.

AUTOMATIC FIRE CONTROL FOR AIR CONDITIONING INSTALLATIONS

Rockwood Dualguard Fire Control Systems should be specified for the extinguishment of fire, the automatic control of fan motors and the automatic operation of fire doors or dampers in the main supply and main re-circulation ducts in air conditioning systems. In addition, when air intake openings are so located that an exposure fire from outside of the building might be drawn into the air intakes, Rockwood Automatic Deluge Systems of open sprinklers should be installed over all exposed openings.

Physical conditions vary with practically every air conditioning installation, so fire protection equipment should be treated as a separate contract and should not be included as part of the air conditioning specifications. Rockwood Sprinkler Company's engineers may be consulted regarding plans, specifications and installation.



(Left) Outside wall of Buffalo department store protected by 5 Dualguard Heat Actuated Devices (H.A.D.'s) in weatherproof housings. A fire in adjoining property would be quickly detected by these units which would automatically shut off 66 motors operating large air conditioning fans. (Right) Water curtain which is laid down outside wall automatically and simultaneously with shutting down of fans.

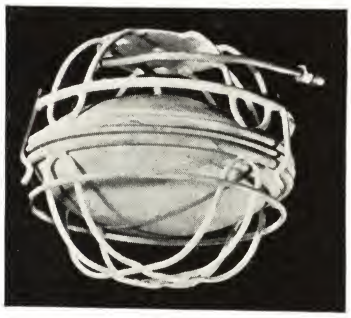
TYPICAL GENERAL SPECIFICATION

1. Materials and Installation

The fire protection equipment proposed includes the furnishing, delivery and installation of necessary devices which shall be approved by the National Board of Fire Underwriters and the Underwriters Laboratories Incorporated.

2. Fire Detection

Rockwood Heat Actuated Devices shall be of the approved bulb thermostat type, operating on the *Rate-of-Rise* principle of heat detection and shall be installed at points to be determined by Rockwood engineers. All Heat Actuated Devices shall be connected by copper tubing run in conduit to the approved control device.



Dualguard Heat Actuated Device automatically and instantaneously detects fire in an air conditioning system.

3. Fire Extinguishment

Approved Rockwood Automatic Sprinklers shall be installed over the air filters. Sprinklers shall be installed on an empty piping system and the water supply to the sprinkler piping shall be controlled by an approved Rockwood Deluge Valve of the proper size. The Deluge Valve shall be operated by the *Rate-of-Rise* principle of heat detection from air pressure in the Heat Actuated Device (or Devices) created by fire.



Rockwood Sprinkler Heads installed on both sides of air filters completely deluge filters with water when fire breaks out.

4. Fan Motor Control

Rockwood Electrical Control Units shall be installed, this unit to be of an approved type designed to operate on both open and closed circuits. The Electrical Control Unit shall be capable of simultaneously stopping the fan motor and sounding a suitable alarm. The Electrical Control Unit shall be operated by the *Rate-of-Rise* principle of heat detection from pressure created by fire in the Heat Actuated Device or from a pneumatic impulse created by the operation of the Deluge Valve.

5. Damper or Fire Door Control

The main dampers or fire doors in the main supply to the Air Conditioning System and in the main outlet of the re-circulation duct shall be operated in case of fire by the *Rate-of-Rise* principle of heat detection from pressure created in the Heat Actuated Device or from a pneumatic impulse created by the operation of the Deluge Valve.

6. Exposure Protection

All intakes to the Air Conditioning System which are subject to an exposure fire shall be protected by a Rockwood Automatic Deluge System of open sprinklers. Weatherproof outdoor type Heat Actuated Devices shall be installed over exposed intakes and connected by copper tubing run in conduit to the Deluge Valve controlling the water supply to the open sprinklers which shall be approved Rockwood open sprinklers.

Note on Special Protection

Basic fire protection for the average type of air conditioning system is covered by the specifications above. Certain air conditioning systems will need special protection requiring special engineering which can be secured through the nearest Rockwood Office. Examples of such special protection include:

1. Smoke detection by means of photo electric cell (or electric eye).
2. Control of fan motor and operation of dampers or fire doors from fire in the air conditioning ducts outside of the plenum chamber.
3. Operation of fan motor and dampers, or fire doors, from a fire within the building but outside of the air conditioning system.

MEMORANDA

GRINNELL COMPANY, INC.

EXECUTIVE OFFICES
PROVIDENCE, R. I.
OFFICES IN PRINCIPAL CITIES

For Automatic Sprinkler Systems, Unit Heaters, Prefabricated Piping and Pipe Hangers, see File Index

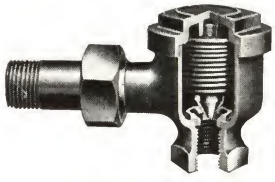
THERMOFLEX HEATING SPECIALTIES

For Vacuum, Vapor and Steam Pressures

The Thermoflex Trap is a product of proven superiority, built to meet the most exacting standards of manufacture and performance.

The heart of all Thermoflex Traps is the Hydron Bellows which is formed from selected seamless drawn tubing by a powerful internal hydraulic pressure. As this pressure is more severe than any which the Trap will ever be called upon to withstand under actual working conditions, every Thermoflex Trap is practically indestructible.

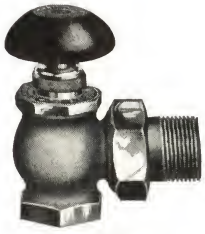
The exceptionally large orifice combined with high lift insures quick action and freedom from clogging. Thermoflex Traps are guaranteed for steam pressures up to 25 lbs., to 50 lbs. and to 125 lbs. A complete Catalog on Thermoflex Heating Specialties may be obtained upon request to GRINNELL COMPANY, INC., 277 West Exchange Street, Providence, R. I.



Radiator Trap
Fig. 12—Angle
Fig. 120—Angle
Fig. 12M—Angle

Radiator Traps

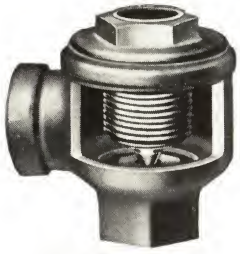
Applicable within stated pressure and capacity ranges to all types of radiation, drip points, main vents, and steam equipment returns.



Inlet Valves
Figs. 11 and 15

Packless Radiator Inlet Valves

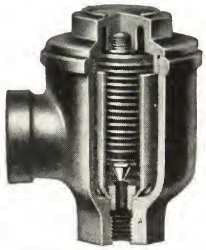
All bronze construction, chromium plated. Large dial plate, easily read. Furnished with non-heating Lever or Wheel Handles in standard or extra heavy pattern.



Iron Body Trap
Fig. 4—Angle
Fig. 4M—Angle

Drip Traps

Applicable within stated pressure and capacity ranges to pipe coils, unit heaters and ventilators where suitable cooling leg is provided, drip points, and steam equipment returns.



High Pressure Trap
Fig. 100A

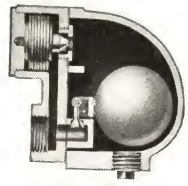
High Pressure Traps

Applicable within stated pressure and capacity ranges to hospital, kitchen, laundry, and industrial steam equipment returns, and drip points.

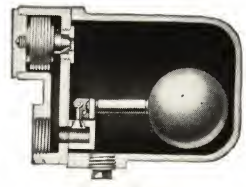
Blast Traps

Thermoflex Blast Traps are high capacity traps utilizing a combined float and thermostatic action to eliminate large volumes of air and water from steam lines. Water is passed through large orifice valve, and air is vented through thermostatic by-pass operated by the same high quality bellows used in Thermoflex traps of the thermostatic type.

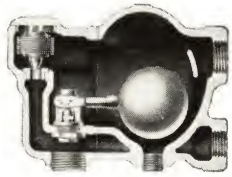
Blast traps are constructed with heavy cast iron body and high test seamless copper ball floats. Low pressure series has bronze working parts and high pressure series has stainless steel trim.



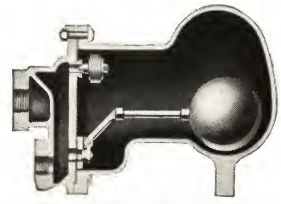
Blast Trap
Fig. A



Blast Trap
Fig. 00



Blast Trap
Figs. 252, 253

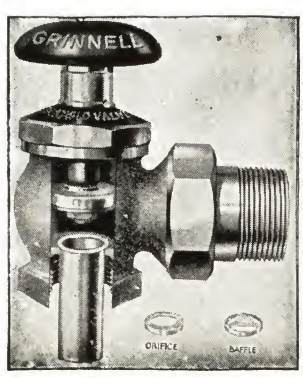


Heavy Duty Blast Trap
Figs. 1, 2, 3 and 4

Grinnell Equiflo Valves

For Forced Hot Water Heating

The designing of forced circulation hot water heating systems is so simplified by the Grinnell Equiflo Valve that they can be laid out and installed as easily as vapor or steam systems. This valve consists of a regular type packless radiator valve with a cartridge or tube made up of a series of orifices and baffles capable of setting up any required frictional resistance. This method of establishing any desired resistance does away with elaborate calculation of pipe sizes. Grinnell guarantees perfectly balanced circulation to each and every radiator where these valves are installed throughout the system.



Equiflo Data Book sent to interested parties.

HOFFMAN SPECIALTY COMPANY, INC.

EXECUTIVE OFFICES
500 Fifth Avenue, NEW YORK, N. Y.
MAIN OFFICE AND FACTORY, WATERBURY, CONN.
SALES REPRESENTATIVES IN PRINCIPAL CITIES

EQUIPMENT FOR STEAM HEATING

Manufacturers of Adjustable Port Radiator Venting Valves, Quick Vents, Supply Valves, Thermostatic Traps and Basement Specialties for Controlled Heat Systems; Hoffman Economy Vacuum and Condensation Pumps, Hoffman Air Conditioner and Hoffman Hot Water "Controlled Heat."



No. 1 Siphon Air Valve

With the Hoffman Adjustable Orifice Venting Ports, a one-pipe steam heating system can be brought to a maximum degree of efficiency.

Now by varying the rate of venting the air from a one-pipe steam radiator, the flow of steam into the radiator can be controlled. By accelerating the venting of large radiators and restricting the venting of small radiators the same proportion of each radiator can be heated in a given time. Likewise, if desired, certain radiators can be made to heat more rapidly than others.

Siphon Air Valves—The No. 1 Siphon Air Valve is used for venting radiators on one and two-pipe steam systems.

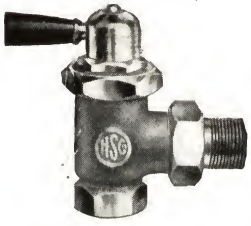
Siphon Air and Vacuum Valves—The No. 2 Siphon Air and Vacuum Valve which has proved its supremacy over a period of years is used on radiators for one-pipe vacuum systems.

Quick Vents—A large variety of quick vent valves for use on ends of mains is available in both straight venting and vacuum types.

A competitive line of valves is also available at lower prices.



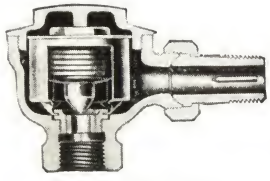
No. 2 Siphon Air and Vacuum Valve



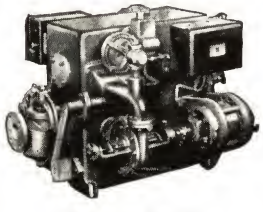
No. 7 Modulating Valve

The valve and trap shown constitute the two most important items of a regular "Hoffman Controlled Heat" System. In place of the No. 7 valve shown numerous other types of supply valves may be used. The No. 8A trap likewise is only one of the many types and sizes of traps available to meet practically all conditions existing in a two-pipe steam heating system where traps are required.

Basement specialties such as the differential loop and the boiler return trap are used in conjunction with the above specialties for returning the condensation, on two-pipe steam installations, to the boiler.

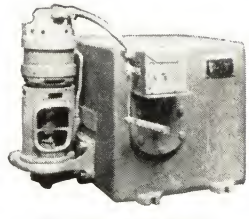


No. 8A—½"



Vacuum Pump

On large installations or wherever special conditions necessitate the use of vacuum or condensation pumps we recommend the use of a Hoffman Economy unit. This line of pumps which has rendered unfailing service for many years offers a unit to meet any heating requirement and covers a wide range of capacities and pressures.



Condensation Pump

Hoffman products are sold and stocked by leading wholesalers of heating and plumbing supplies everywhere. Hoffman representatives are available to assist in selection of suitable equipment for various services.

Catalogs covering the above specialties in detail will be furnished upon request.

HOFFMAN HOT WATER "CONTROLLED HEAT"

For Automatically Fired Gravity or Forced Circulation Hot Water Heating Systems Provide Continuous Circulation with Balanced Temperature Control

Hoffman Hot Water "Controlled Heat" features *continuous circulation* with combined outdoor-indoor temperature control. *The related action of these features assures a uniform room temperature which will not vary from Fall to Spring, regardless of how violently the outdoor temperature may fluctuate!*

The whole system is based on the fact that for any given outdoor temperature, the water in the radiators should be kept at the degree of temperature which *exactly* offsets the heat loss of the building.

Hoffman Controlled Hot Water Heat accomplishes this by a smooth modulation of the temperature of the *continuously circulating* water. The system can be adjusted to give any desired degree of room temperature and to compensate for differences in figuring radiation. (150 to 240 B.t.u.)

The Hoffman System is adaptable to either old or new oil, gas, or stoker-fired installations, or any automatically-fired device.

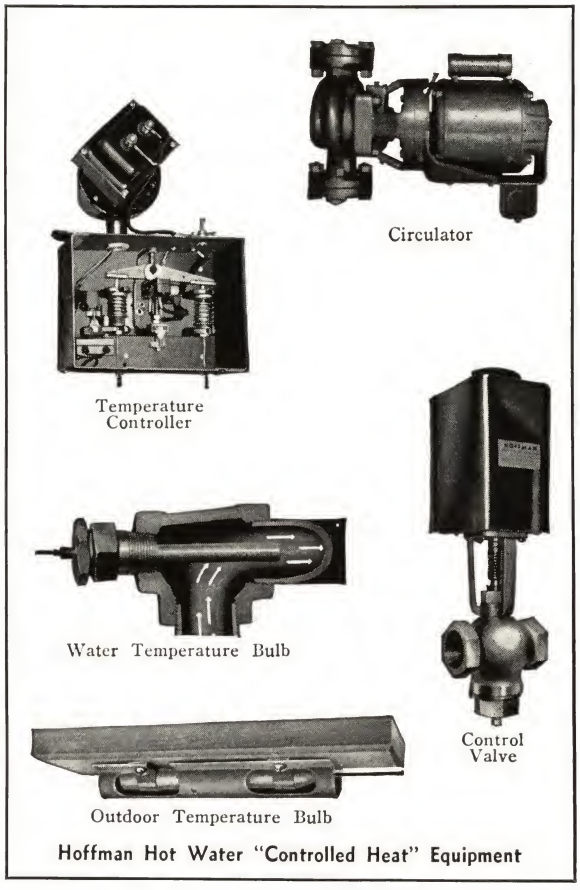
Effects Four Major Improvements In Forced Hot Water Systems

Hoffman Hot Water "Controlled Heat" does four things which effect a remarkable improvement in the operation of a forced hot water heating system.

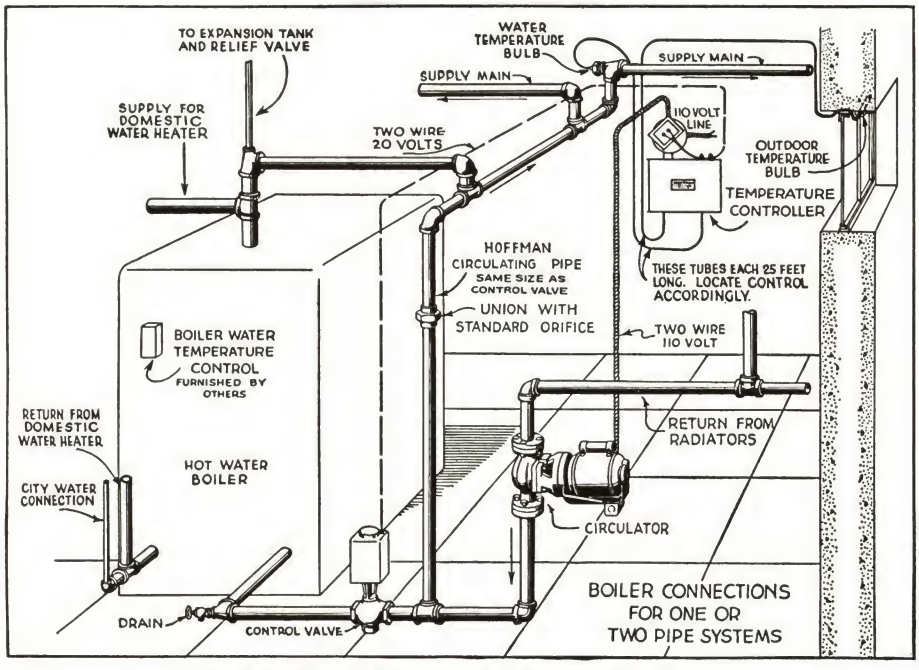
1. It continuously circulates the water to avoid intermittent bursts of heat to the radiators and to permit gradual changes in the temperature of the circulating water.
2. It maintains the temperature of the radiators at a degree which exactly offsets the heat loss for any given outdoor temperature, thereby eliminating "Cold 70."
3. It conserves fuel by positively preventing overheating.
4. It prevents creeping and creaking pipes because of gradual changes in circulating water temperature.

Control Equipment

Only three units are required—a Hoffman Circulator, a Hoffman Control Valve, and a Hoffman Temperature Controller, consisting of a control box connected by two capillary tubes to an outdoor temperature bulb and a water temperature bulb.



Hoffman Hot Water "Controlled Heat" Equipment



Typical Installation of Hoffman Hot Water "Controlled Heat"

Operation of Hoffman Hot Water "Controlled Heat"

In operation, the boiler is maintained at a constant temperature, in accordance with the desired B.t.u. heat emission. The Circulator runs continuously, except when the outdoor temperature rises to about 65°. At this point the Circulator stops and does not start again until the temperature goes below 65°.

Note particularly in the installation diagram at the left that the piping differs from the conventional layout in that a circulating pipe and a Hoffman Control Valve are installed *between* the Circulator and the boiler. Unless the control valve is open, the water circulating continuously through the piping and radiators *does not pass through the boiler!*

To maintain a constant room temperature of 70°, the radiators must give off enough heat to exactly equal the heat loss of the building. Obviously the amount of heat necessary varies as the outdoor temperature rises and falls. *The Hoffman System meets this variation in heat demand*—without overheating or "lag."

Hoffman Hot Water "Controlled Heat" Installation Manual Describing this Equipment in Greater Detail Gladly Furnished on Request.

MEMORANDA

McDONNELL & MILLER

Manufacturers of McDonnell Boiler Water Level Controls

General Offices, Wrigley Building, CHICAGO, ILL.

Products

BOILER WATER FEEDERS; COMBINED BOILER WATER FEEDERS AND LOW WATER CUT-OFFS; LOW WATER CUT-OFFS; COMBINED LOW WATER CUT-OFFS AND PRESSURE CONTROLS; ELECTRIC WATER VALVES; PUMP CONTROLS; LOW WATER ALARMS; CONSTANT LEVEL VALVES; HUMIDIFIER WATER VALVES; and related equipment.

"Doing One Thing Well"

Boiler Water Feeders

McDonnell Boiler Water Feeders (Nos. 47, 147, 51, 53 and 101) supply water to boilers whenever the boiler water level tends to drop to the danger zone. Their dependable operation is assured by the McDonnell "Cool Feed Valve" (Patent No. 1,934,486) which prevents lime and scale formation—by packless (bellows) construction; stainless steel valves; the McDonnell "Quick-Hook-Up" (Patent No. 1,997,785); built-in strainer and many other refinements fully described in the McDonnell literature.

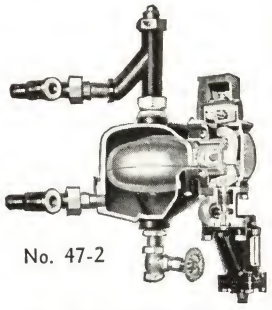
Feeders and Cut-offs Combined

Nos. 47-2, 147-2, 51-2 and 53-2 for automatically fired boilers, are the Nos. 47, 51 and 53 with the McDonnell No. 2 Switch as illustrated. In these combinations the feeder takes care of all normal operation, and the switch stands by to cut off the burner, if an emergency should arise such as extreme priming or foaming or failure of water supply. Another type of feeder-cut-off combination meeting special conditions is found in the No. 67 with No. 101, as explained under the illustrations at the right.

Low Water Cut-offs

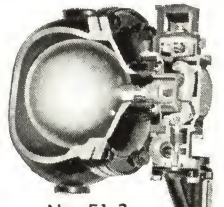
The No. 67 takes care of all cut-off requirements for boilers with steam pressures up to 25 lbs. Its operation is restricted to stopping the burner when low water threatens the boiler. However it is furnished with an extra switch, as explained under the illustration, for operating the No. 101 Electric Feeder so that the feeder may be added at any time without price penalty.

For boilers with pressures from 25 lbs. up to 150 lbs., the McDonnell No. 150 is the cut-off to use. It can be used as either a low water cut-off, a pump control, a low water alarm, or for any combination of these three functions. Service recommendations and typical specifications follow.



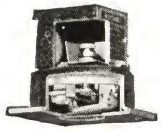
No. 47-2

No. 47-2 Combined Feeder and Low Water Cut-off with "Quick-Hook-Up" for automatically fired boilers below 5,000 sq. ft. capacity. No. 47 for hand fired boilers in same range is identical except for the No. 2 cut-off switch (see below)



No. 51-2

No. 51-2 Combined Feeder and Low Water Cut-off for automatically fired boilers above 5,000 sq. ft. capacity. No. 51, for hand fired boilers, is the same, except for No. 2 switch. No. 53 and No. 53-2 are similar in appearance but of heavier construction for higher pressures (see Tables 1 and 2)



No. 2

No. 2 Low Water Cut-off Switch used on Nos. 47, 147, 51 and 53 Safety Feeders. Has high voltage cut-off contacts and low voltage alarm contacts. Can be furnished on feeders or installed easily after feeders are in place on boilers

Boiler size	Steam pressure	McDonnell product to use
Table 1—For Hand Fired Jobs		
Up to 5,000 sq. ft.	Under 15 lbs.	No. 47 Water Feeder
Up to 5,000 sq. ft.	15 to 35 lbs.	No. 147 Water Feeder
Above 5,000 sq. ft.	Under 35 lbs.	No. 51 Water Feeder
Any size	35 to 75 lbs.	No. 53 Water Feeder
Any size	35 to 150 lbs.	No. 150 as a pump control
Table 2—For Automatically Fired Jobs		
Water Feeder—Low Water Cut-off Combinations		
Up to 5,000 sq. ft.	Under 15 lbs.	No. 47-2 Feeder Cut-off Combination
Up to 5,000 sq. ft.	15 to 35 lbs.	No. 147-2 Feeder Cut-off Combination
Up to 5,000 sq. ft.	Under 25 lbs.	No. 67-101 Electric Feeder Cut-off Combination
Above 5,000 sq. ft.	Under 35 lbs.	No. 51-2 Feeder Cut-off Combination
Any size	35 to 75 lbs.	No. 53-2 Feeder Cut-off Combination
Any size	35 to 150 lbs.	No. 150 as pump control and cut-off
Table 3—Low Water Cut-offs		
Any size	Under 25 lbs.	No. 67 Low Water Cut-off
Any size	25 to 150 lbs.	No. 150 Low Water Cut-off
Low Water Cut-off—Pressure Control Combination		
Any size	Off at 3 lbs. On at 1 lb.	No. 67-13 Combined Cut-off and Pressure Control
(Industrial or Process boilers—Specific recommendations on receipt of complete data)		

Typical Specifications for Boiler Water Feeder or Combined Feeder and Cut-off

Furnish and install complete in every essential detail for each boiler unit, Automatic Boiler Water Feeder—and Low Water Cut-off (if automatically fired)—equipment as manufactured by McDONNELL & MILLER, Wrigley Building, Chicago.

Boiler Water Feeder to be (insert *) of the manufacturer's most improved design, with all working parts isolated from steam and hot water zone by packless sylphon construction. Float power to be multiplied through a leverage mechanism which contains a self-centering roller directly above valve stem. All bearing points, pivots, and levers to be outside of steam and water zone. Valve cone and seat to be stainless steel, removable and renewable. A strainer to be incorporated in the design and to have a basket mounted on a flange for easy removal. Feeder to be installed complete with all piping, valves, fittings, and specialties, as indicated by descriptive diagram in the manufacturer's construction bulletin.

Upon completion of the installation, the contractor to place this automatic equipment in successful operation, subject to acceptance and approval of the architect's . . . . . engineer.

Typical Specifications for Low Water Cut-off

Furnish and install on each boiler, in accordance with the manufacturer's instructions, a McDONNELL & MILLER No. (insert †) Low Water Cut-off, to be float operated and to have packless construction. Control wiring to be of flexible armored cable. All wiring to meet requirements of City Electrical Inspection Department and the National Board of Fire Underwriters.

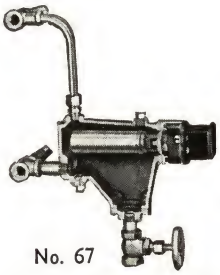
*If job is hand fired, insert: "No. 47," "No. 147," "No. 51," or "No. 53," as indicated by service conditions in Table 1.

*If job is automatically fired, insert: "No. 47-2," "No. 67-101," "No. 147-2," "No. 51-2" or "No. 53-2," as indicated by service conditions in Table 2.

When combined units No. 47-2, No. 51-2, or No. 53-2 are specified, add the following paragraph to specifications: "Make electrical connections for low water switch to control fuel supply equipment, so that the fuel is automatically shut off by the low boiler water control. Control wiring to be of flexible armored cable. All wiring to meet the requirements of the City Electrical Inspection Department and the National Board of Fire Underwriters."

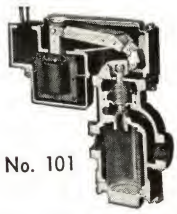
†Insert at this point "No. 67" or "No. 150" as indicated by service conditions in Table 3.

Literature contains complete descriptions, capacity chart, installation instructions, wiring diagrams, dimensions, etc.



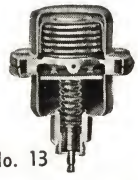
No. 67

No. 67—most advanced development in low water cut-off with McDonnell Quick-Hook-Up. Has extra switch which closes on small drop of water line, without cutting off burner, to complete circuit to No. 101 Electric Water Feeder (See below). Note deep sediment chamber, removable clean out plate, and tapping which provides for No. 13 Wireless Pressure Limit Control.



No. 101

No. 101 Electric Water Feeder for use with No. 67 Low Water Cut-off. Note also that many modern boiler-burner units have "built-in" McDonnell Low Water Cut-offs which may be used to operate No. 101. The No. 101 has stainless steel valve, positive powerful closure against water pressure up to 150 lbs.



No. 13

No. 13 Pressure Limit Control for quick and easy mounting on No. 67 Low Water Cut-off. Its plunger forces down the float of the low water cut-off when excess pressure develops, stopping the burner until proper operating pressure is restored. No wiring. May be used on "built-in" cut-offs which provide tapping for it.



No. 150

No. 150 Combination Low Water Cut-off, Pump Control and Low Water Alarm built to stand up in high pressure service. Float operates two switches. One closes pump circuit when water level falls; the other cuts burner circuit and completes alarm circuit when water level falls to danger zone. Maximum steam pressure, 150 lbs.

MILWAUKEE VALVE COMPANY

MANUFACTURERS OF

Milvaco Heating Specialties and Approved Bronze Valves

2375 South Burrell Street, MILWAUKEE, WIS.

MILVACO PACKLESS RADIATOR VALVES

MILVACO

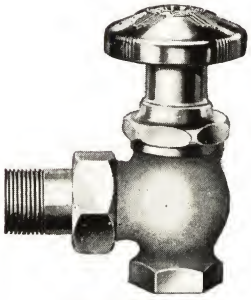


Fig. No. 215
Packless
Angle Valve

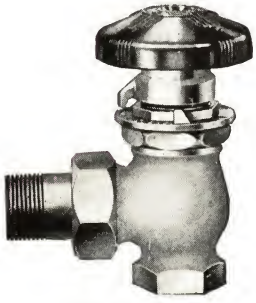


Fig. No. 210
Wheel Handle
Graduated Valve

Precision made according to exacting specifications of "Milwaukee" Engineering Standards, MILVACO Packless Radiator Valves are scientifically designed and constructed to better serve the requirements for which they are recommended.

Uniformity of strength and quality throughout, ease of operation after extended service, perfect seating and simplified leak-proof construction are qualities of unexcelled performance.

All valves regularly furnished with rough nickel-plated body, polished and plated trimmings. When so specified, can be furnished with chrome-plated finish.

Practically all types from ½ in. to 2 in. inclusive.

Other MILVACO Heating Specialties include Quick Vent, Air Line Valve, Sediment Strainer, etc.

The MILVACO line of Heating Specialties is complete, and a complete MILVACO installation means higher efficiency and lower maintenance cost.

Send for condensed catalog.

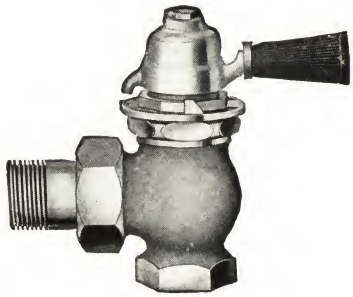


Fig. No. 209
Lever Handle
Graduated Valve

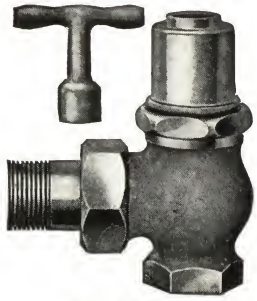


Fig. No. 216
Lock and Shield
Angle Valve



Fig. No. 120
Double End Union
Globe Valve

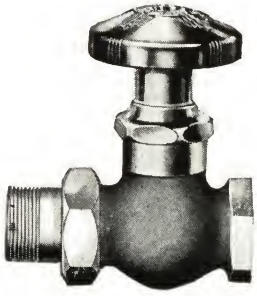


Fig. No. 105
Radiator
Globe Valve



Fig. No. 108 R. H.
True Corner Valve



Fig. No. 252
Modulating Orifice Valve

This valve is made especially for use with concealed or cabinet radiation when a damper is used. It is so designed to be easily adjusted and set to regulate the amount of steam to each radiator so that each unit will heat evenly at the same time

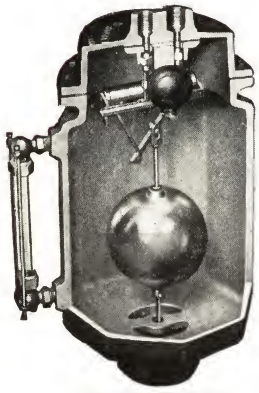


Fig. No. "M"-80

Boiler Return Traps

MILVACO Boiler Return Traps are an indispensable unit for returning condensation direct to the boiler on vapor heating systems. Completely automatic and positive in operation.

Made in 3 sizes. Capacities from 1,500 to 4,000 sq. ft. of direct radiation.

Air Eliminator

A simplified positive device for the rapid elimination of air from mains, coils or any low pressure steam installation. Combines float and thermostatic principle. Made in 4 sizes, from ¼ in. to ¾ in. inclusive.

Float Vent

Same as Air Eliminator, but closes against water only, and does not contain thermostatic element.



Fig. No. 12

MILVACO THERMOSTATIC TRAPS

Bellows Types and Diaphragm Types

MILVACO Thermostatic Traps embody a simplified design, scientifically engineered to provide sensitive, positive operation for a longer period of time.

MILVACO Bellows are hydraulically formed, carefully pre-tested and inspected. Cage construction for convenience in cleaning and inspection. In addition to illustrations shown, also made with swivel connection. *Suitable from 25 in. vacuum to 25 lbs. gauge pressure.*

MILVACO Diaphragm Type Traps contain the self-seating diaphragm assembly, an exclusive MILVACO development, insuring positive seating accuracy at all times. Also made in right and left hand corner, and straight way patterns, in addition to illustrations shown. *Suitable from 25 in. vacuum to 15 lbs. pressure.*

Made in capacities of 200 to 1,000 sq. ft. of direct radiation. Regularly furnished with rough nickel-plated body, polished and nickel-plated cover and trimmings. When so specified, can be furnished in chrome-plated finish.

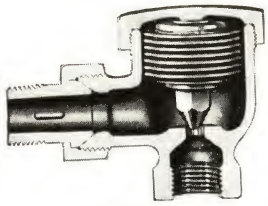


Fig. No. 25-2
Capacity 200 sq. ft. Made in ½-in. size

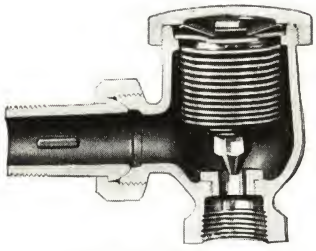


Fig. No. 25-8
Capacity 800 sq. ft. Made in ¾-in. size

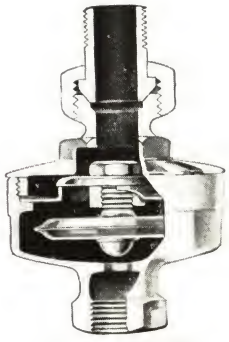


Fig. No. 100-6ST
Capacity 200 sq. ft.

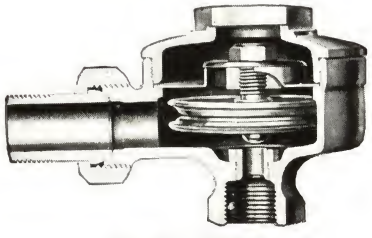


Fig. No. 750-6
Capacity 700 sq. ft.

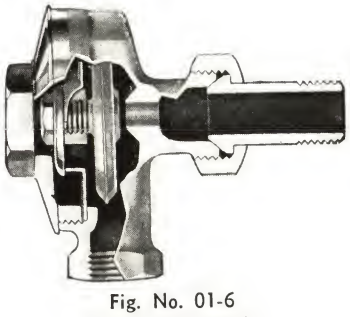


Fig. No. 01-6
Capacity 200 sq. ft.

High Pressure Trap

The MILVACO *High Pressure Trap is designed to operate on steam pressures from 5 to 100 lbs.* All parts are quickly and easily accessible for cleaning. Traps are made of heavy duty high pressure steam bronze. Made in 3 sizes. Maximum capacity for the ½ in. is 260, for the ¾ in. and 1 in., 540 lbs.

Float and Thermostatic Trap

The float valve and seat are monel metal. The valve is self-aligning and moves horizontally. The outlet seat is self-cleaning and reversible.

A diaphragm thermal element closes against a renewable monel seat. A baffle plate, incorporated in the body, prevents condensate from flowing directly onto the float.

Made in 14 sizes and capacities from 200 lbs. to 8,000 lbs. of water per hour at a 2 lb. pressure differential.

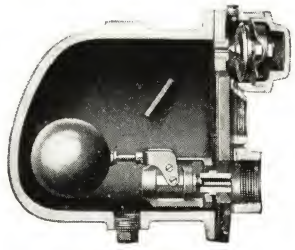


Fig. No. 13-6
Float and Thermostatic Trap

All capacities listed given at 2 lbs. pressure differential

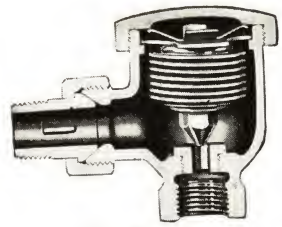


Fig. No. 25-4
Capacity 400 sq. ft. Made in ½-in. and ¾-in. sizes

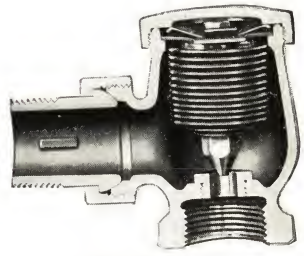


Fig. No. 25-10
Capacity 1000 sq. ft. Made in 1-in. size

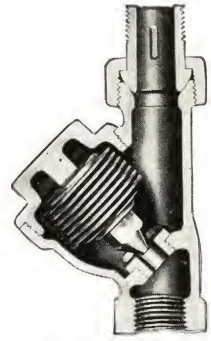


Fig. No. 25-2ST
Capacity 200 sq. ft. Made in ½-in. size

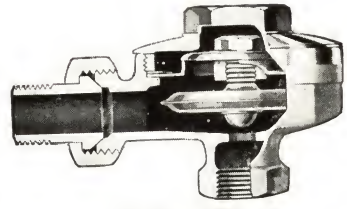


Fig. No. 350-6
Capacity 400 sq. ft.

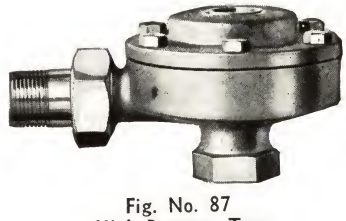


Fig. No. 87
High Pressure Trap

THE NASH ENGINEERING COMPANY

201 Wilson Road
SOUTH NORWALK, CONN.

Sales and Service Offices in most of the principal cities in the United States and Canada, and abroad in London, Oslo, Amsterdam, Brussels, Stockholm, Sydney, and Tokyo

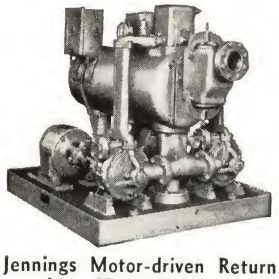
Products

Return Line and Air Line VACUUM STEAM HEATING PUMPS; CONDENSATION PUMPS; CENTRIFUGAL PUMPS, Standard and Suction; COMPRESSORS and VACUUM PUMPS for air and gases; SEWAGE EJECTORS; SEWAGE PUMPS; SUMP PUMPS.

Return Line Vacuum Steam Heating Pump

Removes air and condensation from return lines of vacuum steam heating systems, discharges the air to the atmosphere, and returns the water to the boiler.

Pump consists of two independent units combined in a single casing—an air unit and a water unit. Impellers of both units are mounted on the same shaft, supported on annular ball bearings outside the casing. Pump is bronze fitted.



Jennings Motor-driven Return Line Vacuum Steam Heating Pump

Air unit exhausts air and vapors and delivers these to the atmosphere without back pressure. Water unit removes the condensation and pumps it directly into the boiler. By handling the air independently of the water, power is saved.

Supplied either direct-connected to standard electric motors, for belt drive, or for steam turbine drive. For continuous operation, or with automatic control.

Furnished in standard sizes with capacities ranging from 4 to 400 g.p.m. of water and 3 to 171 cu. ft. per minute of air. For serving up to 300,000 sq. ft. of equivalent direct radiation. Larger units special.

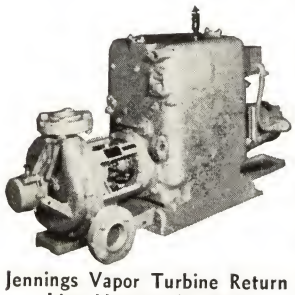
Bulletins 264 and 267 on request.

Jennings Vapor Turbine Vacuum Heating Pumps

The Vapor Turbine combines all the advantages of the standard return line heating pumps with a new type of drive, a specially designed low pressure turbine which operates directly on steam from the heating mains. Requires a differential of only 5 in. of mercury, and returns that steam to the heating system with practically no heat loss.

This pump affords the safety and economy which goes with a continuous condensation return and steady vacuum, and at no cost for electric current.

This outfit is equipped with a complete electrically operated stand-by unit that will automatically operate should the turbine be cut out for inspection or servicing.



Jennings Vapor Turbine Return Line Vacuum Heating Pump

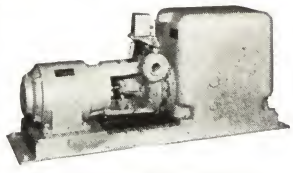
Furnished in standard sizes with capacities ranging from 10 to 150 g.p.m. of water, and 3 to 50 cu. ft. per minute of air. For services up to 150,000 sq. ft. equivalent direct radiation. Larger sizes built special.

Bulletin 290 on request.

Condensation Pump

Removes the condensation from radiators in return line steam heating systems, particularly radiators set below the boiler water line level, and pumps the condensation back to the boiler.

By making the pump casing a part of the return tank, and bolting the motor base to the tank, floor space is conserved. The rectangular construction permits installation in a corner against the wall.



Jennings Motor-driven Condensation Pump

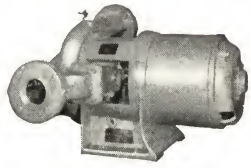
Supplied in standard sizes with capacities ranging from 4 to 200 g.p.m. of water. For serving up to 150,000 sq. ft. of equivalent direct radiation.

Bulletin 241 on request.

Standard Centrifugal Pump

For all centrifugal pump services.

Compact—motor armature and pump impeller are mounted on the same shaft. Simplified—no bearings in pump casing, only one stuffing box. Accessible—pump impeller can be removed without breaking pipe connections, touching packing, or disturbing shaft alignment.



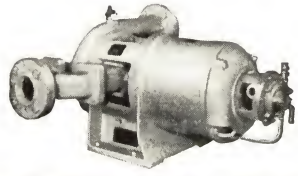
Jennings Motor-driven Standard Centrifugal Pump

Sizes 1, 1¼, 1½, 2, 3, 4, and 6 in. Capacities to 1900 g.p.m., heads to 300 ft. Bronze fitted standard construction; also all-bronze or all-iron for special services.

Bulletin 155 on request.

Centrifugal Pump Operating with Suction Lift

When the Jennings Suction Centrifugal is started, the built-in Nash Hytor Vacuum Pump exhausts the air from the casing and suction piping. Water is quickly drawn into the pump. Full rated capacity is delivered without delay.



Jennings Motor-driven Suction (Self-priming) Centrifugal Pump

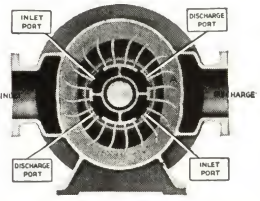
Successful performance is assured under conditions where water level is likely to fall, or where air or gas is handled together with the water being pumped. Intermittent operation is possible without a foot valve.

Furnished in standard sizes with capacities up to 1900 g.p.m. Heads up to 300 ft. Supplied either bronze fitted or all-bronze construction.

Bulletin 155 on request.

Compressors and Vacuum Pumps for Air and Gases

Operation is as follows: the rotor, consisting of a cylindrical hub, around the periphery of which are chambers or spaces formed by heavy shrouds cast integrally, revolves freely in an elliptical casing or housing filled with water.



New Conical Type Nash Hytor Compressor or Vacuum Pump
Showing the unique principle of hydro-turbine operation

As the rotor turns, it carries the water around with it. The water, under the influence of centrifugal force, is compelled to follow the contour of the casing, and alternately to enter and to leave the rotor chambers, twice in each revolution.

As the water recedes from the rotor, air is drawn through the cone inlet port and then through the ports in bottom of rotor chambers into the rotor. As the water is subsequently forced back into the rotor by the converging casing, the air is compressed and then discharged through the ports in bottom of rotor chambers, then through cone outlet ports and finally out through pump discharge.

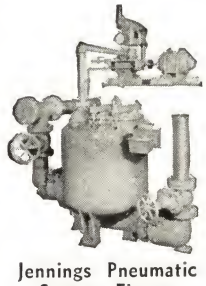
A separator, supplied with each compressor, frees the delivered compressed air of entrained moisture.

Supplied in several standard sizes for handling up to 6000 cu. ft. of air per minute. Regularly supplied for pressures up to 75 lb.; vacuums up to 27 in. of mercury. For higher pressures and vacuums, special equipment will be furnished.

Bulletins 252, 255, 258 and 282 on request.

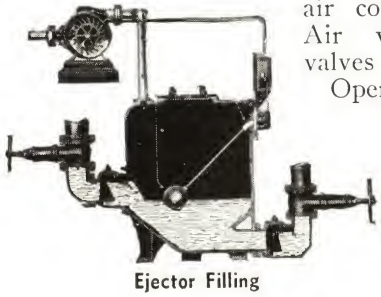
Sewage Ejector

For pumping unscreened sewage or drainage from basements below the street sewer level, handling crude sewage from low level districts, pumping effluent, sludge and other heavy liquids.



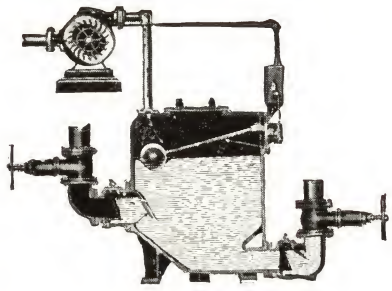
Jennings Pneumatic Sewage Ejector

The Jennings Sewage Ejector is of the pneumatic type. Air, compressed to the necessary working pressure by a Nash Hytor Air Compressor, is used as the motive power to pump the accumulated sewage from a pot to the sewer. Air is compressed only to the pressure at which it is used. There are no air storage tanks, reciprocating air compressors or screens. Air valves and reducing valves are avoided.



Ejector Filling

Operation is as follows: Sewage, under the action of gravity, flows through the inlet check valve into the pot. As it accumulates, it raises a ball float which, when the pot is full, actuates a float switch, thereby starting up the Nash Hytor Air Compressor.



Ejector Discharging

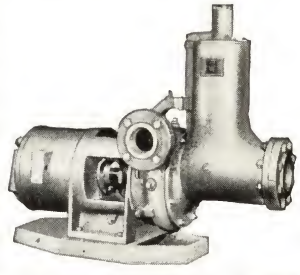
Compressed air is delivered into the top of the pot, closing the inlet check valve and expelling the sewage through the outlet check valve. When the pot has been emptied, the float, having reached the lower limit of its travel, opens float switch stopping compressor, through which, then, the air in the pot is vented. Sewage again flows by gravity into the pot, repeating the cycle.

Furnished in several standard sizes up to 1500 gal. per minute against heads up to 100 ft.

Bulletins 103 and 108 on request.

Suction Sump and Sewage Pumps—Standard Type

The Jennings Suction Sump Pump is a self-priming centrifugal pump for handling seepage water and liquids reasonably free from solids. The Suction Sewage Pump is fitted with a non-clog type impeller. Both pumps are mounted entirely above the sump where they are always readily accessible. Only the suction pipe is submerged.



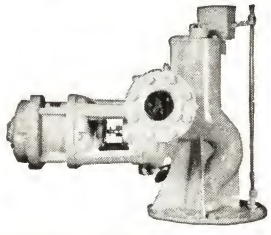
Jennings Motor-driven Suction Sewage Pump, Standard Type

There are only two moving parts: the centrifugal impeller and the vacuum priming pump rotor. Both rotate without metal-to-metal contact in the casing. Both are mounted on the same shaft that carries the rotor of the driving electric motor, making possible a single compact assembly.

Capacities and heads to meet all requirements.

Bulletins 159 and 161 on request.

Suction Sump and Sewage Pumps—Pedestal Type



Jennings Motor-driven Suction Sewage Pump, Pedestal Type

Jennings Suction Sump and Sewage Pumps, Pedestal Type, provide even greater convenience and compactness. This type pump is mounted directly on the pit cover and requires no other foundation. The base of the pump fits a standard manhole and, when bolted down, forms a gas-tight cover.

Furnished only in medium capacities and heads.

Bulletin 275 on request.

Bulletins and Complete Information

Bulletins and complete information covering any and all of the pumps listed on these pages will be sent promptly on request.

ESTABLISHED 1886

PENBERTHY INJECTOR CO.

Penberthy Hot Water Heating Specialties—Reducing Valves—Relief Valves

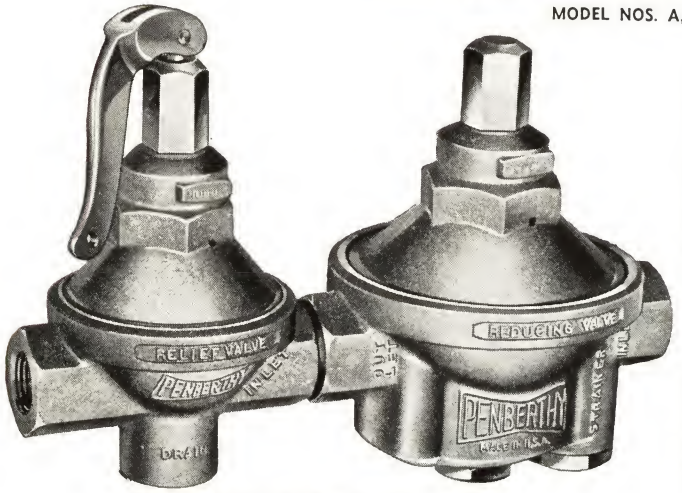
DETROIT, MICH.

CANADIAN PLANT: WINDSOR, ONT.

For Penberthy Sump Pumps and Cellar Drainers, see File Index

PENBERTHY PRESSURE AND RELIEF CONTROL

MODEL NOS. A, B AND C



Constructed of High Grade Steam Bronze
(Model C not illustrated)

This combination unit is used for automatically filling a hot water heating system and for automatically relieving any excess pressure that may occur in that system. It consists of a Penberthy Relief Valve in combination with a Penberthy Reducing Valve. The relief valve is equipped with a lever for testing. This control complies with the A. S. M. E. Code.

The fact that the Penberthy Pressure and Relief Control is a quality product throughout will be evident from the following description. It is made from high grade steam bronze; precision machine work assures the interchangeability of all parts. Sediment strainers made of monel are provided in both the relief and reducing valve to insure protection of seats against injury from scale and other foreign matter. Both valves are of diaphragm type and require no guide wings. Diaphragms are laminated nickel silver and maintain their flexibility without brittleness. Gaskets above and below the diaphragms and relieved casting corners prevent binding and assure maximum effectiveness of the diaphragms.

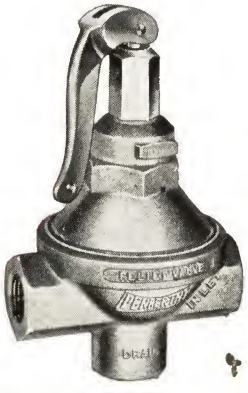
Special composition discs are sufficiently hard not to interfere with valve flow, yet soft enough to prevent cracking and assure perfect seating. Adjusting screws on both valves are protected by caps so that adjustment cannot easily be tampered with. Springs are carefully calibrated and have high fatigue resistance. The only spring exposed to water is the spring below seat in the reducing valve which is phosphorous bronze and makes this valve more sensitive at lower pressure differential.

The principal difference between Model A and Model B is that Model A Reducing Valve has a greater capacity and is recommended where quick filling of the system is desirable. Model C (not illustrated) has one-piece body construction and is recommended where initial cost is the dominant factor.

Model No.	List price	Pipe, in.	Reducing valve	Relief valve
A	$16.00	½	201	111
B	14.00	½	211	111
*C	10.00	½	One-piece construction	

Relief valve set at 28 lbs. and reducing valve set at 12 lbs.
*Model C not illustrated.

PENBERTHY RELIEF VALVES



Model Nos. 111, 112, 121, 122, 511, 512, 521 and 522

Constructed of High Grade Steam Bronze



Model Nos. 1, 2, 11, 12, 311 and 312

Automatically relieves any excess pressure in system. Complies with A. S. M. E. Code and has lever for testing. Carefully made of high grade bronze throughout and has built-in monel strainer.

Laminated diaphragm is nickel silver that maintains its flexibility without brittleness; gasket above and below diaphragm, and relieved casting corners prevent binding and assure maximum effectiveness of diaphragm.

Spring is carefully calibrated and has high fatigue resistance; it is not exposed to water. Adjusting screw is protected. Special composition renewable disc assures perfect seating.

PRESSURE RELIEF VALVES FOR HOT WATER HEATING SYSTEMS

Conform with A.S.M.E. heating code. Set to relieve at 28 lbs. unless otherwise specified. All valves are adjustable up to their maximum ratings. Minimum adjustment 5 lbs.

Valve No.	Size, in.	Type	Maximum adjustment, lbs.	Connections	Remarks
1	½	Dead end	28-32	Angle double female	Large diaphragm
2	¾	Dead end	28-32	Angle double female	Large diaphragm
11	½	Dead end	28-32	Angle double female	Small diaphragm
12	¾	Dead end	28-32	Angle double female	Small diaphragm
111	½	In-line	28-32	Male and female	Small diaphragm
112	¾	In-line	28-32	Male and female	Small diaphragm
121	½	In-line	28-32	Double female	Small diaphragm
122	¾	In-line	28-32	Double female	Small diaphragm

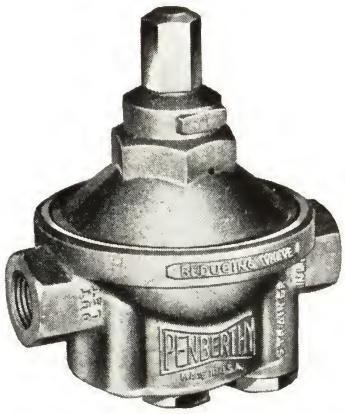
PRESSURE RELIEF VALVES FOR HIGH PRESSURE WATER SUPPLY SERVICE

Set to relieve at 50 lbs. unless otherwise specified. All valves are adjustable up to their maximum ratings. Minimum recommended adjustment 25 lbs.

Valve No.	Size, in.	Type	Maximum adjustment, lbs.	Connections	Remarks
311	½	Dead end	120-130	Angle double female	Small diaphragm
312	¾	Dead end	120-130	Angle double female	Small diaphragm
511	½	In-line	120-130	Male and female	Small diaphragm
512	¾	In-line	120-130	Male and female	Small diaphragm
521	½	In-line	120-130	Double female	Small diaphragm
522	¾	In-line	120-130	Double female	Small diaphragm

Refer to bulletin No. 4787—No. 4947-5019.

PENBERTHY REDUCING VALVES



Model Nos. 201, 202, 211, 401, 402, 403, 409, 410 and 411
Constructed of High Grade Steam ***Bronze***

Automatically reduces city water pressure and maintains desired working pressure in system. Complies with A. S. M. E. Code. Built-in monel strainer is easily removable. High grade steam bronze used throughout; precision machine work assures interchangeability of all parts.

Laminated nickel silver diaphragm maintains its flexibility without brittleness. Main spring is carefully calibrated; it has high fatigue resistance and is not exposed to water. Spring below seat is phosphorous bronze and makes valve more sensitive at low pressure differential.

Special composition disc assures perfect seat. Adjusting screw is protected with cap.

PRESSURE REDUCING VALVES FOR HOT WATER HEATING SYSTEMS

Maximum initial pressure 100 lbs. Set for a delivery pressure of 12 lbs. unless otherwise specified. All valves are adjustable up to their maximum ratings.

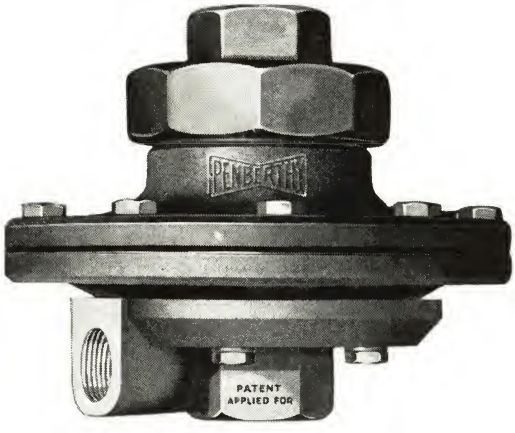
Model No.	List price	Pipe size, in.	Initial pressure, lb.	Delivery pressures			Capacity	Seat
				Factory setting, lb.	Adjustable to lb.			
					Max.	Min.		
201	$10.00	½	100	12	35	5	Extra large	Integral
202	12.00	¾	100	12	35	5	Extra large	Integral
211	8.00	½	100	12	35	5	Standard	Integral

PRESSURE REDUCING VALVES FOR DOMESTIC WATER SUPPLY SYSTEMS AND AIR SERVICE

Maximum initial pressure of 150 lbs. Set for a delivery pressure of 45 lbs. unless otherwise specified. All valves are adjustable up to their maximum ratings.

Model No.	List price	Pipe size, in.	Initial pressure, lb.	Delivery pressures			Capacity	Seat
				Factory setting, lb.	Adjustable to lb.			
					Max.	Min.		
401	$10.00	½	150	45	115	10	Extra large	Integral
402	12.00	¾	150	45	115	10	Extra large	Integral
403	20.00	1	150	45	115	10	Extra large	Renewable Monel metal
409	6.00	¼	150	45	115	20	Standard	Integral
410	6.00	⅜	150	45	115	20	Standard	Integral
411	8.00	½	150	45	115	20	Standard	Integral

PENBERTHY VACUUM BREAKER PREVENTS BACK SIPHONAGE



A safety, non-return valve that prevents back siphonage—provides positive protection of the fresh water supply line from contamination through cross connections, etc. Installed on pressure side, it does not interfere with normal flow of water, but fully opens line to the atmosphere the instant pressure drops, or a vacuum is created.

Purpose

The Penberthy Vacuum Breaker is designed for installation in water systems where exist possibilities of contaminated water being siphoned into fresh water lines when a partial vacuum, or an excessive pressure drop occurs in the water main.

Operation

The Penberthy Vacuum Breaker will start functioning at the slightest degree of vacuum in the water line. Asmospheric pressure acting over the diaphragm raises the valve seat, admitting air into the system. An auxiliary built-in check valve throttles the vacuum effect down to a degree where the air intake can easily prevent any suction lifting of foreign water up into the system.

Construction

High grade steam bronze.

Substantial and simple design. Positive action. A combined union and strainer provided at inlet end permits easy installation and protects valve seat against injury from scale, chips, etc.

Check Valve—Built-in, especially adapted to prevent sticking and allow ample water flow.

Diaphragm—Laminated, phosphor bronze of extra large effective area, automatically relieved of over stresses.

Seat—Metallic, insures sensitive functioning, eliminates danger of disc sticking.

Shield over air inlet ports excludes dirt.

Workmanship—All parts accurately machined, easily accessible and interchangeable in service.

Each unit carefully tested and inspected.

Number	Pipe size, in.	Dimensions, in.		Weight boxed, lbs.	List price
		Height	Width		
VB-1	½	4 9/16	5½	6½	$10.00
VB-2	¾	4 9/16	5½	6½	10.00

SARCO COMPANY, INC.

183 Madison Avenue, NEW YORK, N. Y.

BRANCHES IN ALL PRINCIPAL CITIES

SARCO CANADA LIMITED, Federal Building, TORONTO, ONT.

PRODUCTS

RADIATOR TRAPS
RADIATOR VALVES

SELF-OPERATED REGULATORS
ELECTRIC HEAT CONTROLS

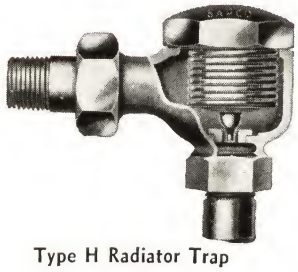
STEAM TRAPS
RETURN TRAPS

AIR ELIMINATORS
STRAINERS

SARCO HEATING SYSTEMS

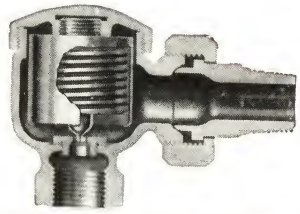
A complete line of Specialties for Vapor, Vacuum and Gravity Steam Heating Systems and Control combined with a competent Engineering Service to architects and heating engineers to assist them in providing modern heating.

Sarco Heating Systems are "prestige Systems." The traps and valves *are* the system as far as maintenance and cost is concerned.



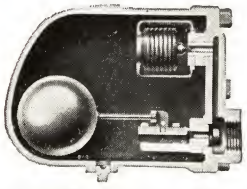
Type H Radiator Trap

Sarco Type H Traps—Are available in angle, straightway, and corner patterns. The Sarco Thermostatic Bellows—made by special machinery, has not been duplicated or even imitated with success. It works efficiently, repeatedly and persistently. It has worked that way for a quarter of a century. Sizes ½ to 1 in.



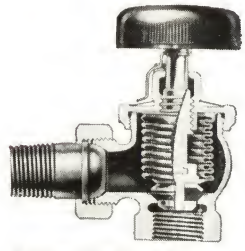
N-100 Medium Pressure Trap

Sarco Packless Valves—Used for one and two pipe heating systems and are truly packless. Steam leaks are impossible. Furnished with round or lever handles or lock shield in angle straightway, or corner patterns. Sizes ½ to 1½ in.



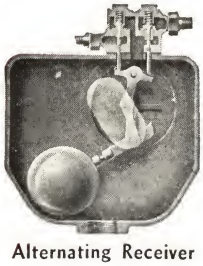
Float-Thermostatic Trap

Sarco N-100 Trap—For high pressure radiators and heating coils in stationary and marine service, and for hospital and kitchen equipment. Has full length protecting shield and stainless steel valve head and seat. Sizes ⅜ to 1 in.



Bellows-Packless Valve

Sarco Float-Thermostatic Traps — For dripping ends of mains and risers, and for stack or blast heaters, large unit heaters and hot water generators. Automatic thermostatic air vents built in. Available in seven sizes with connections ¾ to 2 in.



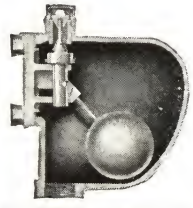
Alternating Receiver

Sarco Alternating Receiver—A complete line of boiler return traps for vapor systems.

Returns water of condensation to boiler automatically, thereby assuring positive return of water under all pressure conditions.

Made in six sizes for from 1500 to 25,000 sq. ft. of radiation.

Sarco Air Eliminators—For venting air from vapor systems at one central point in the basement. Available in two sizes: No. 6 for systems up to 2500 sq. ft. and No. 12 for 15,000 sq. ft. Both are equipped with float valves to stop water escaping through the vent and with check valves to prevent ingress of air when system is under vacuum.

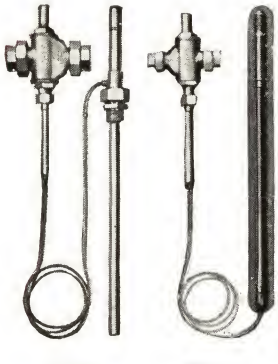


Air Eliminator No. 12

See Sarco Catalog AL 45 for all heating specialties

SARCO TEMPERATURE CONTROLS

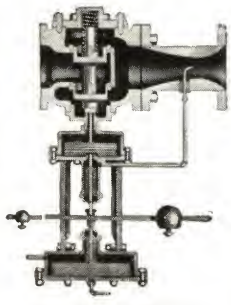
Sarco Self-contained Temperature Regulators — Sarco Temperature Regulators are simple, self-operated valves—the only self-contained units that use the irresistible force of liquid expansion. No stuffing boxes to leak, no auxiliary "power" required; all moving parts are *inside* the equipment. Here again—a type and size for every purpose — for steam, gas, oil, water or brine for temperatures ranging from 0 to 400° F.



Type TR-21
Standard for hot water storage tanks, fan units, etc.

Type KR-14
Designed for room control and air conditioning

Sarco Graduator Systems—Thermostats inside and outside the building actuate the main steam supply valve according to the weather and automatic graduators are placed at the inlet to each radiator. Rapid and uniform distribution of heat is provided with savings of from 25% to 40% of the fuel. Catalog AL 128.



Graduator Valve

Sarco Water Blender

Sarco Water Blender—Mixes very hot and cold water and delivers blended water at any temperature for which it has been adjusted. Valves are fully balanced so that control is not disturbed by differing or fluctuating water pressures. Available in sizes ¾ to 4 in., for pressures up to 150 lbs. Catalog AL140.

Sarco Electric Controls — When temperature control must be close, when wide and rapid fluctuations must be corrected instantly, when the thermostat is at a distance from the controlled unit; use electric regulators. Catalog AL150-1.



Water Blender

Sarco Strainers

Effective insurance against injury to traps, valves, meters, pumps, etc.

Made with screens for steam, water, oil, gas, brine or ammonia.



Room Thermostat

AMERICAN AIR FILTER COMPANY, INC.

226 Central Avenue, LOUISVILLE, KY.

ENGINEERING AND SALES REPRESENTATIVES

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CANADIAN ASSOCIATES, Darling Brothers, Ltd., MONTREAL, QUEBEC

PRODUCTS

The American Air Filter Company, Inc., manufactures a complete line of Air Filtering Equipment, including Automatic Self-cleaning, Standard Unit and Dry Process Air Filters, all used for the removal of dust, dirt, bacteria and other foreign matters from the air.

This equipment is used for general ventilation, drying operations, process dust control; for air compressor and diesel engine; mill motor, turbo generator and other electrical applications; and for air or gas under pressure to remove entrained oil, moisture and dirt.

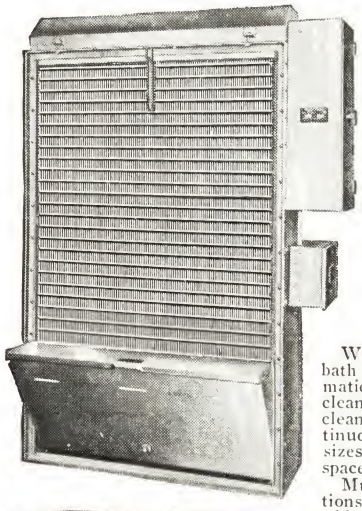
Guaranteed cleaning efficiency on any standard American Air Filter—97% to 98%, at a resistance of .25 to .385 in. w.g.

TECHNICAL FACILITIES

The Engineering and Research Staff of the American Air Filter Company, Inc., includes practically every one of the individual engineers who developed and pioneered air filtration from an idea in 1920 to the position that it holds today of an essential requirement in modern ventilation and air conditioning. Recommendations made by the American Air Filter Company, Inc., are therefore based upon the knowledge accumulated from years of intensive research and the experience gained from designing, building and applying thousands of air filters. Products bearing the "American" name are backed by ample technical and financial resources and may be relied upon as the most modern equipment in this field of service.

AUTOMATIC SELF-CLEANING AIR FILTERS

The American line of automatic air filters is among the most complete that has ever been offered. They have been proven in principle and performance by years of actual service in ventilation and industrial service. Positive self-cleaning assures maximum effectiveness and eliminates practically all maintenance.



THE NEW ARMORED MULTI-PANEL

Introducing an entirely new and unique panel construction to further improve the already outstanding performance of the multi-panel air filter. The new "armored" panel with its 3 stages of air cleaning maintains the present high efficiency and normal operating resistance of the multi-panel filter and offers the added advantage of handling excessive lint concentrations or heavy dust loads without clogging. Directly behind the armored panel is a multiplicity of closely overlapped Bakelite-fibre coated screen panels which form a continuous movable curtain.

When curtain enters changing liquid bath at base of filter, panels are automatically separated and individually cleaned thus insuring positive self-cleaning. Furnished for either continuous or intermittent service in sizes suitable to desired capacity or space conditions.

Multi-panel is made in standard sections of 2 widths—No. 48, 4 ft. 1 in. wide, No. 30, 2 ft. 7 in. wide, and heights from 13 ft. x 6-in. increments. Write for bulletin No. 240-S.

Phoenix and Horizontal Automatic Filters are also available.

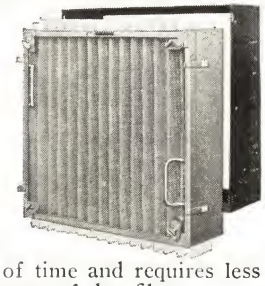


UNIMATIC SELF-CLEANING FILTER

Furnished with either a hand crank or motor drive with push button control. For small or medium air capacities, fills the need for an intermediate filter between manually maintenanced units and the fully automatic Multi-panel. The Unimatic offers numerous advantages, one of which is the single pass curtain which makes possible for the first time the use of progressively packed media with its lower resistance and greater dust holding capacity.

AIRMAT P-L 24

Presents Airmat filtering medium in convenient, compact unit form designed especially to meet the requirements of modern ventilating and air conditioning service. It requires no more space than a viscous filter of the same capacity and offers the high efficiency and simple, inexpensive maintenance of Airmat media. Uses the standard 6 or 10-ply Airmat paper (furnished in 225-ft. rolls) applied with either mechanical or manual loader. Airmat, with its low initial first cost, high resistance and large dust holding capacity will operate satisfactorily for a longer period of time and requires less frequent maintenance than any other type of dry filter.



AMERICAN UNIT FILTERS

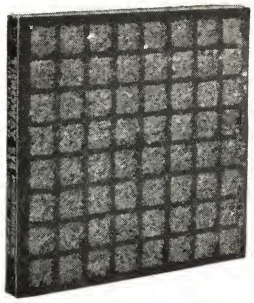
The American Unit Filter is made up of a standard sheet steel frame and interchangeable cell, with filter media of expanded metal or crimped wire, scientifically graded to produce maximum cleaning efficiency. Filters are arranged in wall type set-ups to deliver the required capacity and to meet space conditions. Automatic latches placed conveniently near handles of the cell permit instant and easy removal of the latter for cleaning and recharging.

Cleaning requires but a few minutes time and is usually accomplished by means of a steam or hot water tank.

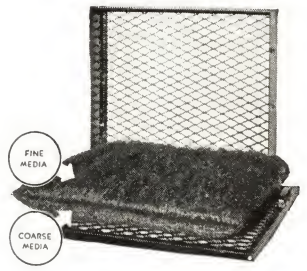


SPECIAL FILTERS

American Air Filters, both "viscous" and "dry" are available in a wide variety of types to meet any specific air cleaning problem. Each type is made in several styles which differ in method of operation, servicing, space requirements, performance characteristics and initial cost.



"Throway" Furnace Filter with Cardboard Casing



Renu-Vent

A renewable type filter for ventilating or air conditioning service

BUFFALO FORGE COMPANY

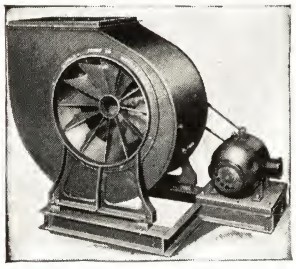
484 Broadway, BUFFALO, N. Y.

BRANCH OFFICES

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ATLANTA, GA., 724 First National Bank Bldg.
BALTIMORE, MD., 404 St. Paul St.
BOSTON, MASS., 486 Main St., Melrose Station
CHICAGO, ILL., 20 No. Wacker Drive
CINCINNATI, OHIO, 626 Broadway
CLEVELAND, OHIO, 418 Rockefeller Bldg.
DALLAS, TEX., 702 Tower Petroleum Bldg.
DAVENPORT, IOWA, 305 Security Bldg.
DENVER, COLO., Hendrie & Bolthoff Mfg. & Supply Co., 1635 Seventeenth St.
DES MOINES, IOWA, 214 Old Colony Bldg.
DETROIT, MICH., Coon DeVisser Co., 2051 W. Lafayette Blvd.
GREENVILLE, S. C., 312 Franklin National Life Bldg.
HOUSTON, TEX., 713 Bankers Mortgage Bldg.
KANSAS CITY, MO., 428 Dwight Bldg.
KITCHENER, ONT., CANADA, Canadian Blower & Forge Co., Ltd.
KNOXVILLE, TENN., C. F. Sexton, 702 Empire Bldg.
LOS ANGELES, CALIF., 708 Pershing Square Bldg.
MINNEAPOLIS, MINN., 2102 Foshay Tower
NASHVILLE, TENN., Southern Sales Co., 117 Fifth Ave., So.
NEW ORLEANS, LA., Devlin Bros., 1003 Maritime Bldg.
NEW YORK, N. Y., 39 Cortlandt St.
PHILADELPHIA, PA., 220 So. Sixteenth St.
PITTSBURGH, PA., 431 Fulton Bldg.
RICHMOND, VA., T. Spencer Williamson, Jr., Inc., Mutual Bldg.
SAN FRANCISCO, CALIF., Moore Machinery Co., 1625 Van Ness St.
ST. LOUIS, MO., 1598 Arcade Bldg.
SEATTLE, WASH., 500 First Ave., So.
TOLEDO, OHIO, 1922 Linwood Ave.
WASHINGTON, D. C., 820 Woodward Bldg.
WILKES-BARRE, PA., Power Engineering Corp., 517 Brooks Bldg.

BUFFALO FANS

VENTILATING FANS, LIMIT-LOAD



Buffalo Limit-Load Conoidal Ventilating Fans will solve air handling problems efficiently and easily. These dynamically balanced fans are available mounted on a silent floating base. Fans are the non-overloading type and will give years of continuous trouble-free service. Another important feature of all Buffalo Limit-Load Fans is their quiet operation. All fans are accurately rated and guaranteed to deliver in accordance with their ratings. Available in a wide variety of sizes for every air handling problem. For complete details write for Bulletin 3099.

HVA FANS FOR AIR CONDITIONING

Buffalo HVA Fans are of the multiblade type directing a large volume of air efficiently against the back pressure encountered in the usual air conditioning system. These fans operate quietly at the speeds for which they are intended. Bearings are floated on rubber insulation. Buffalo HVA Fans are available in a wide range of sizes and capacities. Complete engineering data and rating tables gladly furnished on request.



BREEZO VENTILATING FANS



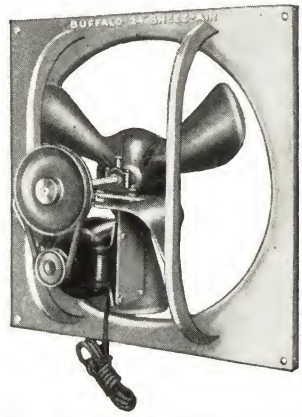
Buffalo Breezo Fans are solving ventilation problems in stores, amusement places, etc., quietly and economically. Of special streamlined design, the construction of the pressed steel ring permits the air to enter the wheel without frictional loss or eddy currents. Bearings are of extra large dimensions, motors are totally enclosed to keep out dirt and water. Full range of sizes listed in Bulletin 2321.

BABY CONOIDAL FANS FOR EXHAUSTING

These high velocity fans have many uses in ventilating industrial plants, stores, schools, and public buildings. Industrial uses include exhausting from hoods and vats, where steam, smoke or foul air must be removed. In schools and public buildings, Baby Conoidal Fans are frequently used to ventilate washrooms, telephone booths, etc. Fans are available in 5 sizes. Write for Bulletins giving complete information.



BREEZ-AIR ATTIC FANS FOR COMFORT COOLING

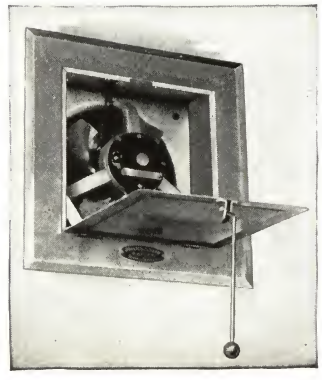


These quiet, large capacity fans have won national recognition by providing efficient and economical residential cooling during hot weather. Fans are put into operation after sundown and within a very few minutes the inside temperature of the home is brought down to within three or four degrees of the cool outside night air. Breez-Air Fans are available in the following sizes: 24, 30, 36, 42, 48 and 54 in., with capacities up to 19,000 c.f.m. They are easily and quickly installed in either old or new homes.

Buffalo Breez-Air Attic Fans are ruggedly constructed, with frame consisting of a steel ring to which is rigidly attached the fan and motor frame. Four bolt holes are provided to bolt the unit to the penthouse or supporting frame. The fan wheel is the broad-blade type, thus assuring delivery of a larger volume of air and more quietly than can be done with the multi-blade type of fan. The 1725 r.p.m. motors are mounted on resilient rubber supports and bolted to the steel frame. For complete information, write for Bulletin 3085.

BREEZO KITCHEN VENTILATING FANS

Buffalo 8-in. Home Ventilating Units provide proper ventilation for bungalows, apartments, kitchenettes, and kitchens of all types of homes. Fans are sturdily built and unusually quiet in operation. Fan is complete with wall box ready for installation. When fan is not in use, the doors of the box are closed. The Buffalo Home Ventilating Fan is also available in 12-in. size for larger homes.



For complete information, write for Bulletin 2892-C.

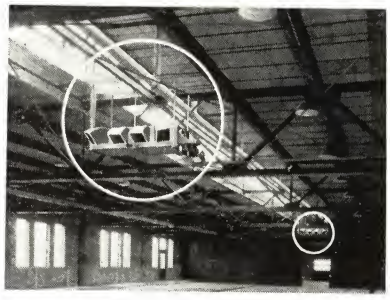
BUFFALO UNIT HEATERS, AIR CONDITIONING CABINETS, EVAPORATIVE CONDENSERS AND AIR WASHERS

MODEL "C" BREEZO-FIN UNIT HEATERS



The new line of Buffalo Breezo-Fin Unit Heaters represents the last word in good design, quiet operation, and high heating efficiency. Heaters may be operated with either low or high pressure steam. Moderately priced. Easily installed. Complete range of sizes available for immediate shipment. Ask for new Bulletin 3137.

HIGHBOY AND LOWBOY UNIT HEATERS

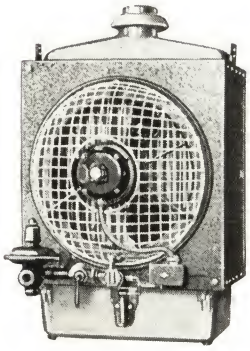


Buffalo Highboy and Lowboy Unit Heaters were specifically designed to distribute warm air over a large area quietly, efficiently, and at a low cost. They are compact and the outlets arranged so as to give maximum distribution of the heated air. High efficiencies are obtained because of the special design and centrifugal multi-rotors, the shape of the individual fan housings, the use of finned heating coils, and the properly proportioned outlets.

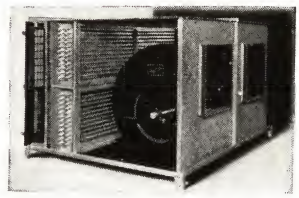
Heaters are available with special Thermadjust dampers. With this special control, minimum outlet temperatures are used at all times, thus assuring maximum economy in operation.

GAS UNIT HEATERS

Buffalo Gas Unit Heaters burn natural or artificial gas. Automatic safety features and temperature control provide ample heating and economical gas consumption. The initial cost is low as these Gas Unit Heaters require no boiler room or fuel storage or other auxiliary equipment. Neither do they require engineers or firemen—simply push a button to start and stop the heater. Gas shuts off automatically when fan stops. Turns on when fan is started. Fan shuts off if gas supply fails. Will not start again until pilot is lighted. Available in a wide variety of sizes and steams with B.t.u. capacities of from 75,000 to 500,000.



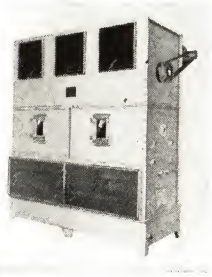
PC AIR CONDITIONING CABINETS



Among the most popular units built for air conditioning, Buffalo PC Cabinets provide cleaning and cooling, cleaning, heating and cooling, or complete air conditioning, including humidifying and dehumidifying. They are made in a wide range of capacities, are extremely quiet in operation. Suitable for use with all types of commercial refrigerants, Buffalo PC Cabinets fit the needs of every comfort air conditioning job.

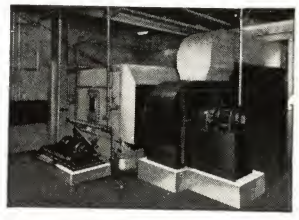
Coils are copper-fin tube; fans are famous Buffalo high efficiency multi-blade type. Careful attention to design has provided units which are sturdy, practical, quiet and efficient. Bulletin 502 gives complete details.

EVAPORATIVE CONDENSERS



Buffalo Evaporative Condensers will save over 90% of the water used for direct cooling of condensers. The make-up water required will not exceed .03 g.p.m. per ton of refrigeration. The necessity for cooling towers is eliminated. All tanks are welded black steel. Casings of galvanized steel sheets and galvanized angles. All seams riveted and welded to make watertight construction. Eliminators of galvanized steel. Buffalo Close Coupled Pump operates spray system. These evaporative condensers are designed for high efficiency with large coil service, low air velocities, and consequent low power consumption. Available in a wide variety of sizes, capacities 4½ tons up. Write for Bulletin 505.

AIR WASHERS



Buffalo Air Washers offer an economical and efficient method of air cleaning. They are easily installed and require a minimum of attention and service. Construction features include non-clogging operating nozzles, suction screen across full length of tank, maximum contact between air and water spray, demountable eliminators made in one piece. Made of copper, or other materials to resist corrosion if necessary, Buffalo Air Washers are available in a wide range of sizes. Our Bulletin No. 480A gives complete details and all the necessary engineering data.

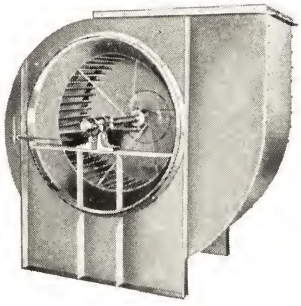
THE BISHOP & BABCOCK MFG. CO.

MASSACHUSETTS BLOWER DIVISION

4901-15 Hamilton Avenue, N.E.
CLEVELAND, OHIO

REPRESENTATIVES IN PRINCIPAL CITIES

FANS AND BLOWERS FOR AIR CONDITIONING AND VENTILATING

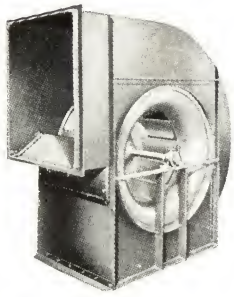


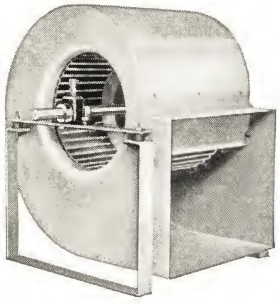
SQUIRREL CAGE FANS

Massachusetts Squirrel Cage Fans having the back plate type wheel, die formed blades, streamlined inlet and bearing supports, deliver air efficiently and quietly. Manufactured in all standard sizes from 6-in. diameter wheel to as large as 96-in. diameter, delivering from 250 to 500,000 c.f.m.

STREAMLINE FANS

Streamline Power Fixed Fans are essentially high speed fans, backward pitched. The Streamline Fan has all air passages free from obstructions, all edges cutting the air are properly shaped preventing air noise. There are eleven standard sizes from 18 to 75-in. diameter wheels, delivering from 1000 to 100,000 c.f.m.



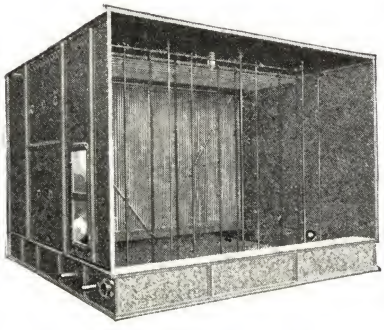


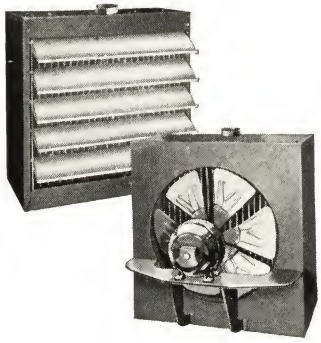
FURNACE BLOWERS

Maximum efficiency with lower power requirements, highest possible volume of air per revolution, die formed floats assure uniformity of each wheel. Operates on slower speeds, streamline inlets eliminate turbulence resulting in quieter operation.

AIR WASHERS

Four types of Air Washers. Type "A"—general purpose washer; Type "B"—high saturation washer; Type "C"—cooling type washer; Type "D"—humidifying washer.





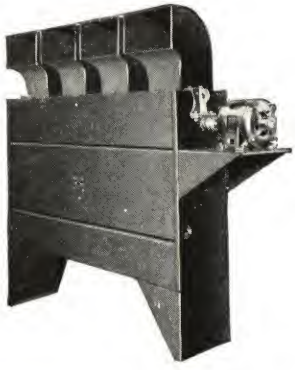
UNIT HEATERS

Type "H" Propeller Fan Type for low and high pressure ceiling suspension or floor mounting with recirculating boxes. Made in four sizes with various speed combinations.

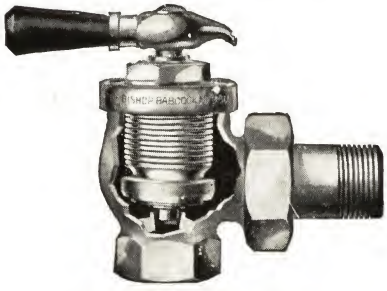
Type "V" Floor Mounting Type draws cool air from a point just above the floor level and discharges horizontally at high velocity just above the breathing zone.

Type "C"—similar to Type "V" with blower type wheel, except for ceiling mounting.

Type "H" Unit Heater



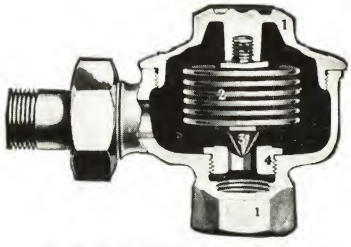
Type "V" Unit Heater



Special Modulation Valve

HEATING SPECIALTIES

The B & B line of Heating Specialties includes all sizes of Multiflex Radiator Traps, Multiflex Radiator Valves, Blast Traps, Float Vent Valves and Boiler Return Traps.



B. & B. Multiflex Trap No. 6

DeBOTHEZAT VENTILATING EQUIPMENT DIVISION

AMERICAN MACHINE AND METALS, INC.
100 Sixth Avenue, NEW YORK, N. Y.

ATLANTA, GA. BOSTON, MASS. CHICAGO, ILL. CLEVELAND, OHIO DES MOINES, IOWA DETROIT, MICH. LOS ANGELES, CAL. PITTSBURGH, PA. ST. LOUIS, MO. SAN FRANCISCO, CAL.
(Also in Other Principal Cities)
FACTORIES: EAST MOLINE, ILL.

PRODUCTS

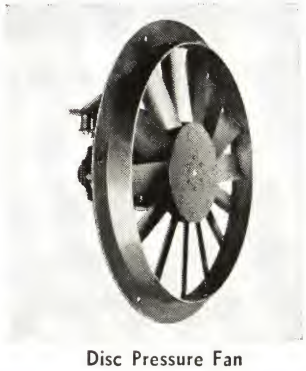
Disc Pressure Fans—direct motor, belt and gear drives; Giant Fans (5 to 12-ft. diameters) for general industrial ventilation and cooling tower applications; Bifurcators; Roof Ventilators; Impeller Blowers; Attic Ventilators.

Also Man Coolers and Agitators; Kitchen Fans; Fan Wheels for special industrial applications.

All DeBothezat Fans and Blowers have non-overloading power characteristics with complete operating safety under varying working conditions.

DISC PRESSURE FANS

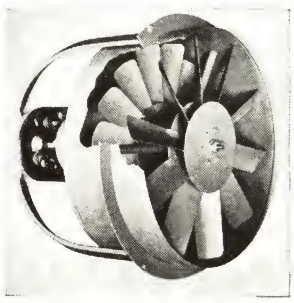
DeBothezat "selective series" Disc Pressure Fans are designed to meet pressure-volume requirements specifically and efficiently. They are built in three types: "H" for high static pressures; "HL" for moderate; "L" for low—from 18 in. to 10 ft. with a wide range of r.p.m.—also type "I" for fans 8 to 17 in. in diameter. "Selective Series" Bulletin 101 contains complete technical data and instructions for selecting from over 200 units the proper fan for particular requirements.



Disc Pressure Fan

IMPELLER BLOWERS

DeBothezat Impeller Blowers are multiple stage axial flow fans. Fan wheels rotate in opposite sense to each other and are so proportioned as to eliminate race velocity, resulting in exceptionally high efficiency—with the virtues of (a) high air delivery and (b) high static pressure at low r.p.m. These units are designed for both supply and exhaust in industrial marine application and for general ventilation. Available in two types "A" and "C" with following drives: (1) *Duplex Rotation*—revolving field motor, one fan wheel driven by armature, one by motor field; (2) *Direct Motor Drive*—each wheel driven by one motor; (3) *Belt Drive*—from one motor having reverse belt arrangement; (4) *Belt Drive*—from two motors and (5) *Gear Drive*—reverse bevel gear box.



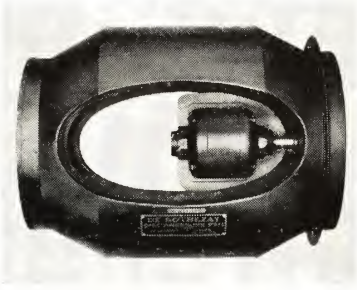
Impeller Blower

Advantages of the DeBothezat Impeller Blower include: economy in power consumption, compactness, adaptability, reversibility; reliability and unusually quiet operation.

Standard sizes available in 8 in. to 12 ft. fan diameters.

BIFURCATORS

Industrial plants with ventilating problems—steel mills, chemical plants, paint shops—have found DeBothezat "straight line duct" Bifurcators unexcelled for handling explosive vapors, corrosive fumes or hot gases which are injurious to motors. In plants and homes they are installed as induced draft boosters. In the Bifurcator, the motor is isolated from the air stream—air being drawn through the duct and upon reaching the unit passes on either side of motor chamber. The Bifurcator can be mounted in any ventilating system without changing direction of air flow or size of main duct. Use of undesirable long shafts, intermediate bearings and flexible couplings is completely eliminated. Built in sizes from 8 to 48 in. in wide range of corrosion-resistant materials. Direct motor or belt drive.



DeBothezat Bifurcator

ROOF VENTILATORS

DeBothezat Roof Ventilators assure positive ventilation under every atmospheric condition.

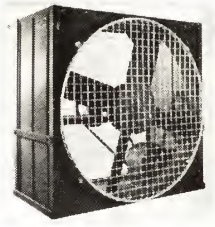


Roof Ventilator

The unit is built in 14 to 48-in. diameters (special sizes on specification) with capacity ranges from 925 to 52,300 c.f.m. of free air. Motor driven fan is located in throat to assist natural ventilation. Motor totally enclosed and ball bearing mounted. May also be furnished in Bifurcator type construction: i.e. motor isolated from air stream.

ATTIC FANS

DeBothezat Attic Fans, adaptable to every type house, are extremely efficient, quiet, vibrationless and easy to install. They are built in four diameters: 18, 24, 30 and 36 in. Each unit is of steel construction, insulated, with four-bladed fan which rotates on special rubber mounted ball bearings.



Attic Fan

CATALOGS

Descriptive catalogs of all DeBothezat ventilating equipment will be sent upon request.

ENGINEERING SERVICE

DeBothezat maintains highly equipped laboratories with a staff of expert ventilating engineers whose services are available without obligation.

KNOWLES MUSHROOM VENTILATOR CO.

TELEPHONE
WAlker 5-5250

41 North Moore Street, NEW YORK, N. Y.

ESTABLISHED
IN 1906

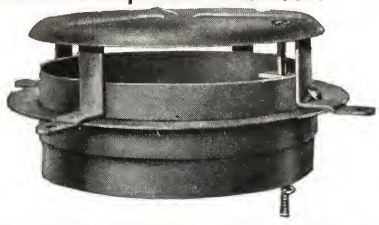
Products

CAST IRON and HEAVY STEEL ADJUSTABLE MUSHROOM VENTILATORS; TU-WAY and AISLE HOOD AIR DEFLECTORS; ROUND and OBLONG GALLERY RISER VENTS.

Uses and Operation of Air Controlling Heads

Used for controlling the supply of fresh air or the exhaust of vitiated air, particularly in the ventilation of auditoriums of theaters, schools, public buildings and large rooms of factories. Equally effective in up-draft or down-draft methods. Heads are usually located on the floor under the seats and connected with the plenum chamber or ducts. They are individually adjusted for their relative distance from the fan, so that each will distribute an equal quantity of air, or so that the distribution is regulated for different parts of the room.

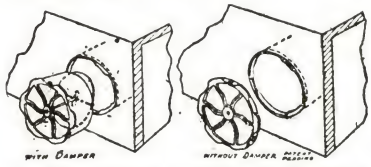
AERO VALVE — The Knowles Improved Mushroom



Strong, rigid, this solid heavy steel mushroom *affords the finest regulation of air flow,* and at the lowest possible price. Of fixed height, with sturdy cap supports bearing directly on flange. Quick, easy adjustment for finest air control by turning screw on top of cap. Rigid locking device prevents rattling. Quick anchorage to wood floors with screws through extended lugs on flange, and to concrete with masonry nails. Furnished with or without adjustable air valve damper in 8-in. diameter size only, same capacity as "Nu-Notch." (See table.)

Specifications—Furnish and install, where indicated on drawings or as hereinafter specified, 8-in. Steel Aero-valve Mushrooms (with) (without) adjustable Air Valve Damper. Provide under each diffuser one No. 20 galvanized iron sleeve to be set by the heating contractor.

Disc-Loc Knowles Gallery Riser Vent



Designed to insure better control of air. Round holes in gallery risers do not weaken construction but, on the contrary, with the cast iron rings it is actually strengthened. Cast iron grille is quickly inserted and locked by simple twist motion—no bolts, screws or springs. Furnished with or without damper to fit same rings.

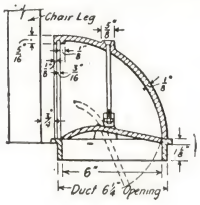
Size No.	Diameter of grille, inches		Outside diameter of ring and contractor's sleeve, in.	Casting thickness, in.	Net area, sq. ft.	C.f.m. at 300 ft. vel.
	Opening	Flange				
14	3¾	5⅛	4¾	⅛	.08	24
15	4¾	6¼	5 13/16	⅛	.13	39
16	5¾	7⅜	6⅞	⅛	.19	57
*17	6⅝	7⅞	7 13/16	⅛	.24	72

*Square mesh grille.

Oblong Gallery Riser Ventilator (Cast Iron) Grilles

With regulating volume damper

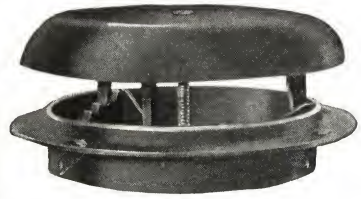
Size No.	Collar and Riser Opening		Area, sq. ft.	C.f.m. at 300 ft. vel.
	Length, o.d., in.	Height, o.d., in.		
8	10¼	6¾	.35	105
6x12	12⅜	6⅜	.5	150



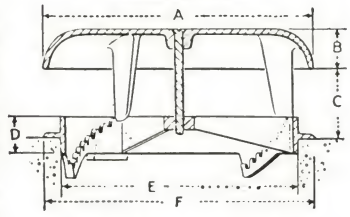
Standard Aisle Hood (Cast Iron)

Air Deflectors are used to throw the air out into the aisles in one direction. A curved damper reduces friction loss. Large size, 8 ins. long, 6 ins. wide, 6 ins. high. Area .333 sq. ft. Small size, 8 ins. long, 4½ ins. wide, 4½ ins. high. Area .25 sq. ft.

Nu-Notch Knowles Mushroom Air Diffuser (Dome or Flat Top)



The ideal cast iron mushroom. Head has three outer bearings and is absolutely rigid. Ten recessed notches give close regulation of air. *Locked into positive adjustment by tightening head screw with a special key provided—a new feature to prevent tampering.* Supplied with dome or flat tops; three screw-holes in floor flange for wood floor; for concrete, three holes, threaded, in floor collar for inserting set screws.



Cast L Lugs and Dirt Ring

Size No.	A in.	B in.	C in.	D in.	E in.	F in.	Wgt., lb.	Area, sq. ft.	C.f.m. at velocity of 200 ft.	250 ft.	300 ft.	350 ft.	400 ft.
5	6	⅞	1¾	1 15/16	5 3/16	6	4	.1364	27.3	34.2	41.	47.7	54.6
6	7⅛	1⅛	1½	1½	6 3/16	7⅞	4¾	.1964	39.3	49.1	59.	68.7	78.6
7	8¼	1¼	2⅛	1¼	7 3/16	8¼	6½	.2673	53.5	66.8	80.2	93.5	107.
8	9⅝	1½	2	2	8 3/16	10⅛	9	.3491	69.8	87.3	105.	122.	140.
10	11⅛	1⅝	3	2½	10 3/16	11⅞	14½	.5454	109.	136.3	163.6	191.	218.

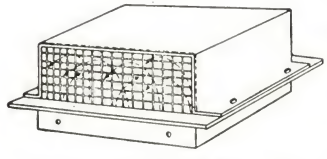
Specifications—Furnish and install where indicated on drawings or as hereinafter specified [5-in.] [6-in.] [7-in.] [8-in.] [10-in.] [Dome Top] [Flat Top] Nu-Notch Cast Iron Mushroom Air Diffusers with recessed notches for the permanent adjustment of mushroom caps at any desired opening together with center key-locking screw feature as manufactured by KNOWLES MUSHROOM VENTILATOR CO., New York, N. Y.

Provide under each air diffuser one No. 20 galvanized iron sleeve to be set by the heating contractor in conjunction with the general contractor at the time the floor is laid. In concrete floors when sleeves are located on forms fill sleeves with sand before being grouted in to prevent their distortion.

For wood floors: attach the mushrooms to the floor by means of flat head screws. *For concrete or similar type floors:* by inserting 3 setscrews in the collar.

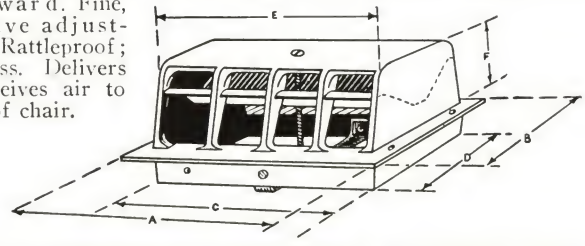
Tu-way Air Deflectors (Cast Iron) Deliver Full Area of Floor Opening

Designed to give maximum area with minimum fixed height. Air is discharged at both ends along the row of seats. Volume damper easily adjusted with screwdriver on top of hood.



Size No.	Dimensions, in.			Wt., lb.	Area, sq. ft.	C.f.m. at 300 ft. vel.
	High	Wide	Long			
2	2⅜	8½	4½	5	.223	67
4	4⅜	8½	8½	11	.45	134
6	6⅜	8½	12½	22	.67	200

Improved No. 3 Size Tu-way Air Deflector (Cast Iron)—The most popular size in this type deflector. Ornamental design. Adjustable double-wing curved damper deflects air downward. Fine, positive adjustment. Rattleproof; noiseless. Delivers or receives air to sides of chair.



Size No.	A. in.	B. in.	C. in.	D. in.	E. in.	F. in.	Wt., lb.	Area, sq. ft.	C.f.m. at 300 ft. vel.
3	10	8	8½	6½	8¼	3½	10	.333	100

B. F. STURTEVANT COMPANY

Heating, Ventilating, Air Conditioning and Vacuum Cleaning Equipment

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The Cooling and Air Conditioning Division of B. F. Sturtevant Company, Hyde Park, Boston, Mass.

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For Sturtevant Vacuum Cleaners, see File Index

Engineering Service

Each of the above offices maintains a staff of trained engineers who are always at the service of Architects and Consulting Engineers to discuss air handling equipment, and to make recommendations for suitable apparatus.

Silentvane Fan



Backwardly curved blade type. A ventilating fan to meet the most exacting specifications, where very high efficiency and exceptionally low power consumption are required.

Multivane Fan



Forwardly curved blade type. A highly efficient centrifugal ventilating fan of sturdy construction to meet the general run of ventilating requirements.

Rexvane Fan



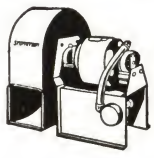
The modern paddle wheel. Correct inlet blade curvature and stream line shrouding retain all good features of the old paddle wheel and greatly increase capacity.

Convertible Multivane Fan



This is a low speed centrifugal type fan with convertible and reversible housing, permitting quick conversion to any horizontal or vertical discharge.

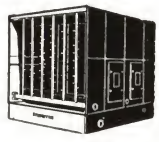
Ventilating Set



Direct connected; motor driven. For use with ducts, in ventilating small rooms, laboratory hoods and, in general, any room up to 10,000 cu. ft. contents.

Sturtevant
REG. U. S. PAT. OFF.
Puts Air to Work

Air Washer



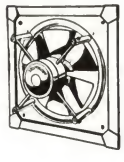
Built in several types to meet varying requirements in cleaning, cooling, dehumidifying and humidifying air.

Filticooler



A compact, highly efficient, sectional type air washer. For filtering, washing, humidifying, cooling, and dehumidifying. Principally for public buildings and factories. Available in a range of sizes.

Propeller Fan



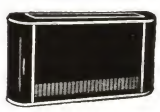
Built in fan sizes from 12 up to 45 in. Electric motors are available for both alternating and direct current, in wide variety of voltages.

Pent House



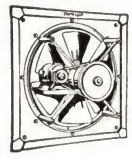
Sheet steel construction, with angle-iron framework. Includes automatic shutter. Made in range of sizes for Sturtevant Design 5 and Design 7 Propeller Fans.

Unit Ventilator



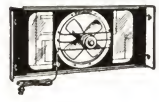
A combined steam heating and ventilating unit widely used in schools and other places. Finished in duco of any standard color. Stainless steel trim.

Attic Fan



A propeller type fan for installation in the attic, for house cooling and ventilating. Range of sizes. Motors for various voltages, for a-c. and d-c.

Kitchen Type Propeller Fan



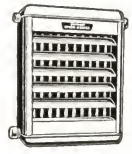
Complete with switch, cord and plug with or without adjustable panel. Panels all-metal or with glass windows. Fan dia., 10 in. Motors, 110 volt, a-c. or d-c.

Built-in Kitchen Type Fan



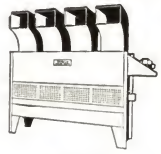
Consists of fan section and shutter section. These sections are fastened to wood frames built into wall by contractor. Fan: 10″ dia., 600 c.f.m. Motors: 110 volt, a-c. or d-c.

Suspended "Speed Heater"



Propeller fan type, for wall or ceiling installation. Fin type heating element. For steam pressures up to 200 lbs., capacities up to 300,000 B.t.u.

Rexvane Speed Heaters



Centrifugal fan type for floor, wall, or ceiling installation. Fin type heating element. For steam pressures up to 200 lbs., capacities up to 1,421,000 B.t.u.

Electric Motors



A-c. and d-c. fractional and integral horsepower sizes. For general purposes and special application.

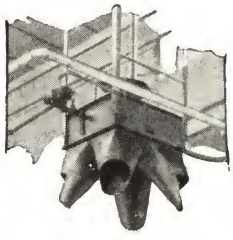
L. J. WING MFG. CO.

51 Seventh Avenue, NEW YORK, N. Y.

WORKS: NEWARK, N. J. BRANCH OFFICES IN PRINCIPAL CITIES

Wing "Featherweight" Unit Heaters Floodlights of Heat





Low heating cost and uniform diffusion of comfortable warmth are two features in which WING Floodlight Heating excells all other systems.

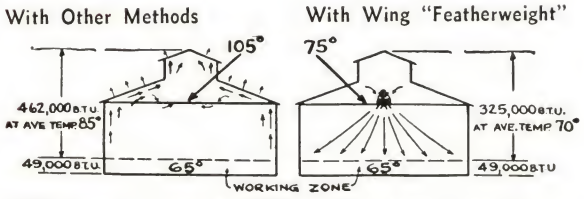
Located near the ceiling or roof, they prevent accumulation of hot air in the upper spaces with the accompanying costly waste of heat.

They project the air, comfortably warmed, to the working area where the heat spreads to every point. Vertical downward discharge from multiple outlets at proper velocity assures even distribution.

The lightness of the units permits their suspension directly overhead in any location. Furthermore, one WING unit heater with multiple discharge takes the place of several one-direction heaters at less cost for units, piping, wiring and installation.

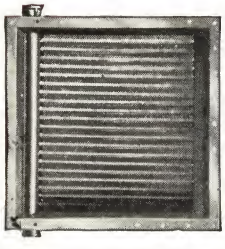
There is a type for every condition from low ceilings to installations as high as 55 ft. from the floor.

They make use of the WING "Featherfin" Heating Element described below. Bulletin H-6A.



137,000 B.t.u. is saved with WING Featherweight Unit Heaters. (Based on a 35° day)

Wing "Featherfin" Heater Sections



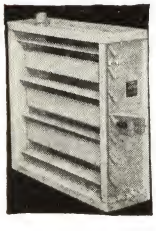
For heating air for any purpose by steam or hot water. The WING "Featherfin" Heating Element, used in these sections, is extremely light in weight. For equal heat transfer, it offers less resistance to air flow than any other element on the general market. It is of the tube-and-fin extended-surface type. The hairpin shape of the tubes avoids strains caused by expansion and contraction. Each tube is easily replaced in case of accidental damage.



Detail of Wing "Featherfin" Heating Element —Showing Compression union tube connection

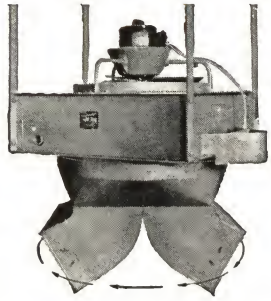
The sections are tested at 1000 lbs. pressure. They are available for any desired final air temperature. Are used separately for any heating purpose and in WING Unit Heaters. Bulletin HS-1.

Wing Variable Temperature "Featherfin" Heater Sections



These sections will deliver air at any temperature from the maximum obtainable with the prevailing steam pressure down to the temperature of entering air. Cannot freeze because steam at full pressure is always in heater. Invaluable in supplying fresh air for space heating or process work where close control of temperature must be maintained. Either manual or automatic control. Obtainable separately or in combination with WING Heaters. Bulletin HS-1.

Wing "Revolving Discharge Featherweight" Unit Heaters



Bring the realization of a heating method that produces live heat—the pleasant healthful effect of comfortably warmed air in motion.

No hot spots, cold spots or drafts because the circulating air is continually changing direction. Eliminates difficulties encountered in certain plants where machines or other equipment would permanently or temporarily obstruct the flow of heat from a fixed discharge.

These heaters have been giving entire satisfaction in some of the most trying situations, as for instance, on fruit piers where even temperatures are essential—where "hot" spots would be disastrous. This discharge supplements the list of eight different designs of standard discharge outlets available for WING "Featherweight" Unit Heaters. Bulletin H-6A.

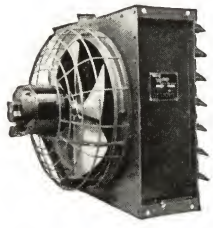


A large foundry heated by Wing Featherweight Unit Heaters



Wing Heaters with Revolving Type Discharge in a modern automotive plant

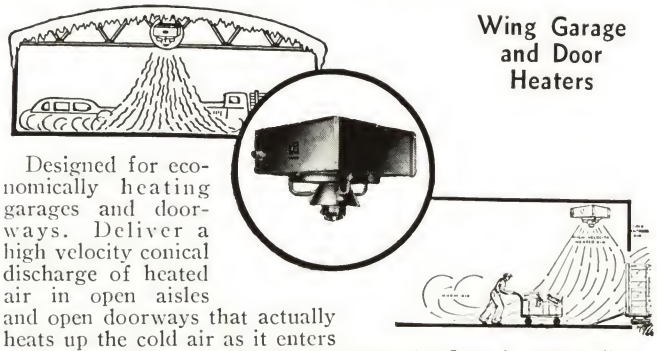
Wing Utility Heaters





A lightweight suspended unit heater for delivering heated air in one general direction. Has the same powerful fan and rugged heating element as WING "Featherweight" Unit Heaters. This is the latest refinement of the original horizontal lightweight heater which was developed by WING and was the forerunner of all modern unit heaters. Bulletin U-4B.

Wing Garage and Door Heaters

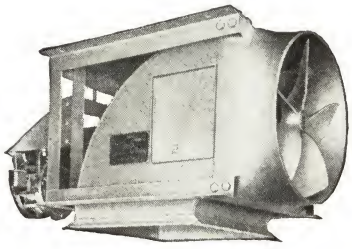


Designed for economically heating garages and doorways. Deliver a high velocity conical discharge of heated air in open aisles and open doorways that actually heats up the cold air as it enters and causes the warm air to roll along the floor in every direction. Bulletin G1 (Garage), D1 (Door).

Wing-Scruplex Exhausters

For economically moving air wherever ducts are used. It combines the efficient WING-Scruplex Propeller Fan with a housing of convenient form which places the motor entirely outside the air duct. The motor and drive remain cool and clean and are easily accessible.

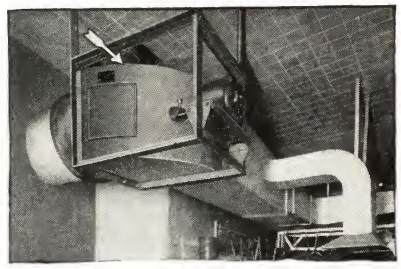
For efficient handling of cool and clean air as well as air containing paint spray, dirt, dust, grease, vapors, gases, steam heat, explosive mixtures, etc.



The powerful WING-Scruplex Fan delivers high air volume with low power consumption against any pressures for which duct systems should be designed.

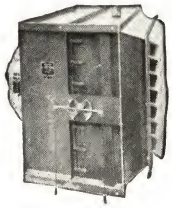
V-belt drive permits the most economical fan speed to meet any conditions of air volume and duct resistance.

The exhauster is built in the form of an elbow and is used as such. Light, compact and easy to install, it fits into tight places and can be mounted horizontally or vertically, by hanging from the ceiling or by bolting to ceiling, wall or floor. No expensive foundation is needed for this lightweight unit.



Made in a complete range of sizes from 10 to 60 in. and for 500 to 70,000 cu. ft. per min. Bulletin E-70.

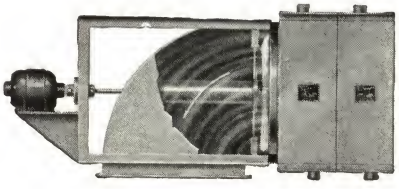
Wing Industrial Fog Eliminators



Eliminate fog, odors and fumes in dyeing, bleaching and finishing plants, creameries, pasteurizing, bottling, canning and packing plants, chemical works, paper mills, steel pickling plants, etc. Keep walls and ceilings dry. Eliminate dripping of moisture and prevents deterioration of building structure. No ducts are required. Bulletin FE-12.

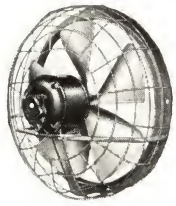
Wing Featherfin Process Heating Units

For manufacturing processes, such as drying, ageing, etc., requiring the recirculation of the heated air. Motor, turbine or pulley drive located outside air current. Bulletin P-2.

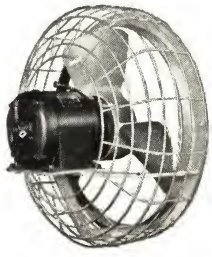


Wing-Scruplex Safety Ventilating Fans

A propeller type fan that delivers air against static pressure, quietly and efficiently. The true screw design of the fan wheel propels air in straight and parallel lines at uniform velocity over the entire area. Eddy currents are therefore reduced to a minimum, the result being quiet, smooth and efficient operation.



The heavy welded steel guard is designed to provide perfect safety without reducing the efficiency of the fan.



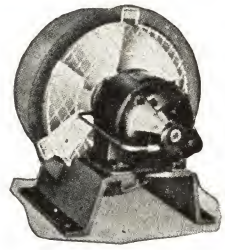
Where it is not expedient to use direct-connected motor driven fans, WING-Scruplex Safety Pulley-Driven Fans may be employed.

Available also in acid-proof construction and for service in dyehouses.

Capacities from 680 to 78,000 cu. ft. per min. Bulletin F-7.

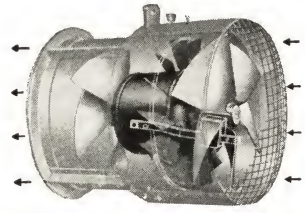
Wing System of Controlled Combustion

For low pressure heating boilers and small power boilers. Increases boiler capacity and permits use of lowest cost fuel. Includes Type EM Blower equipped with fully enclosed dustproof motor complete with speed regulating rheostat and automatic control. This system eliminates necessity of frequent firing, allowing intervals as great as 24 hours in some cases in zero weather. Insures proper temperature at all times. Bulletin M-76.



Wing COM Motor-Driven Blowers

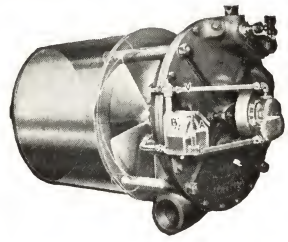
For High Static Pressures



Applied to high pressure boilers produce high static pressures at low speed. Equipped with constant speed motors and integral damper mechanism, permitting variation of air delivery over a wide range with decreasing horsepower. Unusually can be placed directly in boiler wall, eliminating all duct work for hand fired, stoker equipped, oil burning, or pulverized fuel burning boilers. Bulletin CO-3.

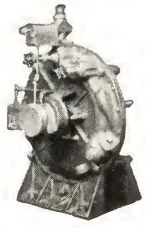
Wing Turbine Blowers

Increase boiler capacity—maintain constant steam pressure—make possible complete combustion of low cost fuels—no duct work necessary. The exhaust steam is free from oil, and can be used for heating or process work, etc.



For hand fired, stoker equipped, oil burning, or pulverized fuel burning boilers. Ideal for lumber drying kilns and similar applications. Bulletin T-97A.

Wing Steam Turbines

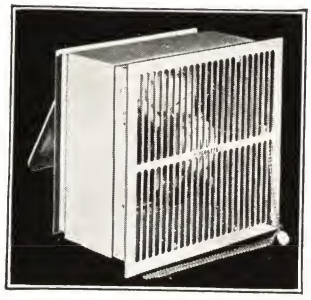


For pump, fan and auxiliary drive. Furnished with overspeed trip or combined overspeed and speed regulating governors. Equipped with the Wing filtered oil lubrication system, insuring a positive supply of clean oil to bearings at all times. Capable of exhausting against high back pressures. Exhaust steam is free from oil; can be used for heating or process work. Bulletin S-9.

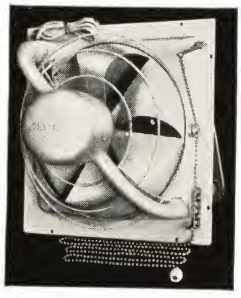
ILG ELECTRIC VENTILATING CO.

GENERAL OFFICES AND FACTORY
2849 North Crawford Avenue, CHICAGO, ILL.
SALES OFFICES AND DISTRIBUTORS IN ALL PRINCIPAL CITIES

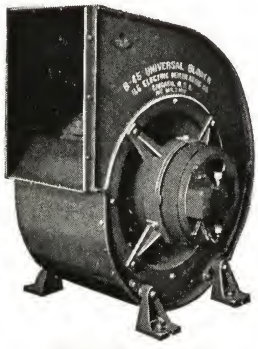
ILG
VENTILATION
and Air Conditioning



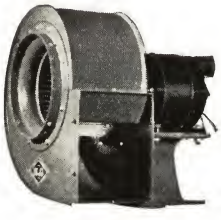
Built-in Ilg Kitchen Ventilator



Package Ilgette Kitchen Ventilator



Direct-Connected Type B Blower



Type B Volume Blower

Products

FANS, BLOWERS, UNIT HEATERS, and COOLERS, AIR CONDITIONERS.

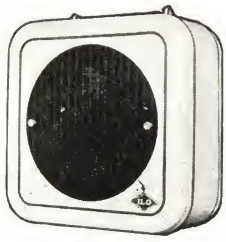
Ilg Kitchen Ventilators

An Ilg kitchen ventilator is one of the housewife's most useful servants. It quickly, quietly, thoroughly, exhausts the cooking odors and the excessive heat of cooking and provides ventilation for the whole house without the draft of open windows. Available in two sizes—the Ilgette for small kitchens; the Ilgair for the larger kitchens, and each is available in models for the wall, window or transom. Both the Ilgette and Ilgair have the fully enclosed Ilg self-cooled motor, noted for its quietness, power, economy and long-life. There is no radio interference. See Ilg Catalog FB-47.

Blowers

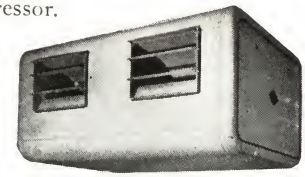
Ilg blowers are available in a number of types and a wide range of sizes with both direct-connected and belted drives. Ilg Type B and Type P volume blowers are suitable for small volume low-pressure work in direct-connected type only. Ilg Type B direct-connected Universal blowers and the Type BW belted Universal blowers cover a complete range of capacities in the higher brackets. Ilg Type BC direct-connected and belted Universal blowers with backward curved blade wheels have non-overloading motor characteristics. All capacities are rated in accordance with the Test Code of American Society of Heating and Ventilating Engineers. See Ilg Catalog FB-47.

Air Conditioning and Cooling Units



Ilg Ceiling Type Cooling Unit

Ilg offers a complete series of models for partial and year-round air conditioning. Ilg central system air conditioners are suitable for residential or commercial air conditioning, including winter or summer air conditioning or both. Unit systems are also available, consisting of one or more ceiling or floor type cooling units connected singly or in multiple to a remotely located compressor. These units can also be used for heating. They are suitable for stores, offices, restaurants, etc.



Ilg Central System Air Conditioner

Two self-contained room cooling units are available:—Model 11 Ilg Spot Kooler, a ½-ton model with water-cooled condenser; Model 31 Ilg Spot Kooler, a ½-ton model with air-cooled condenser. Both closely resemble a console model radio cabinet in size and appearance. Each is a complete summer air conditioner for cooling, dehumidifying and circulating the air.

Ilg air conditioning systems are designed for simple, quick installation and servicing, dependable operation and long life.

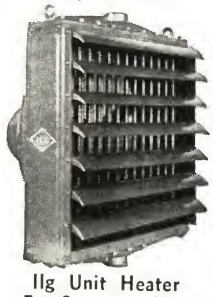
Electric Ventilating Fans



Ilg Self-cooled Motor Propeller Fan

Made in sizes from 9½ to 72 in. with capacities 450 to 40500 c.f.m. Each fan has the famous Ilg self-cooled motor which is exclusive in Ilg fans and is responsible for the economy, durability and efficiency characteristic of Ilg fans. Models are available for wall mounting, and for use as power-roof ventilators. Other models include floor fans, attic cooling fans, etc. Ilg Catalog FB-47.

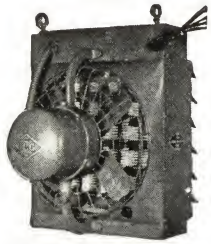
Ilg Unit Heaters



Ilg Unit Heater For Steam or Hot Water

The new Ilg unit heater for steam or hot water has won its way into the factories, stores, garages, etc., by its sheer ability to heat faster and better at lower cost. Its smooth, powerful Ilg self-cooled motor propeller fan enables it to concentrate its stream of warm air on the floor level and minimize heat losses above the working zone. It is available in standard finish, and also in deluxe finish in a number of attractive colors.

The Ilg all-electric unit heater is suitable for installation where ordinary heating methods are not practical. It heats instantly and uniformly and is intended for heavy duty use. An Ilg fully enclosed, self-cooled motor propeller fan insures quiet, steady distribution of heat to the working zone. Available in sizes from 1½ to 60 kw. capacity. See Ilg Catalog No. 127.



Ilg All-Electric Type Unit Heater

THE EMERSON ELECTRIC MFG. CO.

ST. LOUIS, MO.

BRANCH OFFICES

CHICAGO, ILL., 564 W. Randolph Street — NEW YORK, N. Y., 17 East 42nd Street

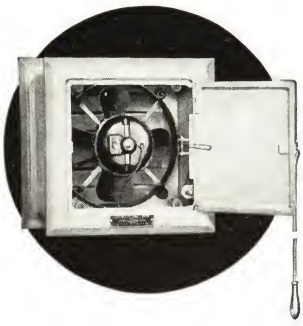
DETROIT, MICH., Woodward at Grand Avenue

Authorized Wholesalers and Retailers in all Principal Cities

EMERSON ELECTRIC

MOTORS – FANS – APPLIANCES

Leaders in the Fan and Motor Industry Since 1890



Interior View



Exterior View

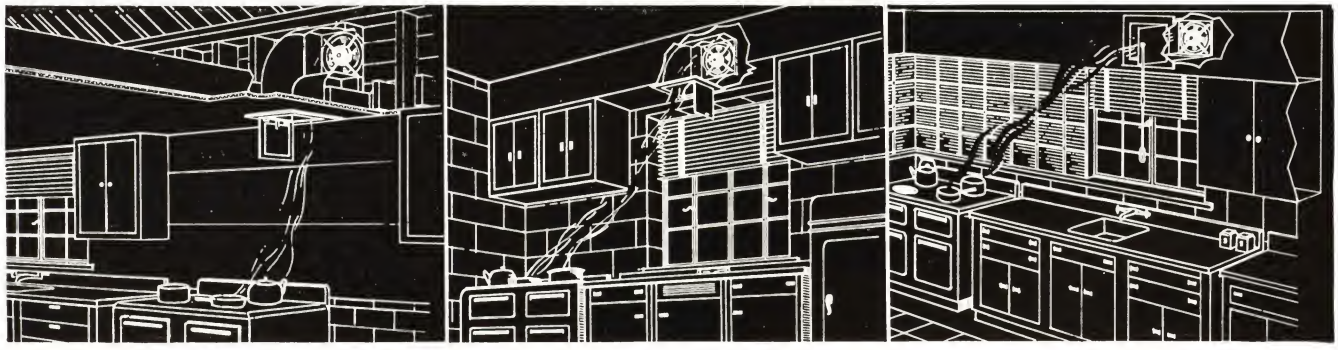


Kitchen Ventilating Fans

In the modern kitchen a ventilating fan is a necessity to exhaust cooking odors, steam and excessive heat, and to prevent them from spreading to other rooms in the home.

Emerson-Electric wall boxes are for permanent built-in installations. In new homes they are installed when the walls are erected. They can be installed at very little extra expense when modernizing kitchens.

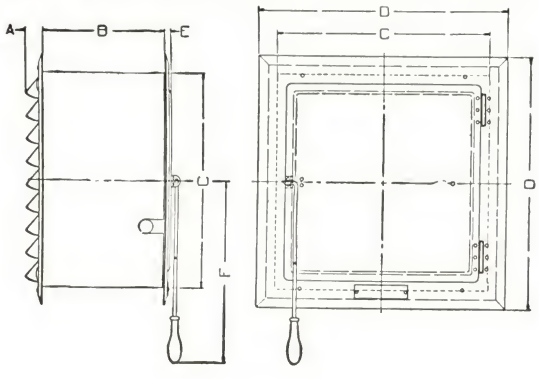
Features—The welded-steel wall box is made in two telescoping sections, adjustable to wall thickness. Fan and inner door panel are installed after the plastering is completed. No special wood frame or lintel is necessary. Line leads may be brought out through special openings at either side of box, or through insulating bushing in door frame, for connection to convenient outlet. Door may be hinged from either side by merely inverting door frame. Automatic switch starts and stops fan with opening and closing of door. Furnished with handle for operating door. Exterior section has permanent louvre which protects the fan from the elements. Exposed parts made of rust-resisting steel. All parts finished in washable, durable gray enamel. Available in two sizes, each with two types of fans.



The fan should be installed in the outside wall directly above the stove, or as near to it as possible, and close to the ceiling. In this way heat, steam and cooking odors will be removed near their source, and will not become distributed through the house. *Above are suggestions for fan and wall box installation in various types of construction.*

DIMENSIONS OF WALL BOXES IN INCHES

Fan Type No.	Fan size, in.	A	B	C	D	E	F
2345 3350-AA	9 10	1⅛	8 to 14	11 1/16	13½	⅜	27¾
59666 3360-AA	12 12	1⅛	8 to 15	14 1/16	16½	⅜	27¾



Standard Emerson-Electric Ventilators

Type 2345, 9-in. fan, 600 c.f.m. free air delivery.
Type 59666, 12-in. fan, 1050 c.f.m. free air delivery.
Fully enclosed, dustproof, induction-type, electrically-reversible motors. Exhausts kitchen air or brings in fresh air. Toggle reversing switch on motor cover, is operated with same handle furnished for opening door of wall box. Motor-mounting supports have sponge-rubber bushings which insulate the fan for quiet operation. Wool-packed bronze bearings. Cotton wicking leads oil to the shaft. One-year guarantee.

Emerson-Seabreeze Popular-Priced Ventilators

Type 3350-AA, 10-in. fan, 570 c.f.m. free air delivery.
Type 3360-AA, 12-in. fan, 875 c.f.m. free air delivery.
Non-reversible, induction type motor for exhaust duty only. Parker blades. Self-aligning, wool-packed bronze bearings with felt-packed oil reservoirs. Sponge-rubber bushings on the motor supports assure quiet operation. One-year guarantee.

Note: When specifying Fan type, include wall-box or window panel as required.

Ventilators with Metal Mounting Panels for Window or Transom

Panel ventilators provide an inexpensive yet effective method of securing proper ventilation in kitchens, bedrooms, lavatories and other rooms of similar size. They do not interfere with the operation of the window, being designed to install flush with stops on the inside. When fan is operated, the upper sash is lowered to the bottom of panel.

Features—Adjustable in width. Attached with 4 wood screws. Finished in washable, durable gray enamel. Panels are made in three sizes for Emerson-Electric Reversible Ventilators, and in two sizes for Emerson-Seabreeze Ventilators.





Emerson-Electric Exhaust Fans

Emerson-Electric Exhaust Fans have nine blades making them exceedingly quiet in operation. All sizes, 12 to 30-in. inclusive, are offered in both ball-bearing and sleeve-bearing construction. The single-phase ball-bearing fans are two-speed types and are furnished with two-speed snap switch. All others are single-speed fans without switch.

Automatic Shutters

Automatic shutters that effectively close the opening and protect the fan when not in operation are supplied in all sizes.

The louvers are made of aluminum, and each shutter is individually hung on corrosion-proof brass pins, to assure continuous service, without attention.

When the fan is started, the louvers, being light in weight open and give practically no resistance to the flow of air. When the fan is stopped they close of their own weight. The tie-rod connecting the individual louvers holds them rigid and prevents rattling.

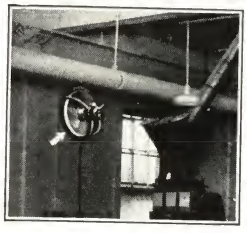
Made in five sizes for 12, 16, 18, 24 and 30-in. exhaust fan openings.



Outstanding Features—Emerson-Electric Ball-Bearing Exhaust Fans may be installed in horizontal or vertical position, or at any angle desired, without injuring the motor or impairing the efficiency of the fan's operation. The motor is equipped with special thrust-type ball-bearings, packed with grease lubricant and sealed against leakage. Lubrication is necessary but once a year and no other attention is required. The motor is fully enclosed, protecting the working parts from dust, grit, grease and fumes. The constant stream of air passing over the motor while it is in operation prevents it from overheating. Each Emerson-Electric Exhaust Fan is individually tested before packing.

Emerson-Electric also offers a complete line of popular-priced, single-speed Exhaust Fans with sleeve-bearing self-cooling motors of the heavy-duty type, fully enclosed and dustproof. Wool-packed, oversize bronze bearings insure continuous operation without overheating and need only occasional re-lubrication. Designed for horizontal discharge only.





Types of rooms and buildings	Required changes per hour
Club rooms, billiard and card rooms	6– 8
Dining rooms	2– 3
Sleeping Quarters	1– 2
Offices, banks, drug, grocery and barber shops	4– 6
Smoking rooms and bowling alleys	8–10
Public lavatories	18–25
Garages and laundries	10–15
Restaurants	10–14
Kitchens	12–15
Markets	8–12

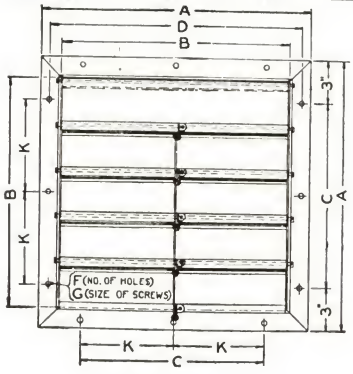
The proper size exhaust equipment required is determined by two factors—(a) size of room or other space to be ventilated. (b) number of times per hour the air is to be changed.

Multiply the number of cubic feet of air in the space to be ventilated, by the number of times per hour the air is to be changed. The result gives the volume of air to be removed per hour, and determines the size of the exhaust fan or number of exhaust fans needed.

Fans should be installed to exhaust directly into the open air with prevailing winds and not against them.

PERFORMANCE OF 60-CYCLE AND DIRECT-CURRENT EXHAUST FANS IN FREE AIR AND AGAINST STATIC PRESSURE

Size fan	r.p.m.	c.f.m. free air	c.f.m. under static pressure (inches of water)									
			.05	.1	.15	.2	.25	.3	.35	.40	.45	.50
			c.f.m.—Cubic feet of air per minute. *r.p.m.—Speed of fan in revolutions per minute.*									
12″	1140	850	700	500	300							
	860	725	525	375	230							
16″	1140	1500	1350	1150	925	670	400					
	860	1125	1050	875	700	500	300					
18″	1140	2350	2150	2000	1750	1550	1200	700	400			
	860	1750	1650	1500	1300	1150	900	570	300			
24″	860	4000	3800	3600	3300	3000	2700	2300	2000	1500	900	400
	570	2700	2550	2500	2200	2000	1800	1500	1300	1000	650	250
30″	685	6700	6200	5740	5240	4800	4350	3860	3360	2700	2200	1500
	570	5600	5180	4750	4350	4000	3620	3200	2780	2300	1820	1240



CUT No. 5258

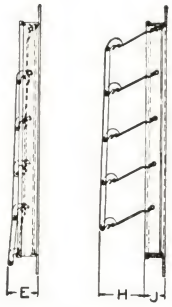


Diagram and Dimensions—Automatic Shutters

Fan size	A	B	C	D	E	F	G	H	J	K	No. of leaves
12″	14 3/4″	12″	8 3/4″	13 5/8″	1 3/4″	8″	1/4″	3″	1 9/16″	.....	3
16″	19″	16″	13″	17 1/2″	2 1/4″	8″	1/4″	3″	1 9/16″	.....	4
18″	21″	18″	15″	19 1/2″	2 1/4″	8″	1/4″	3″	1 9/16″	.....	5
24″	27″	24″	21″	25 1/2″	2 1/4″	12″	1/4″	3″	1 9/16″	10 1/2″	6
30″	33″	30″	27″	31 1/2″	2 1/4″	12″	1/4″	3″	1 9/16″	13 1/2″	7

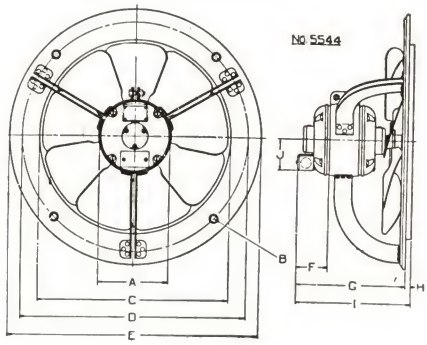
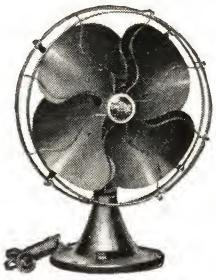


Diagram and Dimensions—Exhaust Fans

Fan Size	Type Bearing	A	B		C	D	E	F	G	H	I	J
			No.	Size								
12″ A.C.	Ball	4 7/8″	3	5/16″	12 3/8″	14 1/8″	15 9/16″	4″	9 7/16″	3/4″	9 13/16″	2 3/4″
12″ D.C.	Ball	4 7/8″	3	5/16″	12 3/8″	14 1/8″	15 9/16″	2 7/8″	8 5/16″	3/4″	8 11/16″	2 7/8″
12″ A.C.	Sleeve	4 7/8″	3	5/16″	12 3/8″	14 1/8″	15 9/16″	3 3/32″	9 5/32″	3/4″	9 17/32″	2 1/2″
16″ A.C.	Ball	6 1/16″	4	5/16″	16 1/2″	19 1/2″	21 3/4″	3 15/16″	10 9/16″	7/16″	11″	2 21/32″
16″ D.C.	Ball	6 1/16″	4	5/16″	16 1/2″	19 1/2″	21 3/4″	3 15/16″	9 13/16″	7/16″	10 1/4″	3 1/16″
16″ A.C.	Sleeve	6 1/16″	4	5/16″	16 1/2″	19 1/2″	21 3/4″	3 15/16″	10 9/16″	7/16″	11″	2 31/32″
18″ A.C.	Ball	7 1/16″	4	5/16″	18 1/2″	21 3/8″	23 3/4″	3″	10″	7/16″	10 7/16″	2 29/32″
18″ D.C.	Ball	7 1/16″	4	5/16″	18 1/2″	21 3/8″	23 3/4″	3 29/32″	10 29/32″	7/16″	11 11/32″	3 13/32″
18″ A.C.	Sleeve	7 1/16″	4	5/16″	18 1/2″	21 3/8″	23 3/4″	3 9/16″	10 9/32″	7/16″	10 23/32″	3 11/32″
24″ A.C.	Ball	8 1/2″	4	5/16″	24 3/4″	28 1/2″	31 1/2″	3 13/16″	13 9/32″	11/16″	14 1/4″	3 3/16″
24″ D.C.	Ball	8 1/2″	4	5/16″	24 3/4″	28 1/2″	31 1/2″	5 27/32″	14 27/32″	11/16″	15 17/32″	3 1/16″
24″ A.C.	Sleeve	8 1/2″	4	5/16″	24 3/4″	28 1/2″	31 1/2″	3 3/4″	13 1/2″	11/16″	14 3/16″	3 25/32″
30″ A.C.	Ball	11 1/4″	4	5/16″	30 3/4″	35 1/2″	39 1/4″	4 9/32″	16 13/32″	7/8″	17 9/32″	4 3/32″
30″ D.C.	Ball	11 1/4″	4	5/16″	30 3/4″	35 1/2″	39 1/4″	6 17/32″	18 21/32″	7/8″	19 17/32″	3 29/32″
30″ A.C.	Sleeve	11 1/4″	4	5/16″	30 3/4″	35 1/2″	39 1/4″	4 3/8″	16 1/2″	7/8″	17 3/8″	4 15/32″



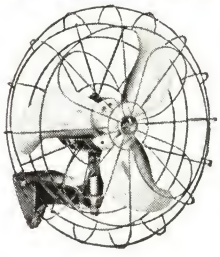
Emerson-Electric Wall-Type Fans



Emerson-Electric Parker and Overlapping-Blade Oscillators are standard equipment in many of the nation's largest institutions. Available in 10, 12, and 16-in. sizes. 5-year guarantee.

Features—Stationary, hollow-steel shaft. Forced-feed lubrication system. Oiltight, dustproof bearing, can not throw oil from the blades. Fingertip oscillation control. Patented adjusting collar permits pointing fan in a wide arc without moving base.

Write for catalog.



Emerson-Electric Air Circulators

Emerson-Electric Air Circulators are recommended for installation in all public places and wherever there is a problem of providing rapid ventilation over large areas, such as in retail stores and shops, taverns, restaurants, churches, recreation buildings and industrial plants of all kinds.

Emerson-Electric Air Circulators are available in seven models, 3 and 4-blade fans, each with adjustable floor-column, counter-column, ceiling or wall-bracket mountings. Heavy-duty, grease-packed, ball-bearing motors give 6000 hours (3 average seasons) of continuous service without relubrication. All types have fully-enclosed, streamlined, ball-bearing motors, polished blades and ornamental guards.

When used in industrial plants, or in other places where safety conditions require, fine-mesh guards are available.

Features—Induction-type, streamlined, fully-enclosed motor with grease-packed ball bearings. Will normally give 6000 hours of service before relubrication is necessary. Spot-welded, 2-piece ornamental guard. Can be tilted to any position from 8° above horizontal to 25° below horizontal in ceiling mounting, or vice versa in column or bracket mounting. Pull switch in back motor cover. Rubber-insulated mounting yoke. Standard fans are finished in black with polished blades. Also available in chromium-plated finish.

Send for complete catalog on how to install Emerson-Electric Air Circulators for greatest efficiency.



Adjustable-Stand Fans

Stand fans—the newest innovation in fan design—are now available in several models. They are recommended because of their portability and ease of adjustment to meet practically any usage in hotel rooms, offices, shops, and homes.

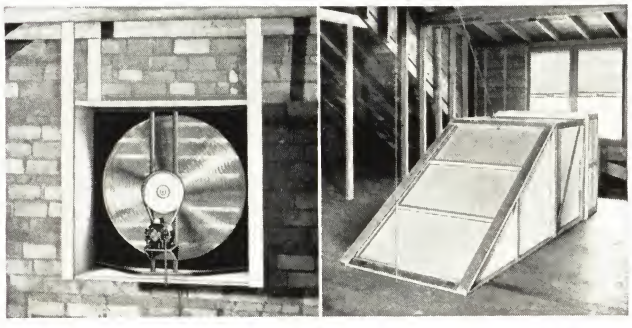
Shown at left is overlapping-blade oscillator, available in 10 and 12-in. sizes. The ornamental Silver Swan is also made in these sizes. Stands are adjustable from 3 ft. 3 in. minimum to 4 ft. 9 in. maximum, from floor to center of fan. 5-year guarantee.



Ceiling Fans

Emerson-Electric ceiling fans with their many exclusive features give fan buyers greater value for their investment. 5-year guarantee.

Features—Two sizes, 36 and 52-in. sweep fans; 2 and 3-speeds, respectively. Electrically reversible (blow air up or down) and non-reversible types. Available with or without fitter for use with light and unit glassware. All switches can be on the fan, or wall switches for remote control can be used.



THE EMERSON-ELECTRIC HOME COOLER FAN

Here's real improvement in home cooling—a central cooling system within the financial reach of every home owner. Economical to operate, flexible in regulation, it quietly and efficiently cools the entire home or any desired part.

After sundown, suffocating heat is exhausted from the attic and the cooler outside air breezes through the home. Actually, as tested, this fan will change the air completely every minute in an average six-room house.

Available with or without plenum chamber (suction box). Ceiling grille and plenum chamber can be furnished as separate accessories and supplied dismantled for assembly on the job. However, all materials required are available in almost any community, and can be built readily to Emerson-Electric design and specifications. Or the plenum chamber can be eliminated entirely where the attic is tightly constructed, and the home cooler fan be connected directly to an opening in an outside wall.

Here is something truly desired by every home-owner—a low cost cooling system for modern summer comfort. *Send for complete catalog.*

Specifications and Performance

Frame—Steel, welded construction, firmly braced. Vertical members slotted for adjustment of belt tension.

Motor—⅓ hp., 110v., 60 cycles "KS" capacitor-start, induction run, resilient (rubber) hub mounted, two-speed 1725 and 1140 r.p.m. Built-in thermal-overload motor-protector. Oversize sleeve bearings grooved to distribute the oil evenly.

Fan Blade Assembly—Three blades, 42-in. diameter, perfectly balanced. Steel shaft operates in two grease-packed, thrust-type, ball bearings, cushioned on rubber.

Belt—V-type, sure traction, non-stretching.

Dimensions—Steel frame 49 in. wide, 49 in. high, 14 in. deep. Motor extends 10¾ in. beyond back of frame. Over-all depth 24¾ in. with motor mounted on frame.

Finish—Frame and motor finished in black enamel, blades in green enamel.

Accessories Furnished—Two-speed snap switch for remote control. Six sponge-rubber cushion blocks ½x2x12 in. for insulating fan box from floor. Canvas for connecting fan box to suction box proper.

Accessories Furnished Separately

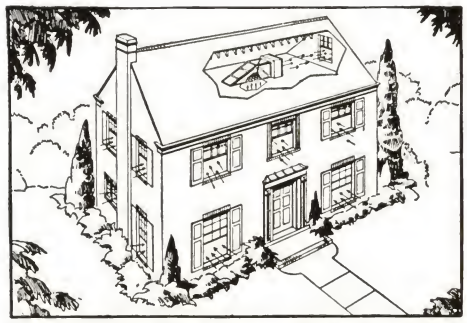
Grille—Wood ceiling grille consists of notched strips which may be used to make grille 36 x 78 in. or any intermediate size.

Automatic Shutter—Aluminum louvers swing on brass pins, which eliminates any operating difficulty due to corrosion.

Plenum Chamber—Made of wood and utility board, unassembled, over-all dimensions approximately 4 ft. wide, 9 ft. long, 4 ft. high. No hardware or switches included.

Fan size, in.	Motor frame	Speeds—r.p.m. Motor	Speeds—r.p.m. Fan	H.p.	Volts	Cycles	Watts	Performance: Free air	Performance: *In suction box	Weight, lbs. Net	Weight, lbs. Pkd.
42	KS67-TL	1725	275	⅓	110	60	385	12,800 CFM	10,700 CFM	155	244
		1140	185	1/10	110	60	195	8,600 CFM	7,200 CFM		
Wood ceiling grille 36x78 in. unassembled											20
Automatic aluminum-leaf shutter for 42-in. fan											46
Plenum chamber (suction box) 4 x 9 ft. unassembled											182

*Performance in suction box 4 x 4 x 9 ft. with grille area of 20 sq. ft.



Cool the entire home or any desired part of it.

PRYNE & CO., INC.

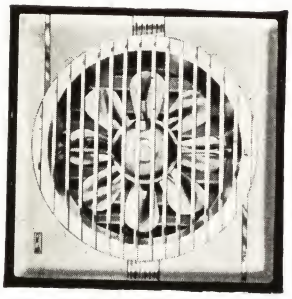
Pioneer Manufacturers of Electric Ventilators for Homes

1245 East 33rd Street, LOS ANGELES, CALIF.

BRANCH SALES OFFICES

SAN FRANCISCO, CALIF., 145 Second Street NEW YORK, N. Y., 101 Park Avenue

REPRESENTATIVES IN ALL PRINCIPAL CITIES



Grille Type

Modern, streamlined, cast aluminum hinged grille—furnished usually only in the extreme South where insulation against cold is not required. May be had in other parts of country on special order.

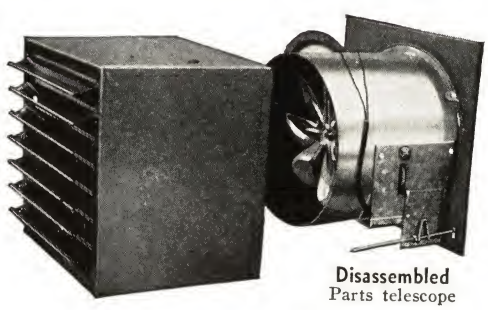
Extension Parts for Extra-Thick Walls

In cabinets or extra-thick walls, the exterior housing may be set flush with the outside and the inside section flush with the interior by adding a No. 124 (10 in.) or a No. 125 (12 in.) set of auxiliary parts. These consist of an auxiliary housing for holding inside section, extension for switch-louver rod, and extension for air chamber.

Tested and Approved 3068 by Good Housekeeping Institute GOOD HOUSEKEEPING MAGAZINE

Guarantee

Complete equipment is fully guaranteed by PRYNE & Co., INC. Motor is guaranteed jointly by Westinghouse Electric & Mfg. Co. and PRYNE & Co., INC.



Disassembled
Parts telescope

"Pacific Breeze"

SIDEWALL VENTILATORS

Nationally recognized as "the most beautiful ventilator made." New "hi-heat" baked enamel with chrome trim. Choice of either door or grille. Reversible (in 10 in. size) to draw air either in or out.

EXCLUSIVE FEATURES

Reversible (First Introduced in 1925)

In the No. 109 and 113 models, the motor swings end over end on cradle bearings *while running,* thus preserving the maximum efficiency of the fan for *both* directions—*an exclusive* "Pry-an'co" *feature.* Right-hand lever controls reversing.

Automatic Louvers

Overlap; weatherproof; will not flutter. Open and close mechanically by same lever which operates switch (left hand lever). May be opened partially for natural ventilation without starting motor. Control rod furnished for operating levers.

Motor

Streamlined, polished aluminum, rubber-mounted. Has Westinghouse windings and a special exclusive "Pry-an'co" forced feed long-life lubrication system.

Fan Blade

Polished, wrought aluminum; new silent over-lapping pressure type; maximum efficiency.

Finish

Baked white enamel with chrome trim. All chrome available on special order.

Easy to Clean

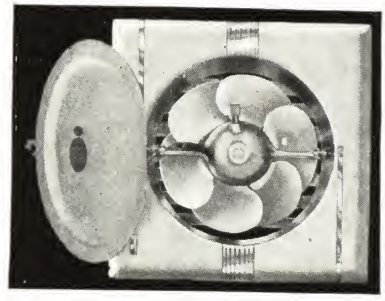
All-aluminum interior is easily cleaned, as both door and grille are hinged. Unnecessary to remove any parts to clean.

SPECIFICATION DATA

Blade size	Draws watts	Speeds	Housing size	Approx. c.f.m.
10-in.	35	1	12 x 12″	500
12-in.	75	2	14 x 14″	1000

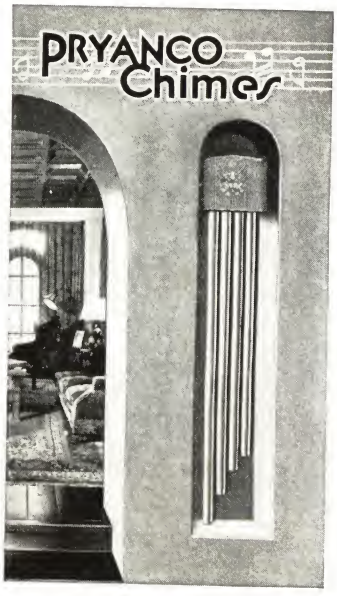
Cat. No.	Blade size	Reversible	Housing depth	For walls
106	10″	No	6 ″	6 to 9″
119	10″	No	9½″	9 & over
109	10″	Yes	9½″	6 to 13″
113	10″	Yes	13 ″	13 & over
140	12″	No	6 ″	6 to 9″
143	12″	No	9½″	9 to 13″
144	12″	No	13 ″	13 & over

Extension parts for an additional 15 in.
No. 124—for 10-in. size fans.
No. 125—for 12-in. size fans.
(Parts may be cut off on job to fit.)
(Larger sizes on special order.)



Door Type

Only fan available with a *double, insulated* inside door and frame. In extreme weather this prevents "sweating" by shutting out the cold which otherwise penetrates any type of exterior louver. Standard for Northern sales.



2-Tube Magnetic Types

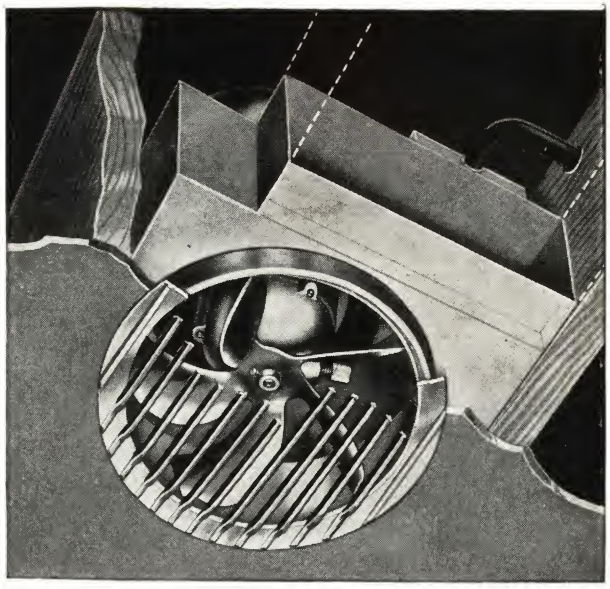
No. 299—2 notes from front door only; overall 7½ x 42 in.
No. 301—2 notes from front door, 1 note from rear; overall 7½ x 42 in.
No. 302—Same as No. 301 except has longer, heavier tubes; overall 7½ x 53½ in.

3-Tube and 4-Tube Motor-driven Sets

No. 303—3 tubes; 4 notes front, high note side, low note rear; overall 9 x 52 in.
No. 305—4 tubes; 8 note Westminster tune front; high note side, low note rear; overall 9 x 60 in.
All chimes are surface mounting and with exception of transformer are completely contained in one unit. Wide selection of guards.
Remote Control available with any motor-driven set, for servant calls or dinner chimes.

"Blo-Fan"

Advanced Blower-Type Ceiling Ventilator



A NEW FAN PRINCIPLE

"Blo-Fan" is a new, patented combination of propeller and blower principles. The *volume* of the breeze fan is combined with the *efficiency* of the blower. Air is fed into the vortex of the blower under pressure by the breeze-fan portion of the blades and is then packed, centrifugally, into the exhaust duct—*by blower pressure.* "Blo-Fan" is an important forward step in engineering because it provides maximum air movement with minimum power and speed. Complete unit entirely encased in the ceiling, only the grille showing from the room below.

Bearings and Oiling System

An exclusive Pryne & Co. development—in successful use since 1925. Thrust runs in well of oil, which is force-fed through bearings. Refill only at long intervals.

Motor and Guarantee

Streamlined, cast aluminum, *full floating.* 75 watts; 1200–1750 R.P.M. Westinghouse windings; fully guaranteed in every way.

Ducts

Standard furnace size, 3½x10 in. In 1-story jobs ducts lead from elbow through roof; in 2-story jobs either through roof or (more commonly) to outside wall (No. 212 includes cap.)

Capacity

Approx. 350 C.F.M. through 1 elbow and 18 feet of duct. Low speed equivalent to 8 in. fan; medium to 10 in. fan; high speed exceeds capacity of 12 in. fan. "Free air" readings used for breeze fans should not be confused, for they mean little against resistance of motor body, louvers, headwinds, etc.

"Blo-Fan" Blade

One-piece wrought aluminum, accurately balanced and reinforced with steel ring.

Grille

Cast aluminum, modern design, streamlined. Overlaps opening. Easily removed.

Backdraft Prevention

Automatic louver in exhaust port; 2 more in No. 212 exterior wall cap.

Switch Plate

Chrome; fits 2-gang box; has switch and speed control.

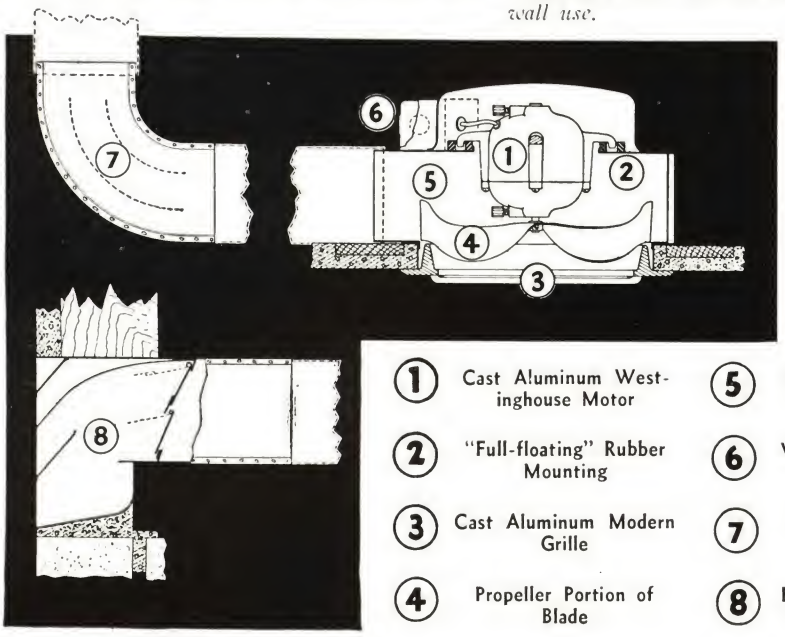
How to Specify

No. 211—For fan with elbow for vertical discharge. (Neither duct nor roof jack furnished.)
No. 212—For fan with wall cap for horizontal discharge. (Duct not furnished.)
No. 214—For fan with *neither* elbow nor wall cap.
No. 215—For fan like No. 214, *but for sidewall use.*

Note: Be sure to provide standard 2-gang wall box for switch (switch plate furnished).

Dimensions

Framing-in size 11¾x13¾ in., open on one 11¾ end for duct. Ceiling opening 9⅝ in. diameter. Overall height 7¾ in. Exterior wall cap opening 10¼ x 7 in.

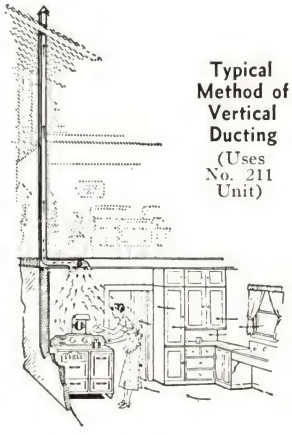


1. Cast Aluminum Westinghouse Motor
2. "Full-floating" Rubber Mounting
3. Cast Aluminum Modern Grille
4. Propeller Portion of Blade
5. Blower-type Portion of Blade
6. Wiring Connection and Splice Box
7. Elbow for Vertical Discharge
8. Exterior Cap for Horizontal Discharge

Advantages of Ceiling Ventilation

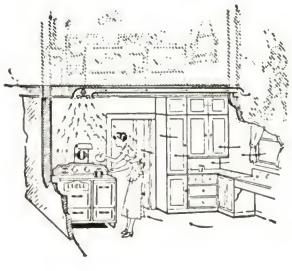
A "Blo-Fan" Ceiling ventilator forms an invisible "air hood" over the range, drawing cooking odors, grease and steam quickly from the room. Air naturally enters through doors and windows, moves toward the range and when heated rises directly into the "Blo-Fan." Ceiling ventilation is more efficient than sidewall ventilation because it gathers foul air at the source, before it can spread. "Blo-Fan" is *not* a problem fan, but is scientifically correct for kitchen ventilation. Ask any ventilating engineer.

Breeze Fan Volume
—Plus Blower Efficiency



Typical Method of Vertical Ducting
(Uses No. 211 Unit)

Typical Method of Horizontal Ducting
(Uses No. 212 Unit)



SIGNAL ELECTRIC MFG. CO.

MENOMINEE, MICHIGAN

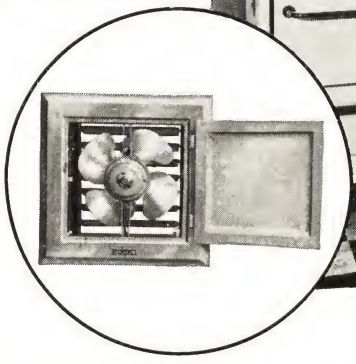
SIGNAL — MANUFACTURERS OF ELECTRICAL PRODUCTS

Automatic Kitchen Ventilating Fan

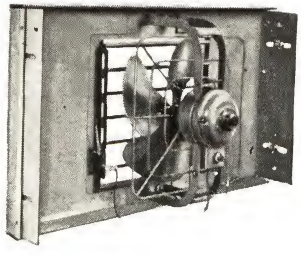
Adjustable to wall thickness, easy to install, no metal or wood frame necessary; no screws in plaster, wood, or brick needed to install, 10-inch quiet type fan—available for alternating or direct current; alternating current type non-radio interfering. Attractive finish — inside and outside frames are polished cast aluminum—adjustable wall box is steel. Automatic switch and shutters are controlled by opening and closing door. Opening door starts the motor, as illustrated here, and opens shutters. Closing door stops motor and closes shutters.

Descriptive bulletin on request.





No.	Voltage	C.f.m.	Watts	For walls, in.	Shipping weight, lbs.
V-30	110 a.c.	600	50	7 to 13	25
V-31	110 uni.	680	65	7 to 13	25
V-30s	110 a.c.	600	50	13 to 24	52
V-31s	110 uni.	680	65	13 to 24	52



Adjustable Window Vent Fan

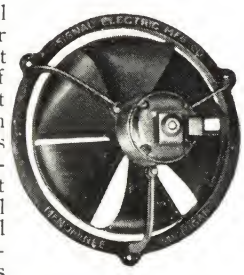
For windows from 24 to 37 in. in width. 10-in. quiet type polished aluminum fan blade, steel frame, weatherproof shutters, 10-ft. rubber cord and plug. Shutters are opened and closed from inside with a pull cord. Finish is French gray.

No.	Voltage	C.f.m.	Watts	Shipping weight, lbs.
V-24A	110 a.c.	600	50	19¼
V-25A	110 uni.	680	65	18¼



Two-speed, wall mounting, lever type switch available for all Bucket and Flat Blade Vent Fans.

Bucket Blade Exhaust Fan

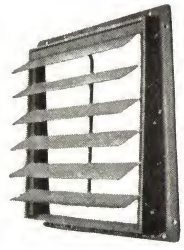


For commercial installations, or where displacement of large volume of air is desired. Quiet and economical in operation. Motor is shaded coil, self-cooling type, built into fully enclosed housing, equipped with reversible conduit box, bearings special leaded bronze with wool packing —black enamel finish.

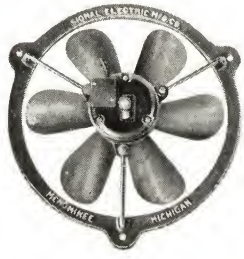
Size, in.	No.	Voltage	C.f.m.	R.p.m.	Shipping weight, lbs.
12	V-112	110 a.c.	825	1000	25
12	V-212	110 d.c.	825	1000	25
16	V-116	110 a.c.	1400	1150	36
16	V-216	110 d.c.	1400	1150	36
18	V-118	110 a.c.	2300	1150	40
18	V-218	110 d.c.	2300	1150	40

Automatic Shutters

For use with Signal Bucket and Flat Blade Vent Fans. Protect fan opening. Vanes made of aluminum are fastened to a tie-rod mounted in cast iron frame. Vanes open when fan starts and close when fan stops.



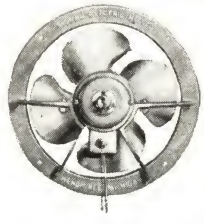
Size, in.	No.	Shipping weight, lbs.
12	L-12	11
16	L-16	18
18	L-18	23



Flat Blade Vent Fan

For offices, washrooms, kitchens, poultry houses, etc. Reinforced cast iron frame. Shaded coil fully enclosed motor. Black enamel finish.

Size, in.	No.	Voltage	C.f.m.	R.p.m.	Shipping weight, lbs.
12	V-1A	110 a.c.	725	1000	21
12	V-5A	110 d.c.	725	1350	21
16	V-2A	110 a.c.	1200	1000	32
16	V-6A	110 d.c.	1200	1200	32



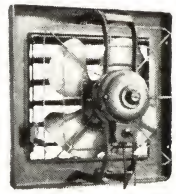
Ring Type Kitchen Vent Fan

For installations where weight must be considered this vent fan is recommended. Can be mounted on wallboard. Cast aluminum mounting ring; quiet type 10-in. polished aluminum fan blade, on-and-off switch and 10-ft. rubber cord and plug.

No.	Voltage	C.f.m.	Watts	Shipping weight, lbs.
V-105	110 a.c.	600	50	12
V-106	110 uni.	680	65	12

Built-In Type Vent Fan

For permanent installation. Equipped with 10-in. quiet type polished aluminum fan blade and 10-ft. rubber cord and plug. Steel frame with weatherproof shutters. Shutters are opened and closed from inside by a pull cord. Finish is French gray.



No.	Voltage	C.f.m.	Watts	Shipping weight, lbs.
V-24A-BT	110 a.c.	600	50	12¼
V-25A-BT	110 uni.	680	65	11

TRADE-WIND MOTORFANS, INC.

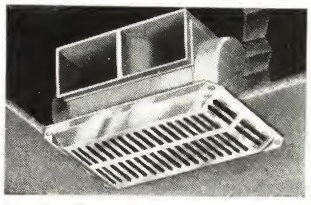
Manufacturers of Centrifugal Ventilating Blowers

1325 Maple Avenue, LOS ANGELES, CALIF.

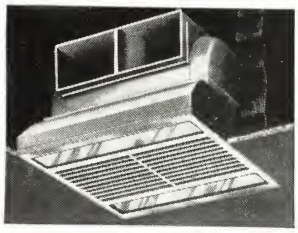
TRADE-WIND FORCED DRAFT HOME KITCHEN VENTILATION

Products—"Clipper" Ventilating Centrifugal Blowers for Home Kitchens, Bathrooms, Dens, and Lavatories, Offices, Telephone Booths, Photographic and X-Ray Dark Rooms, Projection Booths, Ticket Offices, and Show Windows.

Distinctive Construction—Trade-Wind, five years ago, introduced the first fundamental improvement in design and type of Home Kitchen ventilators, made in many years. This efficient compact blower is mounted within joist spaces, above the range in ceiling out of sight except the grille. The rubber mounted quiet oversized motor will operate thousands of hours without re-lubrication. The motor and electrical connections are entirely separated from the greasy air stream passing through the blower, an Exclusive Feature of Trade-Wind Blowers.



No. 201—Senior
Twin Blower



No. 203L—Senior Twin-Blower
With Dual Light Combination

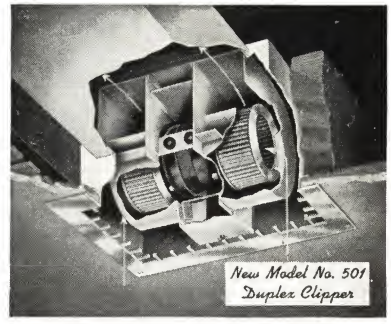
The "Squirrel Cage" centrifugal blower wheel generates pressure in the air stream setting into fast motion a dense stream of air, useful to pick up heavier than air steam vapor and cooking smoke and rapidly force it out of doors through a small duct with little capacity loss. This rapid removal of contaminated air prevents its travel into living quarters with a deposit of grease on the walls, ceilings and furnishings and eliminates cooking odors. Blade type fans depend on "screw" or thrust principle and cannot move air sufficiently fast, at quiet operating speeds, to overcome the friction of ducts efficiently.

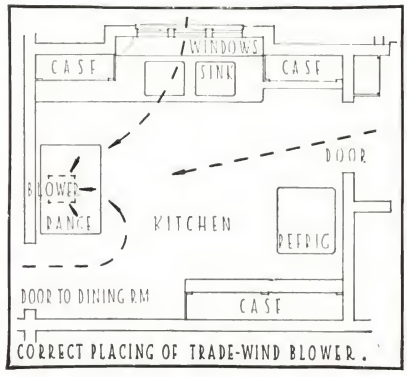
Widely Used—Thousands of successful installations, in many parts of the country including hundreds of the finest homes of the Hollywood motion picture actors and executives, demonstrate the superior results obtained with the Trade-Wind Centrifugal Blower over the ordinary type kitchen ventilator.

Capacities and Prices—Models No. 301 and 401 Clipper Blowers ventilate kitchens of 1250 cu. ft. content and sell for $30.00. The No. 501 will ventilate kitchens of 2000 cu. ft. content and sells for $50.00. Both models mount in joist spaces 14 in. wide by 9 in. deep. Automatic shutters are available for double and single models.

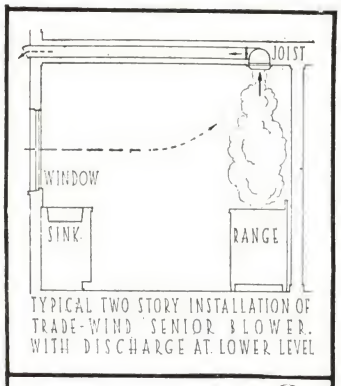
Catalog—New Bulletin No. 400-A giving full description of all models and dimensional data, sent on request.

For further information we refer you to any one of our sales representatives in many Eastern cities. Trade-Wind products are available at most electrical jobbers. Write for address of nearest agent.

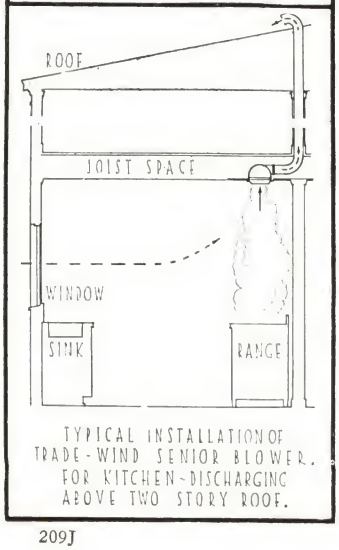




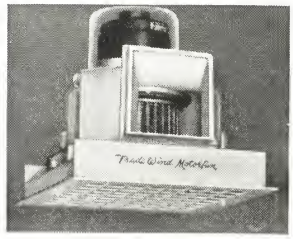
CORRECT PLACING OF TRADE-WIND BLOWER.



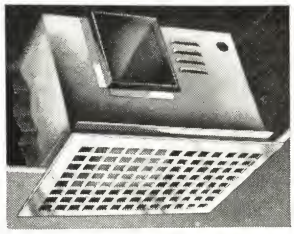
TYPICAL TWO STORY INSTALLATION OF TRADE-WIND SENIOR BLOWER. WITH DISCHARGE AT LOWER LEVEL



TYPICAL INSTALLATION OF TRADE-WIND SENIOR BLOWER. FOR KITCHEN-DISCHARGING ABOVE TWO STORY ROOF.



No. 102—Junior Blower
All aluminum blower, ball bearing motor; ideal for bathrooms



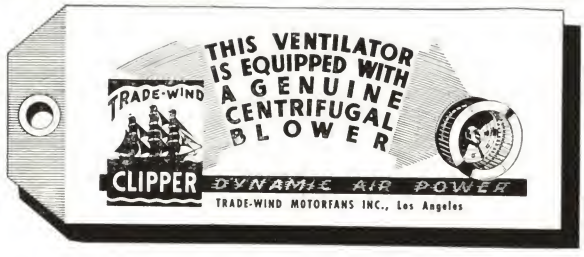
No. 301—Clipper Blower
Horizontal Discharge. All clipper blowers are complete package units



Automatic Shutter
No. 110—Single Blowers
No. 210—Double Blowers



No. 401—Clipper Blower
Vertical Discharge Blower—showing easy removal of motor assembly through grille opening.





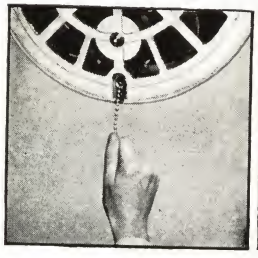
Modern Home Kitchen with No. 201
Senior Twin Blower above range.

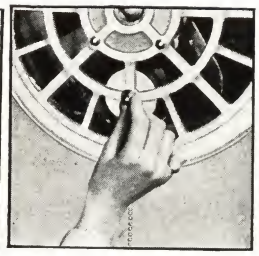
VICTOR ELECTRIC PRODUCTS, INC.

750 Reading Road, CINCINNATI, OHIO
VICTOR COMPANIES AND WAREHOUSES IN ALL PRINCIPAL CITIES

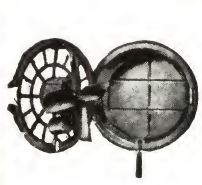
VICTOR IN-BILT VENTILATORS

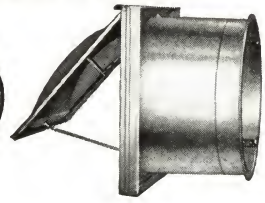
Eliminate cooking odors, stale smoky air—provide every room with its own ventilation. The Victor line of In-Bilt ventilators, attractive in appearance and easy to install, make this a simple matter. There is a Victor Ventilator to fit every requirement and every price range. Completely concealed wiring makes the finished installation inconspicuous. The table gives sizes and capacities of all Victor models, for easy comparison.





THESE IMPORTANT FEATURES ASSURE EFFICIENCY



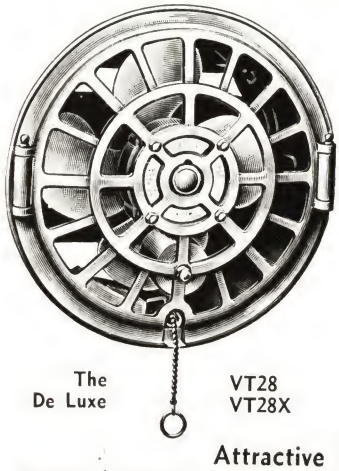






Automatic operation, 3-speed Control, ease of cleaning through swing-out mounting, ease of installation with telescopic sleeve, and weathertight shutters make Victor Ventilators foolproof, attractive and economical. The telescopic sleeve makes for ease of installation, regardless of wall thickness. The automatic operation feature—releasing chain from catch starts the motor and opens the shutter, thus eliminating the rod method of opening. The De Luxe model with 12-in. fan exhausts over 800 cu. ft. of air per minute; the Master moves 400 cu. ft.; and the Standard, 600 cu. ft. per minute. All Victor fans have streamlined, superquiet fan blades, wick-oiled bearings saturated with one-shot lubrication, rustproof finish and weathertight construction of shutter. The motor, grille and fan are one unit; the sleeve, a separate assembly.

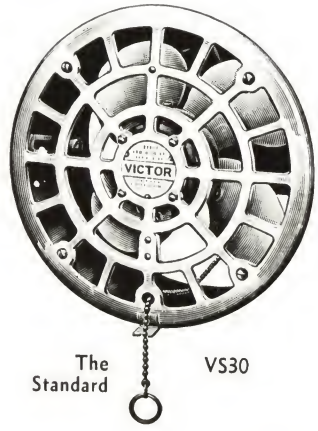
THREE MODELS TO SELECT FROM— A TYPE FOR EVERY NEED



The De Luxe — VT28, VT28X



The Master — VS32, VS33



The Standard — VS30

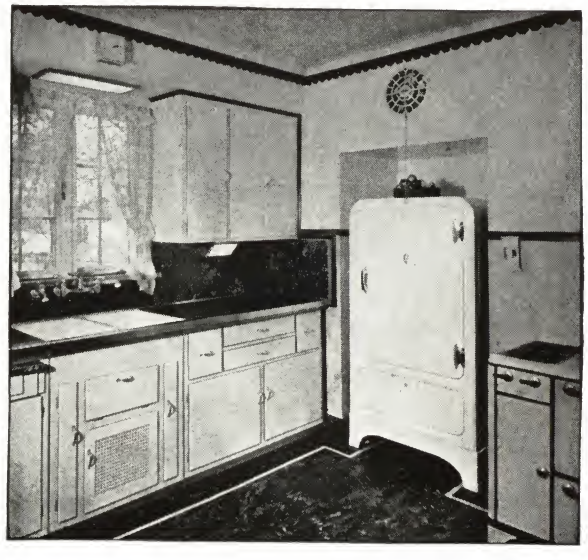
Attractive in Any Setting

Kitchen, bedroom, living room, bathroom—are not marred in any way by the installation of Victor In-Bilt Ventilators. The illustration at the right shows an attractive installation assuring comfort, summer or winter. Victor Ventilators are being used extensively for basement recreation rooms, where the air is frequently smoky and stuffy.

SIZES AND CAPACITIES—ALL MODELS

	VT 28 VT 28X	VS 30	VS 32 VS 33
Blades (quiet)	12-in. diameter	10-in. diameter	8-in. diameter
Capacity	800 c.f.m.	600 c.f.m.	400 c.f.m.
Interior grille	15¼-in. diameter	12-in. diameter	11½ in. diameter
Outside panel	15⅜x15⅜ in.	12½x12½ in.	10¼x10¼ in.
Wall opening	14-in. diameter	11¼ in. diameter	8¾ in. diameter
Wall thickness	5½ to 9 in.— VT 28, VT 28X 9 to 17½ in.— No. 28—1 Extension sleeve 17½ to 26 in. No. 28—2 Extension sleeve	5½ to 9½ in. VS-30 9½ to 17½ in. No. 30-1 Extension Sleeve 17½ to 26 in. No. 30-2 Extension Sleeve	5½ to 9½ in. VS-32 9½ to 13½ in. VS-33 13½ to 21½ in. No. 33-1 Extension Sleeve 21½ to 30 in. No. 33-2 Extension Sleeve
Louvres	Three Inter-locking	One-piece	Streamlined
Finish (grille)	VT 28—Brushed Aluminum VT 28X—Polished Aluminum	Silchrome	Silchrome
(wall sleeve)	Mat Silver—Plated	Silchrome	Silchrome
Wiring	BX or Conduit	BX or Conduit	BX or Conduit
Motor	Induction 110-120 volts 50-60 cycle a.c.	Induction 110-120 volts 50-60 cycle a.c.	Induction 110-120 volts 50-60 cycle a.c.
Watts	70	40	35

All Victor In-Bilts guaranteed one year against electrical and mechanical defects.



Women enjoy cooking in a well ventilated kitchen. No grease, no odors, no fumes.

WEST WIND CORPORATION

Airport Way at Grand Street, SEATTLE, WASH.

WEST WIND KITCHEN EXHAUST FAN

Special Advantages

1. The fan of the West Wind is removable without tools or disassembling. It is readily taken down and its wheel and the interior of its casing easily cleaned of the grease that is found to accumulate. Thus the West Wind can be kept as clean as other kitchen equipment. Being removable, the fan has a "plug-in" connection. Outlet near top of casing should be specified.

2. West Wind motors are not ordinary desk fan motors; they have only one-third of the usual clearance or "play" in the bearings. They have an oiling system with reserve lubrication that has operated a stock fan continuously for two years, day and night, without attention.

3. From the standpoint of efficiency West Wind's eight deep-pitched blades permit a smaller casing assembly without sacrifice of capacity. This allows installation in restricted spaces, and an attractive design and finish difficult to attain in larger bulk.



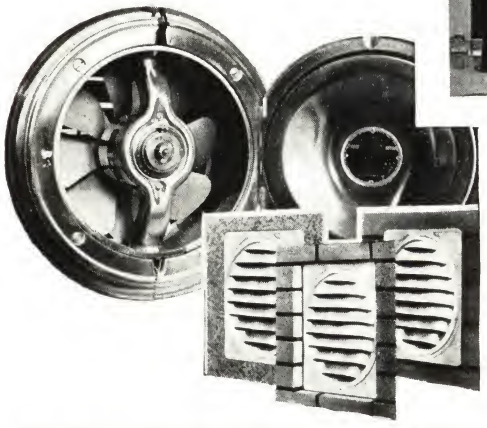
"West Wind" is the original copyrighted name of this character as applied to kitchen ventilating equipment. Others that are sufficiently similar to cause confusion are infringements and will be prosecuted.

Prominent Architects Who Endorse the West Wind Fan

Ernest Flagg, New York, N. Y.
Donald Johnson, Washington, D. C.
Murray D. Hetherington, Chicago, Ill.
Cay G. Weinel, St. Louis, Mo.
J. Roger Musick, Denver, Colo.
Arthur Loveless and Lester Fey, Seattle, Wash.
Paul R. Williams, Los Angeles, Cal.



Buildings Five and Six of the New Flagg Court Apartments, Brooklyn, N. Y.
450 West Wind units installed
ERNEST FLAGG, Architect and Owner

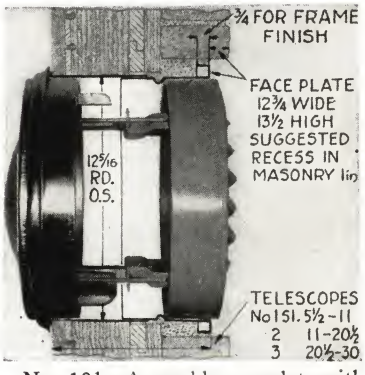


No. 301—Assembly without telescoping sleeve Can be installed on a 11⅛-in. round opening in any kind or thickness of wall.

The West Wind Standard

The removable fan assembly is reversible and has a two-speed motor operated by a pull-chain switch. Its inside door and casing have a "brushed silver" finish and, when closed, give a trim, wall-safe appearance.

We also make a West Wind Junior for ceiling or under-cupboard installation.



No. 101—Assembly complete with telescoping sleeve for wall of any thickness.

THE VENTAIR EXHAUST FAN

Specially designed for use *in quantities* on apartment or group house projects where walls are uniform and low cost is important. The new model incorporates a modification of the exclusive West Wind removable-for-easy-cleaning feature. Fixed or automatic louvres. Totally enclosed motor with oversize shaft and bearings and special West Wind lubrication. Eight blades. Finished in white or ivory lacquer. Easily installed. Inside door gives wall-safe appearance.



Specifications:

A—¾ in., for siding, shingles or stucco.

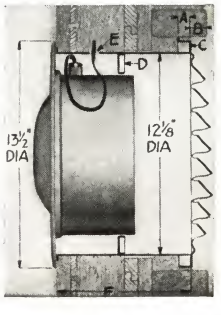
B—1 in., suggested recess in masonry.

C—Face plate 12¾ in. wide, 13½ in. high. To secure in wall grout in mortar or nail against sheeting.

D—Ring for holding sleeve round and to enclose wiring.

E—Knockout for service wire on top, bottom, and both sides.

F—Over-all length of sleeve from face of plaster. In ordering give this dimension.



GOVERNALE BROS., INC.

Manufacturers of Convectors and Radiator Enclosures

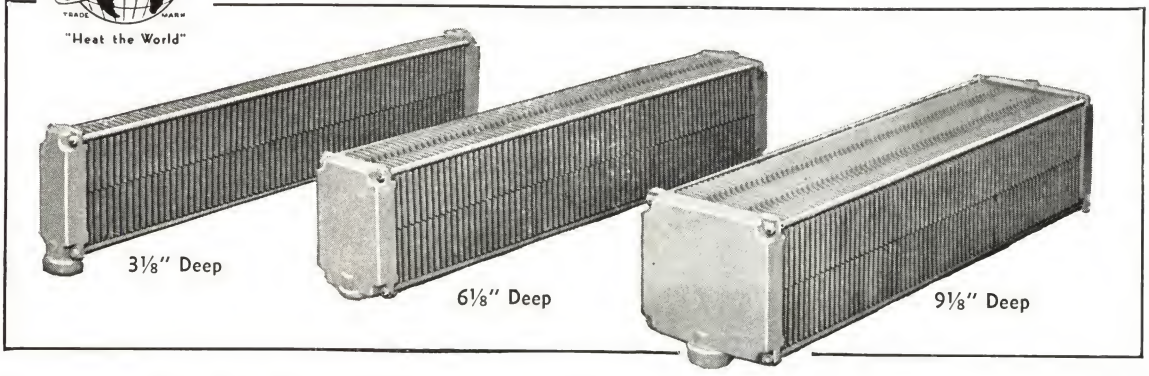
TELEPHONE
ESplanade 7-6441

5510 Avenue N, BROOKLYN, N. Y.

INTERNATIONAL CAST IRON CONVECTORS

For Steam, Vapor and Hot Water Systems

"Heat the World"



The International Cast Iron Convector has been designed on the same basic theories as the present International Toncan Convectors. These have been proven successful and efficient through many years of operation on all types of systems.

The patented tube has been retained in the cast iron core to give maximum capacity with a minimum air resistance through the convector.

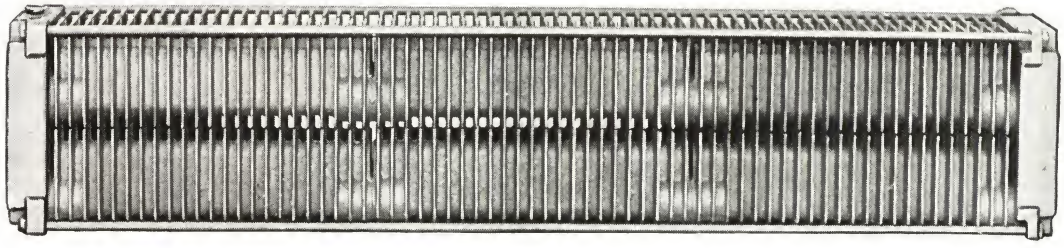
The cast fins are tapered, set vertically and spaced at the most efficient distance, to permit free air travel through the unit.

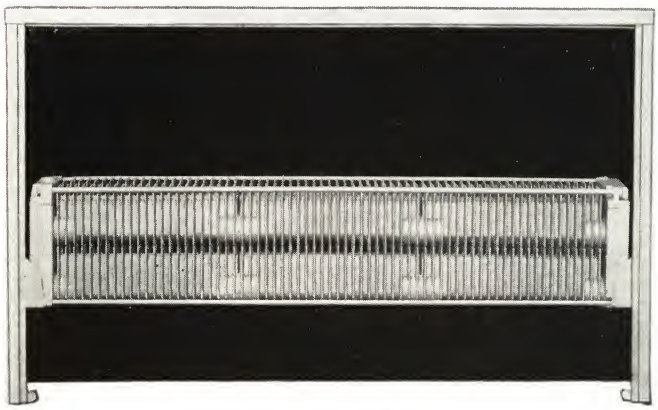
The double tier core gives a large internal volume, and develops a long fin area for the heating transfer surface.

The use of one material, cast iron, insures even expansion and contraction. The method of assembly, with full-length tie rods and slip nipples between sections, makes the convector into one integral unit.

International Cast Iron Convectors Are Made in Three Sizes

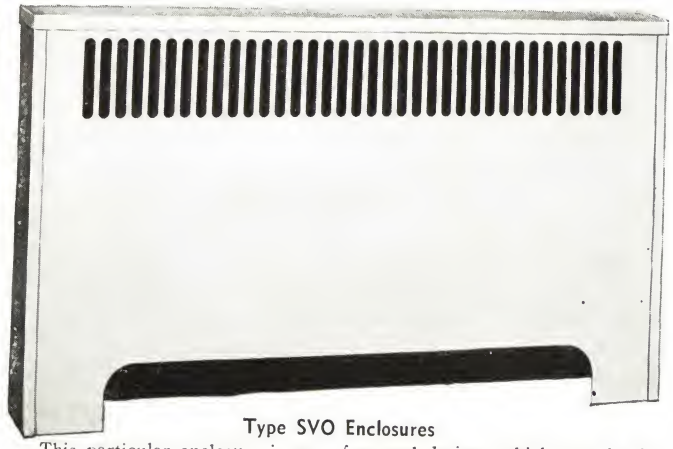
Three depths are available. The 3⅛ in. unit is designed mainly for plaster front treatment and allows sufficient room for insulation in stud depth. The 6⅛ in. unit with a panel front enclosure, comes even with the baseboard and can be trimmed in accordingly. The 9⅛ in. unit is generally used where a large amount of radiation is needed when the window length is limited.





Convector in Typical Enclosure

The unit rests on brackets which are welded to the cabinet. The tappings are located so that swing connections can be made above the floor and the space below the unit is unobstructed.

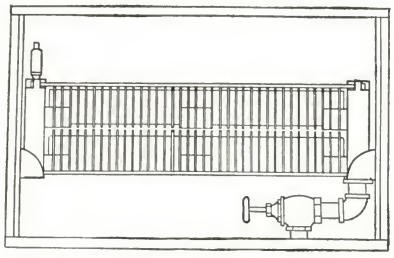


Type SVO Enclosures

This particular enclosure is one of several designs which may be furnished. The front panel is lock type, of 16-gauge steel and re-inforced with angles at top and bottom. The sides of the lining are depressed so that the panel is flush when set in place.

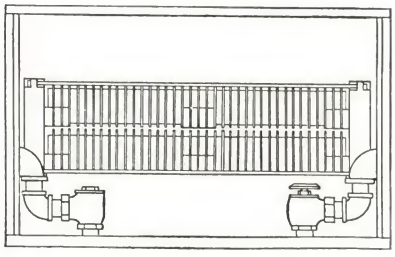
Applications of International Cast Iron Convectors

ON ONE PIPE SYSTEMS



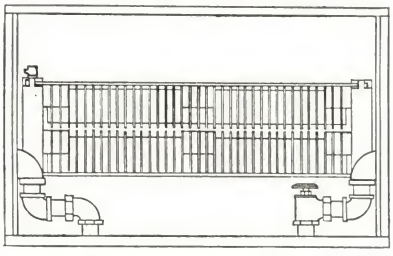
On one pipe steam systems, the convector valve is recommended for a simple supply connection. A straight air valve may be used, since this tapping is on top of the header.

ON TWO PIPE SYSTEMS



On two pipe vapor jobs, the regular angle valve and trap fit in conveniently if the stubs are brought through the floor 6 in. in from each end of the convector.

ON HOT WATER SYSTEMS

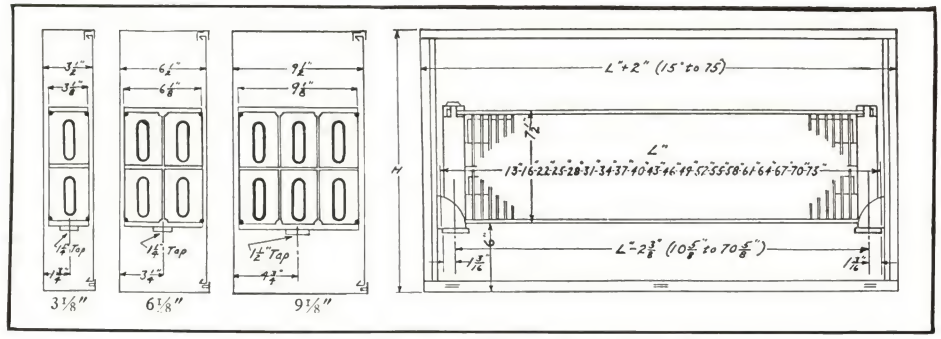


This Convector may be used on circulating hot water systems because it has a large internal volume and high fins to give a long heating surface. The regular hot water valve, coupling elbow and key air valve may be used.

Computing Radiation for Hot Water Systems

In computing the amount of radiation necessary for hot water systems, the following table may be used:

215 degrees	240 B.t.u.
210 degrees	230 B.t.u.
200 degrees	210 B.t.u.
190 degrees	190 B.t.u.
180 degrees	170 B.t.u.
170 degrees	150 B.t.u.



Roughing Dimensions of International Convectors

RADIATION SCHEDULE IN EQUIVALENT OF DIRECT RADIATION

These ratings are based on laboratory tests by the steam condensation method in accordance with the requirements of the standard convector test code of the A. S. H. & V. E. Values are stated in terms of one pound steam operating pressure and 65° inlet air.

Stock No.	Unit length	Cabinet length	20" H Cabinet	22" H Cabinet	24" H Cabinet	26" H Cabinet	29" H Cabinet	32" H Cabinet	35" H Cabinet
3⅛ in. Deep—International Cast Iron Convectors									
313	13"	15"	5.5	5.5	6.0	6.0	6.0	6.5	6.5
316	16"	18"	7.0	7.0	7.0	7.5	7.5	8.0	8.0
322	22"	24"	10.0	10.0	10.5	10.5	11.0	11.5	11.5
325	25"	27"	11.5	11.5	12.0	12.0	12.5	13.0	13.0
328	28"	30"	13.0	13.5	13.5	14.0	14.0	15.0	15.5
331	31"	33"	14.5	14.5	15.0	15.5	16.0	16.5	17.0
334	34"	36"	16.0	16.5	17.0	17.0	17.5	18.0	18.5
337	37"	39"	17.5	18.0	18.0	18.5	19.0	20.0	21.0
340	40"	42"	19.0	19.5	19.5	20.0	21.0	21.5	21.5
343	43"	45"	20.0	21.0	21.5	22.0	22.5	23.0	23.5
346	46"	48"	21.5	22.5	23.0	23.5	24.0	25.0	25.5
349	49"	51"	23.0	24.0	24.5	25.0	26.0	26.5	27.5
352	52"	54"	25.0	26.0	26.5	27.0	27.5	28.5	29.0
355	55"	57"	26.0	27.5	28.0	28.5	29.0	30.0	30.5
358	58"	60"	27.5	28.5	29.0	30.0	31.0	32.0	32.5
361	61"	63"	29.5	30.5	31.0	31.5	33.0	34.0	34.5
364	64"	66"	31.0	32.0	32.5	33.0	34.0	35.0	36.0
367	67"	69"	32.5	33.0	34.0	34.5	36.0	37.0	38.0
370	70"	72"	34.0	35.0	35.5	36.5	38.0	39.0	40.0
373	73"	75"	36.0	36.5	37.0	37.5	39.0	40.0	41.0
6⅛ in. Deep—International Cast Iron Convectors									
613	13"	15"	9.5	9.5	10.0	10.0	10.0	10.5	11.0
616	16"	18"	12.0	12.5	12.5	12.5	13.0	13.5	14.0
622	22"	24"	17.0	17.5	18.0	18.5	19.0	19.5	20.0
625	25"	27"	19.5	20.0	20.5	21.0	21.5	22.0	23.0
628	28"	30"	22.0	22.5	23.0	23.5	24.5	25.0	26.0
631	31"	33"	24.5	25.0	25.5	26.0	27.0	27.5	28.5
634	34"	36"	27.5	28.0	28.5	29.0	30.0	31.0	31.5
637	37"	39"	30.0	30.5	31.5	32.0	33.0	34.0	35.0
640	40"	42"	32.0	33.0	34.0	35.0	36.0	37.0	38.0
643	43"	45"	34.0	35.0	36.0	37.0	38.0	39.0	40.0
646	46"	48"	37.0	38.0	39.0	40.0	41.0	42.0	43.0
649	49"	51"	40.0	41.0	42.0	43.0	44.0	45.0	46.0
652	52"	54"	42.5	43.5	44.5	44.5	47.0	48.0	49.0
655	55"	57"	45.0	46.0	47.0	48.5	50.0	51.0	52.0
658	58"	60"	47.5	48.5	49.0	50.5	52.0	53.5	55.0
661	61"	63"	50.5	51.0	52.0	53.0	55.5	56.5	57.5
664	64"	66"	53.0	54.0	55.0	56.0	58.0	59.0	61.0
667	67"	69"	55.0	56.0	57.0	58.0	60.0	62.0	64.0
670	70"	72"	57.5	59.0	60.0	61.5	64.0	65.0	66.5
673	73"	75"	60.0	61.5	63.0	65.0	67.0	68.0	69.5
9⅛ in. Deep—International Cast Iron Convectors									
913	13"	15"	13.0	13.5	14.0	14.5	14.5	14.5	15.0
916	16"	18"	16.5	17.0	17.0	17.5	17.5	18.0	18.5
922	22"	24"	23.5	24.0	24.5	25.0	25.5	26.0	26.5
925	25"	27"	27.0	28.0	28.5	29.0	29.5	30.0	30.5
928	28"	30"	30.5	31.0	31.5	32.0	32.5	33.0	33.5
931	31"	33"	34.0	34.5	35.5	36.0	36.5	37.0	37.5
934	34"	36"	37.0	38.5	39.0	40.0	40.5	41.0	42.0
937	37"	39"	41.0	42.0	42.5	43.5	44.0	44.5	45.0
940	40"	42"	45.0	45.5	46.5	47.0	47.5	48.0	49.0
943	43"	45"	48.0	49.0	50.0	51.0	52.0	52.5	53.0
946	46"	48"	51.0	52.5	53.5	54.5	55.5	56.0	57.0
949	49"	51"	54.5	56.0	57.0	58.0	59.0	60.0	61.0
952	52"	54"	58.5	59.5	61.0	62.0	63.0	63.5	64.0
955	55"	57"	61.5	63.0	64.5	65.5	66.5	67.0	68.0
958	58"	60"	65.5	67.0	68.5	69.5	70.5	71.5	72.5
961	61"	63"	68.5	70.5	72.0	73.0	74.5	75.0	76.0
964	64"	66"	72.0	74.0	76.0	77.0	78.0	79.0	80.0
967	67"	69"	76.0	78.0	79.0	81.0	81.5	82.5	83.0
970	70"	72"	79.0	81.0	83.0	84.0	86.0	87.0	88.0
973	73"	75"	83.0	85.0	87.0	88.5	90.0	91.0	92.0

Specify System, and Stock Number When Ordering.

FAULTLESS RADIATOR ENCLOSURES

Faultless Radiator Enclosures are custom-built and carefully constructed throughout to meet the most exacting requirements. A very complete line of designs and models is available for both concealed and free-standing radiation and a well equipped shop enables us to give prompt service on special designs to meet individual specifications. Estimates furnished promptly.

MEMORANDA

MODINE

Heating, cooling and air conditioning equipment for residential, commercial and industrial application



MODINE MANUFACTURING CO.
RACINE • • • WISCONSIN

BULLETIN SA-39



MODINE

HEATING, COOLING AND AIR CONDITIONING EQUIPMENT

For Residential, Commercial and Industrial Application

Behind Modine Equipment lies twenty-two years of experience in the design, manufacture and sale of heat transfer equipment. Millions of pieces of Modine equipment produced in this twenty-two-year-period and distributed to all parts of the globe, provide a tremendous "proving ground," so necessary in the development of superior products.

It is with this background of research, experience, development and facilities that the Modine products are offered to the architect, contractor, and engineer.

Arthur B. Modine, founder of the company, is an engineer as well as a manufacturer. His work in the development of automotive radiators and industrial heating equipment serves as a background for the larger line of Modine products now known nationally. His belief in the necessity of well-equipped experimental laboratories has played a large part in the design of Modine products.

It was Modine who pioneered the suspended-type unit heater for industrial and commercial heating . . . now accepted, used and endorsed by the most prominent architects, heating engineers and industrialists in the United States.

The use of copper and copper alloys plays an important part in the durability of every Modine product. Because Modine purchases millions of pounds of copper and its alloys each year, unusual precautions are taken in securing only that copper which fully meets Modine specifications. These coppers and copper alloys are carefully tested, both chemically and mechanically, in the Modine laboratories. This assurance that only the highest quality of metal, free from impurities, is being used in Modine products, is significant to every heating engineer. It means that the possibility of hidden flaws is reduced to a minimum.

All ratings of Modine heat transfer equipment are accurate and in accordance with the Standard Code of the A.S.H. & V.E., assuring the architect and engineer of full rated Btu. capacities.

Nation-wide Sales Organization—There is a Modine Representative in your locality (see list on back cover of this catalog). Every Modine Representative is a competent heating engineer and will be happy to assist you. Naturally, there is no obligation whatever.

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MODINE MANUFACTURING COMPANY
GENERAL OFFICES • RACINE, WISCONSIN

Sales offices throughout the United States and in several foreign countries—see list on back cover.

MODINE COPPER RADIATION

For over a decade, Modine Copper Radiation (Convectors) has been specified as standard heating equipment for America's finest buildings and residences.

As a pioneer manufacturer of copper convectors, the Modine Manufacturing Company contributed much to the wide-spread preference for this type of heating equipment . . . and to the consequent comfortable living conditions which convectors provide.

Recognizing the varied requirements and applications of convector heating, Modine now makes available *the widest selection of copper radiation* . . . three distinct and separate lines . . . each designed for a specific purpose.

The design and construction characteristics as well as the suggested applications of the *Deluxe, Standard* and *Institutional* convectors are outlined on this and following pages.

MODINE *De Luxe* CONVECTORS

Modine *Deluxe* Convectors are designed for use where truly distinctive beauty of enclosure is essential. Strikingly styled enclosures, graceful of line and pleasingly proportioned . . . and the wide selection of cast grille patterns which Modine *patented flexible design* makes possible, give Modine *Deluxe* Radiation a beauty of appearance that blends harmoniously with the decorative schemes of the finest interiors.

Grilles on the Modine *Deluxe* Convectors are die-castings, nearly a quarter of an inch thick at their shallowest point and are cast in four designs of *individual segments.* By inserting the separate interchangeable segments in the grille frame the number of grille patterns which can be created through the combination of the four elementary designs shown below is limited only by the versatility of the architect.

Grilles can be obtained prime-painted or in plated finishes such as 24k Gold, Polished Chrome, Colonial Brass, Statuary Bronze or Antique Silver.

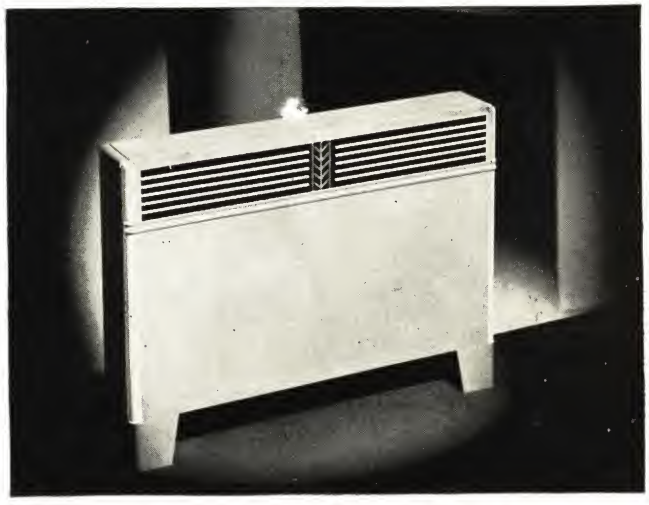
THERE ARE 4 TYPES OF MODINE DE LUXE CONVECTORS

The Modine Concealed Type—The Modine Concealed Type Convector is perhaps the most popular of the four types of Modine Convectors. It is truly the ultimate in concealed radiation. The only visible parts are the grilles—everything else about the assembly being installed in the wall, *behind the plaster.*

The Modine Recessed Type—This convector is installed *in the wall* and is designed to serve the same general applications as the Concealed Type. However, it has several distinct and important features.

The Recessed Type does not require plastering across its face . . . and it occupies less space in the wall than any of the other types.

The Modine Floor Cabinet Type—In the modernization of already existing buildings, as well as in those being newly constructed, the Modine Floor Cabinet Type Convector has a wide range of application.



Floor Cabinet with Modern Medallion Grille

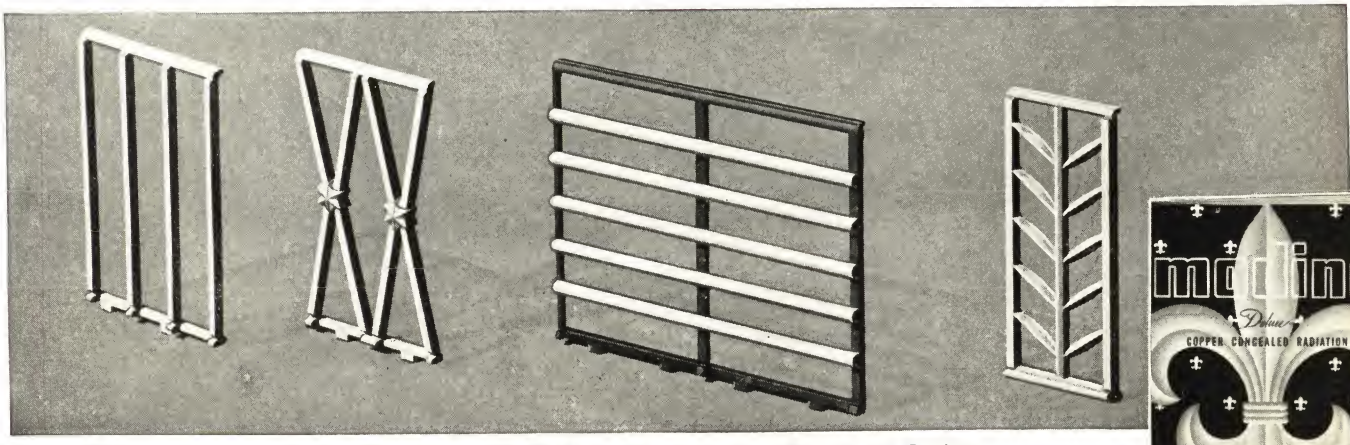
Designed primarily for open installation in a room . . . because it is generally placed *against the wall,* rather than in it . . . the Floor Cabinet Type ideally fits modernization plans in which it is not desired to disturb the wall construction already in existence.

The Modine Wall Cabinet Type—The Modine Wall Cabinet Convector has found its widest range of application in institutional and commercial fields. Designed for installation *on the wall,* it is an ideal type for offices, stores, schools, hospitals and other public or semi-public institutions of all sorts, where recessing is not practicable and easy cleaning of floors is imperative.

Range of Sizes and Capacities

SIZES:
Five Depths—3⅝ in., 5½ in., 7⅜ in., 9¼ in. and 11⅛ in.
Twelve Lengths—From 15 in. to 60 in.
Thirteen Heights—From 18 in. to 70 in.

CAPACITIES:
From 8.7 to 139.7 sq. ft. of radiation.



Interchangeable Grille Segments in Four Elementary Designs



For Further Details WRITE FOR CATALOG No. S238 ▶

MODINE *Standard* CONVECTORS

The new Modine *Standard* convector is intended for application where the economies that are effected by simplification and standardization of design can be employed to advantage. As a result, the most popular applications for this new convector are in stores, offices, hotels and other commercial buildings and in apartments and moderate cost, single family dwellings.

Because of the economies resulting from its simplified design, the benefits of steam and hot water heating with Modine copper convectors can be enjoyed at a new low cost.

The new Modine *Standard* convectors are as handsome in appearance as they are sturdy in construction. The design of the enclosure gains from its rounded corners a genuinely smart yet rugged appearance which harmonizes perfectly with modern interior decoration schemes.

Removable Front Feature—One of the outstanding features of the Modine *Standard* convector is its removable front. No tools are required. By simply disengaging two catches with the hands, the entire enclosure front may be easily removed for accessibility for cleaning, or for servicing the copper heating unit and its piping. When installed, the front fits snugly to the enclosure, assuring a rigid, sturdy assembly. The desirability of this feature has been definitely evidenced by its wide-spread demand over a period of years, particularly for commercial buildings.

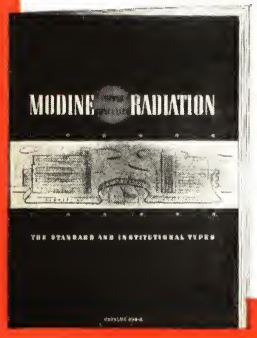
TYPES OF ENCLOSURES ON MODINE STANDARD CONVECTORS

The drawings at right show the differences in design of the available types of Modine *Standard* Convectors.

Flush Front—This type adheres to the conventional design of Recessed enclosure. The front is perfectly flat and is installed flush with the finished wall, occupying no floor space whatsoever. When painted to match the wall or properly grained to match the woodwork, this convector affords a high degree of concealment.

The depth of heating unit which this enclosure will accommodate is determined by the distance from the finished plaster line to the rear of the enclosure.

Panel Front—To accommodate a heating unit of a depth greater than that between finished plaster line and the rear of the enclosure, Modine designed the Panel Front Recessed convector. With less depth of wall recess, a convector unit of greater capacity can be employed. This is possible because the front projects about 1¾ in. from the wall. Therefore, although the heating unit may be 1¾ in. deeper than the rear half of the enclosure, this difference is accounted for by the slight projection of the front from the wall. This frequently results in lower installation costs where only one convector need be installed in a room where two would otherwise be necessary.



Projection Front—An entirely new principle of recessed convector design is embodied in the Modine Projection Front convector. This convector was developed for installation *in walls of 4 in. stud-depth,* where it is necessary to provide a maximum amount of radiation in a limited wall area.



Floor Cabinet Type Showing Operation of Removable Front

In design principle, the Projection Front type differs from the Panel Front in the following manner: (1) the stack or rear half of enclosure remains 4 in. in depth; (2) the front, however, is available in a 3½ in. or 5½ in. depth. Thus it is possible to install a heating unit of 7⅜ in. or 9¼ in. depth in a wall of only 4 in. stud-depth—with the enclosure front projecting 3½ in. or 5½ in. into the room.

Where this projection into the room is not objectionable, one Modine convector of this type may be used where perhaps two or more conventional convectors would otherwise be necessary.

Floor Cabinet—The Modine *Standard* Floor Cabinet convector is ideally adapted to installation in existing buildings as well as in new construction. Primarily designed for open installation in a room—against a wall rather than recessed in it, this type is often specified for modernization work and where it is not desirable to disturb existing wall construction.

Wall Cabinet—The Modine *Standard* Wall Cabinet convector is most commonly specified for institutional and commercial application. Ideal for school rooms, corridors, offices and stores where recessing is not always practical, this convector is installed on the wall and allows easy cleaning of the floor beneath it.

Like the Floor Cabinet, it is ideally adapted to modernization work where it is not desirable to make changes in existing building construction.

Range of Sizes and Capacities

SIZES:

Five Depths—3⅝ in., 5½ in., 7⅜ in., 9¼ in., and 11⅛ in.

Twelve Lengths—From 15 in. to 60 in.

Eleven Heights—From 18 in. to 44 in.

CAPACITIES:

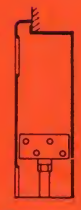
From 8.7 to 125.1 sq. ft. of radiation.

(below)

TYPES OF MODINE ENCLOSURES



Flush Front



Panel Front



Projection Front

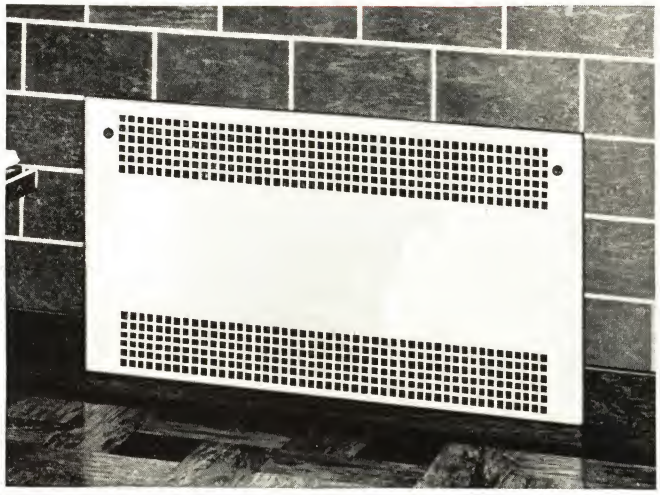


Floor Cabinet



Wall Cabinet

MODINE *Institutional* CONVECTORS



Flush Front Recessed Type

Modine Now Offers a Line of Convectors SPECIFICALLY Designed to Meet the Requirements Of Institutional Heating

For this specialized application, architects and engineers specify equipment which is seldom necessary for commercial and residential heating. Hence, it is not practical or economical to include these institutional "specials" in convectors which are designed primarily for residential or commercial application.

Heretofore these "specials" have been treated as extras and accordingly carried a considerably higher price. In the *Institutional* line, Modine makes these "specials" standard equipment . . . stock items available at only a slight additional cost.

This line includes the Flush Front and Panel Front Recessed types and the Wall Cabinet type. Dimensions are interchangeable with these types in the *Standard* line.

FEATURES OF THE INSTITUTIONAL CONVECTORS

Optional features of the *Institutional* Convectors include such items as the Lock Type Removable Front and Lock Type Damper for use in institutions where tampering with convectors is likely.

For the additional strength and rigidity required for institutional work, these enclosures are made of heavier gauged metals than used in the *Standard* type. Square lattice grilles are standard equipment in this line.

Flush Front and Panel Type Recessed Convectors—These convectors are made with stacks or rear enclosure halves of 18 ga. steel, and fronts of 14 ga. steel (panel front type), or 12 ga. or 14 ga. steel (flush front). These fronts are available with ¾ in. square lattice upper and lower face grilles or with square lattice upper grille and framed lower opening.

Wall Cabinet Convectors—Stacks on rear enclosure halves are made of 18 ga. steel. Fronts are of 14 ga. and tops (where top outlet grille is used) are of 12 ga. steel. Outlet grille may be furnished on face or top of enclosure.

Range of Sizes and Capacities

Same as *Standard* Convectors.

THE NEW "RED-CAP" COPPER HEATING UNIT—of the Modine Convector

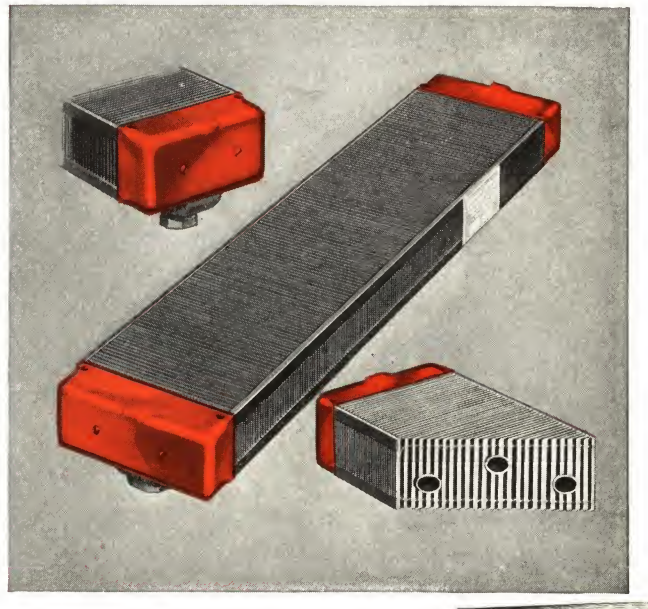
The most important part of any convector is its heating unit. The definite performance advantages of convector heating . . . which are largely responsible for its wide spread acceptance . . . depend to a great extent on the design and construction of the heating unit.

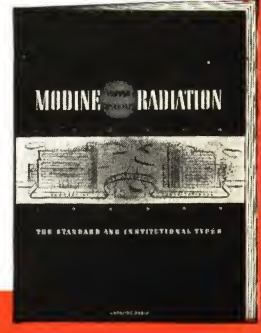
The Modine heating unit is entirely new. Improvements in design and construction have made it more compact than ever before. Although its capacity has been increased, its size and weight have been reduced. Strides have also been taken to streamline this unit, making it much trimmer in appearance. Red metal caps over the end castings make it easy to identify the new Modine "Red-Cap" Heating Unit.

Fins Metallically Bonded to Tubes—Typical of the superior construction of the "Red-Cap" *is the metallic bond* joining fins to tubes. *This positive, permanent junction makes certain that the heat transfer ability of the unit will not deteriorate during its long life of service.*

The Modine "Red-Cap" heating unit may be used on any type of steam system; vapor, vacuum, or one-pipe, and on forced flow or gravity hot water systems. The Red-Cap is available in five depths and twelve lengths. All are the same height—2½ in.

The "Red-Cap" Heating Unit is tested at 100 lbs. hydrostatic pressure and is guaranteed for pressures up to 50 lbs.





For Further Details WRITE FOR CATALOG No. S238-A ▶

MODINE AIR

APARTMENT HOUSE TYPE

An All-Purpose Unit . . . Flexible . . . Accessible . . . Easily Installed

The Modine Air Conditioner (Apartment House Type) is a compact, self-contained unit designed to perform every individual function of true *year-'round* air conditioning. *In winter* it heats, humidifies, cleans and circulates the air. *In summer* it cools, dehumidifies, cleans and circulates the air.

With it Modine provides an automatic, simultaneous control of each separate air conditioning function. A touch of the finger on the Modine all-weather control dial brings the desired climate into any apartment, home, or store . . . with unvarying temperature and the exact relative humidity and air motion which assure maximum health and comfort.

While the Modine Air Conditioner is fundamentally designed as a year-'round air conditioning unit, it is possible to select a unit which gives (a) winter air conditioning only; (b) summer air conditioning only . . . according to needs, climate, and budget. The Modine Air Conditioner for winter air conditioning becomes a year-'round unit by simply adding a cooling coil and, in some cases, supplementary control equipment.

The Modine Air Conditioner uses either steam or hot water as the heating medium. It attaches to any steam or hot water boiler or central steam supply and is adaptable to any kind of automatic firing—oil, gas, or coal stoker; or to hand firing.

FOR APARTMENTS, HOTEL SUITES, RESIDENCES, ETC.

This unit is called the Apartment House Type only because its compactness, easy accessibility, remarkable flexibility of installation, unusually quiet operation and prepossessing appearance ideally suit it for the air conditioning of individual apartments, hotel suites and the like. But it is these same important features that make it equally well adapted to residential and light commercial air conditioning.

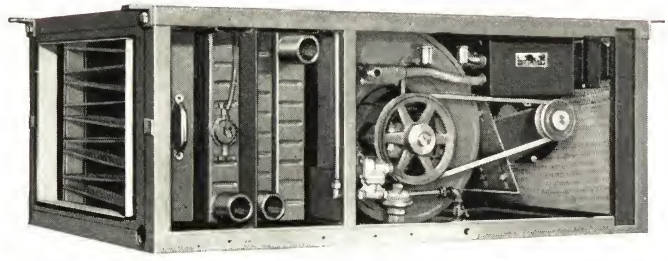




A Model 74 installed in a basement recreation room . . . in conjunction with a hot water boiler. Ducts supply conditioned air to living quarters.



Model 74



Model 74 with Access Doors Removed

So carefully designed is this Modine unit that it may be installed so that only one side need be exposed. The rest of the cabinet (the entire top, bottom, ends, and opposite side) may be installed flush with the adjoining surfaces—wall, ceiling, or supporting shelf. The ends, moreover, need not be accessible after original installation.

Through access doors on the one exposed side, motor and blower, control panel, water valves, heating and cooling coils, and humidifier tray are all quickly and easily accessible. Piping and conduit connections are likewise made from this same side and through one end.

Thus filter replacement, control adjustment, removal of humidifier tray, or addition of cooling coil may be made without in any way disturbing the unit itself.

This distinctively Modine design feature . . . together with the fact that the motor and motor drive are completely enclosed within the cabinet, instead of protruding . . . allows this Modine Conditioner to be easily installed on a shelf above a false ceiling in a closet or hallway.

RANGE OF CAPACITIES (These capacities are based on 0" External Resistance)

	HEATING 2 lb. Steam 65° Ent. Air		HEATING 180° Ent. Water 65° Ent. Air		COOLING 50° Ent. Water 85° D.B. Ent. Air		COOLING 40° Freon 85° D.B. Ent. Air	
MODEL	BTU	CFM	BTU	CFM	BTU	CFM	BTU	CFM
S-74-DE W-74	60,500	845	60,500	925	17,500	805	23,500	845
S-155-DE W-155	130,000	1560	129,000	1720	39,500	1720	46,200	1560

NOTE: The above are a few typical models to illustrate the range of capacities.

◀ For Further Details WRITE FOR BULLETIN No. S638-B

CONDITIONERS

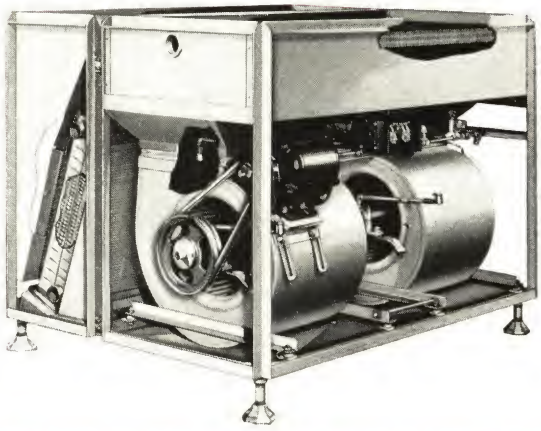


Model 258

Below:

Model 391

with access doors removed and portions cut away.



LARGE CENTRAL TYPE

Modine Automatic Air Conditioning with SYNCHRONOUS CONTROL

Like the unit described on the preceding page, the Modine Large Central Type Air Conditioner performs every individual function of true year-'round air conditioning . . . automatically . . . with synchronous control. In the winter it heats, humidifies, cleans and circulates the air. In the summer it cools, dehumidifies, cleans and circulates the air.

Although the Large Central Type has been designed as a year-'round unit, it is possible to select a model which will provide (a) winter air conditioning only; (b) summer air conditioning only. By simply adding a cooling coil and controls to a winter air conditioner, it becomes a year-'round unit.

A High Capacity Unit—The high heating, cooling and air delivery capacities of this line of conditioners adapts them to the air conditioning of large residences, stores and offices. Ordinarily installed in a basement in conjunction with a steam or hot water boiler, the conditioned air is distributed to the rooms by means of ducts.

Heating and Cooling Media—For winter air conditioning, either steam or hot water serves as the heating medium. In the summer, well water, tap water where sufficiently cold, water pre-cooled by mechanical refrigeration, or Freon may be used for cooling.

CONSTRUCTION FEATURES OF THE LARGE CENTRAL TYPE

The Frame and Cabinet—All component parts of the Modine Conditioner are built into a rigid, electrically welded, heavy angle-iron framework and entirely enclosed in a steel housing. The interior surfaces of the steel trim sheets that form the enclosure cabinet are lined with a layer of sound-absorbing felt which acts as an insulator to eliminate vibration and noise. The exterior surfaces are finished in an attractive green enamel.

The Blower—The quiet, efficient blower which circulates the air is of the double-inlet, centrifugal type, with large diameter wheel, and scroll housing, lined with sound-absorbent felt. The entire assembly is cushioned with live resilient rubber and suspended at four points. This type of suspension prevents transmission of vibration or sound to either the frame or ducts.

The Humidifier—Humidification is accomplished by means of a spray nozzle capable of providing high atomization, which is located in the humidifying chamber, between the blower and the coils. Water from the normal water supply is passed through a strainer and an electric water valve to the spray nozzle and is forced into the chamber as a mist.

Heating and Cooling Coils—All heating and cooling coils are of Modine design and manufacture whether they be for steam or hot water heating or for cold water or direct expansion cooling. All are of the copper fin and tube type, designed to transfer a great amount of heat quickly, with a minimum of air resistance. Tubes, fins, and tanks as well as inlet and outlet castings are of copper or copper alloy. This eliminates probabilities of deterioration by electrolysis.

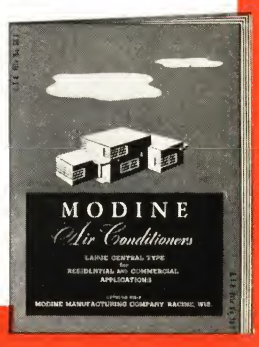
The Air Filters—The air filters are large area pads of glass wool, impregnated with a viscous coating, and are placed transversely and diagonally to the air flow on the intake side of the conditioner cabinet. The filters are of the removable type and can be easily removed for periodic "bumping-off" of any adhering dirt or lint.

Models—The large Central Type Conditioners are available in two sizes, the Model 258 and the Model 391. These models are available with various combinations of steam or hot water heating coils and cold water or Freon cooling coils. The table below shows the capacities of several combinations. Further information on the complete line can be had from the catalog.

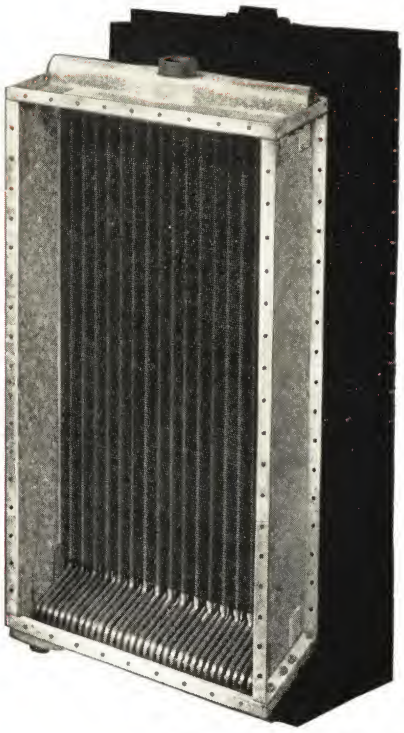
RANGE OF CAPACITIES (These capacities are based on 0" External Resistance)

MODEL	HEATING 2 lb. Steam 65° Ent. Air		HEATING 180° Ent. Water 65° Ent. Air		COOLING 50° Ent. Water 85° D.B. Ent. Air		COOLING 40° Freon 85° D.B. Ent. Air	
	BTU	CFM	BTU	CFM	BTU	CFM	BTU	CFM
S-258-DE	240,000	2320					60,000	2450
W-258			220,500	2650	61,250	2650		
S-391-DE	369,000	3580					104,000	4220
W-391			307,000	3900	87,300	3900		

NOTE: The above are a few typical models chosen to illustrate the range of capacities.



MODINE



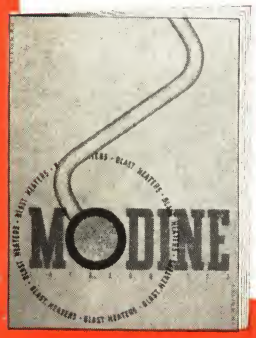
MODINE BLAST HEATERS

Modine Blast Heaters have been chosen by leading architects and engineers for many of the nation's finest buildings . . . and for more than a decade they have been used by makers of various drying and processing machines and air conditioning equipment.

Among the salient features incorporated in the design of this heat transfer surface are greater structural strength without sacrificing light weight . . . highly effective heat transfer capacity and the ability to handle larger volumes of air at low static pressure loss . . . ease and economy of installation . . . accurate, reliable ratings. These features make the Modine Blast Heater capable of meeting the most exacting engineering requirements. Whether used for heating, ventilating, air conditioning, or special process application, they will be found to register a definite contribution to the system.

Sizes and Types of Blast Heaters—Modine Blast Heaters are made in three casing-widths: 21¼ in., 29 in. and 37¾ in.; and thirteen lengths ranging from 2 ft. 8½ in. to 10 ft. 8½ in. All sizes are available in the following seven types: 1 row of tubes, 3 fins per in.; 1 room, 4 fins; 1 row, 6 fins; 1 row, 7 fins; 1 row, 8 fins; 2 rows, 6 fins; 2 rows, 8 fins. These types are known as 36, 44, 57, 64, 72, 93 and 109 respectively. Type numbers designate final temperature based on entering air at 0° F., velocity at 500 F.P.M. and a steam pressure of 5 pounds.

Pressure Guarantee—All Modine Blast Heaters are guaranteed to withstand hydrostatic pressure up to 500 lbs. per sq. in. or operating steam pressure or temperature corresponding to those of 150 lbs. per sq. in. gauge saturated steam.



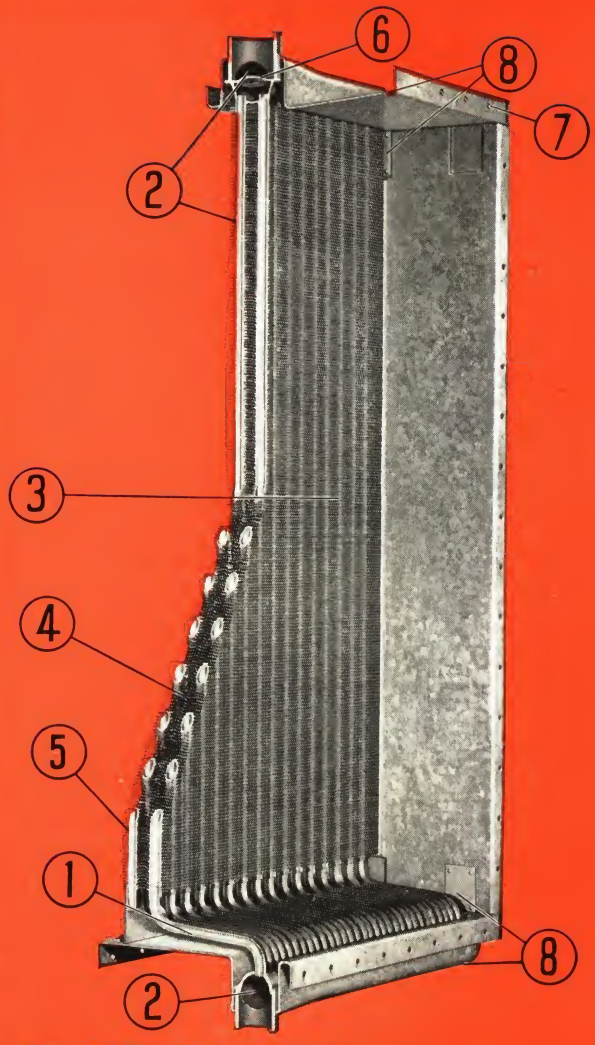
MODINE COOLING COILS
(Cold Water Type)

The latest information on Modine (Cold Water Type) Cooling Coils was not compiled when this bulletin went to press. As soon as this material is assembled, it will be made available to all architects, engineers and contractors.

BLAST HEATERS

THE 8 DESIGN FEATURES

1. **Modine Feature Eliminates Expansion Strain**—The expansion-bend, an exclusive Modine feature . . . allows each tube to expand and contract as its temperature requires without affecting the tube adjacent to it . . . eliminates expansion strain as well as possibility of leakage resulting from this strain.
2. **Headers and Tubes Are Cylindrical**—All steam carrying passages are cylindrical, making for greatest possible structural strength.
3. **Condenser Is Pure Copper or Copper Alloy**—From inlet to outlet, condenser is of copper or copper-alloy construction . . . eliminating all electrolysis probabilities.
4. **Fins Scientifically Formed**—Copper fins are die-formed (covered by Modine patents) to increase heat transfer efficiency.
5. **Fins Bonded Metallically to Tubes**—Metallic bonding insures a permanent junction that remains intact even under high temperatures and years of operation . . . prevents reduction of original heat transfer capacity.
6. **Steam Distributed Evenly to All Tubes**—Steam distributing plate brazed into header rations steam evenly to all tubes . . . eliminates need for orificing.
7. **Casing Designed for Easy Installation**—Sturdy steel casing contributes strength to blast heater and provides for easy and economical installation in any normal operating position.
8. **Piping Strain Absorbed by Casing**—All external piping strain is absorbed by casing instead of being transmitted to copper condenser.



For Further Details WRITE FOR CATALOG No. S338

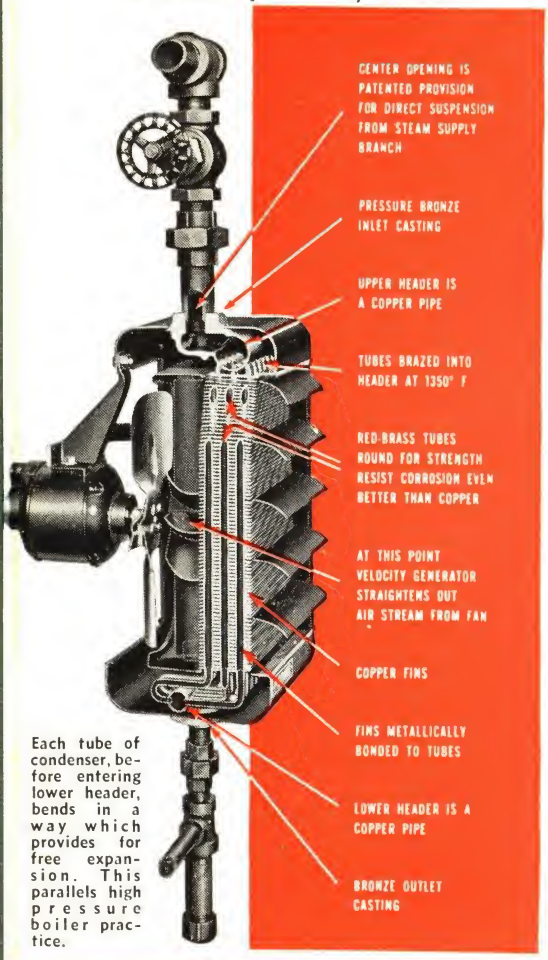
MODINE UNIT HEATERS

Modine pioneered the suspended type of unit heater so universally used for all types of industrial and commercial heating . . . and for drying and processing applications. Modine Unit Heaters will be found in factories, stores and offices in almost every city in the country. This year as in previous years, more Modines are sold than any other unit heater in the world. This enviable record has been achieved through Modine's superior construction and performance and through such Modine features as are described below.

NOTE THESE DISTINCTIVE CONSTRUCTION FEATURES

1—Direct Suspension—This allows the Modine Unit Heater to be hung directly from the supply line without supporting straps or rods, permitting full 360° rotatability. This safe, easy means of support reduces installation costs and greatly simplifies redirection of the unit. *This is a Modine patented feature.*

2—Expansion Bend—Provides for individual tube expansion and prevents tube or tank distortion. After each tube passes vertically through the condenser, it bends and extends horizontally into the bottom tank. This horizontal section acts as a "flexion" or expansion bend. Each tube can expand or contract entirely independently of similar action taking place in adjacent tubes. *This is a Modine patented feature.*



Each tube of condenser, before entering lower header, bends in a way which provides for free expansion. This parallels high pressure boiler practice.

3—Velocity Generators—Provide greater heat throw, more even and economical distribution of heat without increasing power requirements. *This is a Modine patented feature.*

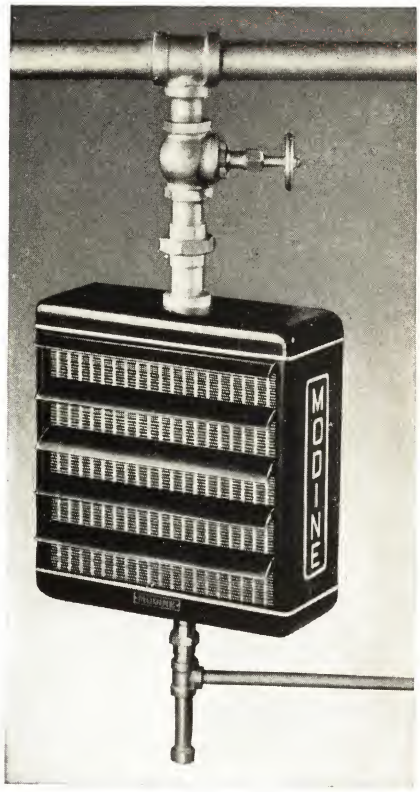
4—Non-Ferrous Condenser—Condenser is pure copper or copper alloy from point where steam enters to where it leaves as condensate. This construction reduces to a minimum, probabilities of electrolysis and corrosion in the condenser.

5—Metallic Bonding—Fins are metallically bonded to tubes to prevent gradual deterioration of heat transfer during the unit's long life of service.

THERE ARE TWO TYPES OF MODINE UNIT HEATERS

1. Steam Type Available in 17 Models—This unit has a condenser designed with cylindrical copper headers, cylindrical red-brass tubes and the Modine expansion bend which provides differential expansion of the tubes. The ratio of primary or tube surface to secondary or fin surface is 1 to 8. All Modine Steam Type Unit Heaters are guaranteed for operation on 150 lbs. steam pressure, with the exception of Model 76 which is guaranteed for 50 lbs. Higher pressure guarantees on models other than No. 76 will be made on special request to the factory.

2. Hot Water Type Available in 9 Models—Because of the decreased temperature difference between entering air and the heating medium (when hot water is used) Modine Hot Water Type Unit Heaters



are designed with a ratio of tube to fin surface of 1 to 3 (steam type is 1 to 8). Oval instead of round tubes are used by reason of the high water turbulence within such tubes compared with round tubes.

The heavy gauge copper headers are capable of absorbing very easily the slight strains set up by tube expansion and contraction caused by comparatively low temperature differences in a hot water system. All Modine Hot Water Type Unit Heaters are guaranteed for operation on 150 lbs. per sq. in. hydrostatic pressure with the exception of Model 73-W which is guaranteed for 50 lbs.

Wide Range of Sizes Available—Modine Unit Heaters are offered in a wide range of steam and hot water sizes from the Model 76 (76 sq. ft. of radiation) to Model 2015 (2015 sq. ft. of radiation). Intermediate sizes facilitate the economical application of Modine units to heating problems of every description.

CONDENSED CAPACITIES AND DIMENSIONS
Modine Steam Unit Heaters

Model No.	Overall Height	Width	Depth Less Motor	E.D.R.	C.F.M.	Motor R.P.M.
76	10½	9¾	5¾	76	187	1550
126	16	13	8	126	456	1590
152	18	15	8	152	540	1590
181	18	15	8	181	770	1140
204	18	15	8	204	735	1140
238	18	15	8	238	731	1140
275	19½	13	9	275	1052	1140
352	22½	18	9	352	1425	1140
440	22½	18	9	440	1320	1140
542	23	22	9	542	1710	1125
620	26½	22	9	620	2140	1120
710	26½	22	9	710	2230	1120
903	27⅞	26	10½	903	3000	1125
1163	30⅜	26	10½	1163	4050	1110
1300	34⅜	26⅜	8	1300	5010	1125
1545	30⅛	52½	11	1545	5400	1125
2015	30⅝	56½	11	2015	6540	1110

All above models are available with variable speed motors. Capacities for hot water units available on request.



MODINE UNIT

BLOWER TYPE . . . . . .



The New, Efficient Modine Unit Cooler

The new Modine Blower Type Unit Cooler is designed primarily for the effective and economical comfort cooling of stores, restaurants, beauty shops, offices and similar commercial establishments. In addition to cooling, it filters and cleans the air, absorbs excessive moisture and creates a positive air circulation . . . thus providing practically every individual function of summer air conditioning . . . yet costing only slightly more than an ordinary unit cooler which only cools the air. The exceptionally deep cold water cooling coils employed in this unit cooler makes it unusually effective, when used with deep well or tap water.

CONSTRUCTION FEATURES OF THE MODINE BLOWER TYPE COOLER

Permits Use of Ductwork—Because the fan on the New Modine Unit Cooler is of the blower type, it has greater capacity for overcoming external resistance than the propeller type fan used in the conventional coolers. Thus the use of ducts is entirely practical and results in less reduction of cooling capacity.

May Be Entirely Concealed—The design of the new Modine cooler allows it to be completely concealed after installation. The unit may be installed in a rear room, above a false ceiling or shelving . . . or in any other convenient location. As all access to the unit and its component parts is from one side of the cabinet, it may be installed with top, opposite side (opposite to access doors) and bottom flush with adjoining surfaces. Where it is unnecessary to conceal the unit, nor desirable to install duct work, the cooler may be suspended from the ceiling and installed without supply and return ducts.

Quiet Operation—Every precaution has been taken to provide the quietest operation possible. The unit has a slow speed blower lined with sound absorbent felt. This acoustically treated material is also used to line the entire interior of the cabinet. The motor is enclosed within the cabinet rather than mounted on the outside and is mounted on rubber cushions.

Attractive Appearance—The Modine Unit Cooler cabinet . . . containing all component parts, is finished in a soft shade of green enamel which contrasts perfectly with the aluminum-finished trim strips. When installed in open view (suspended from the ceiling), this unit will adapt itself to modern commercial decorative schemes.

Cooling Coils—Modine Unit Coolers are available for operation with both cold water and direct-expansion (Freon) types of cooling coils, a separate design of coil, being used for the different mediums.

The cold water cooling coils are designed for use with tap water, well water, non-corrosive brine or water precooled by ice or mechanical refrigeration. The direct expansion cooling coils are intended for operation with Freon only.

Range of Capacities—Modine Unit Coolers (Blower Type) are available in two models: Model 35 and Model 68. The model numbers designate the heat absorption capacity in thousands of B.t.u. per hour with 40° F. average water temperature and 85° F. entering air temperature. Thus a Model 68 under these conditions has a heat absorption capacity of 68,000 B.t.u. per hour.

When these Blower Coolers are equipped with a direct expansion type coil for Freon, they are known as Model 35-DE and Model 68-DE.

RANGE OF CAPACITIES (These capacities are based on 0″ External Resistance)

	COLD WATER 50° Ent. Water 85° D.B. Ent. Air		FREON 40° Refrigerant 85° D.B. Ent. Air	
MODEL	BTU	CFM	BTU	CFM
35-CW*	23,300	925		
35-DE			21,000	905
68-CW†	44,000	1725		
68-DE			47,000	1720

*Capacity based on 40 lbs. water flow/min.
†Capacity based on 60 lbs. water flow/min.



In this restaurant, the Unit Cooler is installed above a false ceiling. Ducts and unit are entirely concealed.



Suspended from the ceiling of this grocery store the Modine Unit Cooler is installed without supply and return ducts.

For Further Details WRITE FOR BULLETIN No. S438-A

COOLERS

PROPELLER TYPE

The Propeller Type Is Used for Economical Cooling with Cold Water



The new Modine Unit Cooler offers a simple yet effective method of cooling by the circulation of cold water. Suspended in a room, like the Modine Unit Heater, it is equipped with a motor and fan which draws the room air through the unit, absorbing heat and moisture and returning cooled and freshened air into the room.

Installation of the Modine Unit Cooler is quickly and easily accomplished . . . without the use of duct work . . . without disturbing existing construction or interior decorations . . . without costly alterations . . . and without the necessity of closing the premises or halting regular operation.

ADAPTABLE TO ALL-YEAR ROUND UTILITY

Adaptable to All-Year-Round Utility—Because Modine Unit Coolers, Cold Water Type, approximate the construction of the well-known Modine Hot Water Unit Heaters, they can be adapted to all-year-round utility. New developments in design which eliminate the use of a moisture eliminator make it unnecessary to go to the trouble of removing this device before using the unit for heating.

During the heating season, hot water or low pressure steam can be circulated through the unit with equally satisfactory and efficient heating results. In new buildings, the same equipment can thus be employed all-year-round for both complete heating and cooling. In existing buildings with heating plants already installed, one or more Modine Units can be used as required to supplement the heating system.

Cooling in summer, heating in winter . . . Modine Unit Coolers represent a sound investment in year-round, life-long service.

Possesses Unlimited Applications—Because it can be economically and easily installed, the Modine Cold Water Type Unit Cooler is well suited to an unusually wide range of application. Stores, restaurants, mortuaries, barber shops, beauty parlors, taverns, offices, recreation rooms . . . these and many other locations where the comfort of patrons or employees is desirable.

Cooling Media—Well water, tap water where sufficiently cold, water pre-cooled by ice or mechanical refrigeration . . . or a non-corrosive brine may be used as the cooling medium.

Available Sizes—Modine Unit Coolers, Cold Water Type, are made in four sizes . . . Models 14, 23, 39, 61 which individually or in combination will fill practically every cooling requirement. Models 14 and 23 are most applicable where quiet operation is essential. Models 39 and 61 are recommended for larger areas and for process applications or may be used where quietness is a factor if provided with two-speed or three-speed motors and operated generally on less than highest speed.

RANGE OF CAPACITIES (High Speed)

	COLD WATER 50° Entering Water 85° D.B. Ent. Air	
MODEL	BTU	CFM
14	9,960	701
23	15,390	1,282
39	25,800	2,310
61	45,210	4,425

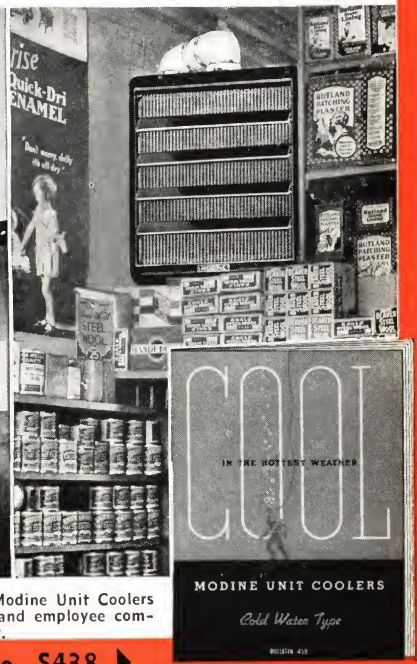
Note Capacity of Model 14 based on minimum water flow of 26 lbs./min.; Model 23—31 lbs./min.; Model 39—41 lbs./min.; and Model 61—47 lbs./min.



Cooling and dehumidifying is an important factor in shops where perishable goods are stored and sold.



Refreshingly cool air makes this a "popular spot" on the hottest summer days and nights.



Hardware stores use Modine Unit Coolers to increase customer and employee comfort.

For Further Details WRITE FOR BULLETIN No. S438 ▶

Albany, N. Y., Ernest E. Malpass,
Industrial Bldg., 1039 Broadway, Albany 45610
Atlanta, Ga., J. W. Hinchey,
152 Nassau St., N. W., Walnut 0429
Atlantic City, N. J., Sidney B. Strouse,
500-529 Guarantee Trust Bldg., Atl. City 53900
Baltimore, Md., Wm. I. Collier & Co.,
522 Park Ave., Vernon 5236
Birmingham, Ala., Haydn Myer,
2224 Comer Bldg., 3-4645
Boston, Mass., G. A. Barrows Co.,
10 High St., Liberty 0465
Bozeman, Mont., E. W. Bunnell, 409 S. 8th St., 1317
Buffalo, N. Y., J. A. Sullivan,
112 Groveland Ave., Univ. 6590
Caldwell, Ohio, I. E. Danforth, 827 West St., 67-J
Charlotte, N. C., Earl G. Embree,
711 Clement Ave., P. O. Box 1867, 2-3550
Chicago, Ill., D. S. Paden,
737 N. Michigan Ave., Superior 0510 & 0518
Cincinnati, Ohio, Harry A. Pillen,
622 Broadway, Rm. 209 Indus. Bldg., Cherry 2440
Cleveland, Ohio, G. A. Rock,
615 Newman Stern Bldg., 1740 E. 12th St.,
Cherry 1970
Columbus, Ohio, A. F. McGovern,
83 So. High St., Rm. 318, Main 1744
Dallas, Texas, Paul R. Winston Co.,
Construction Bldg., 7-4949
Dayton, Ohio, The Graves & Marshall Co.,
716-726 E. Monument Ave., Fulton 8931
Denver, Colo., Harry H. Herman,
1226-1228 California St., Tabor 4505
Detroit, Mich., George W. Akers Co.,
16525 Woodward Ave., Townsend 8-5640,
8-5641 & 8-5642
Elizabeth, N. J., Heating Equipment Sales Co.,
259 N. Broad St., 2-1425
El Paso, Texas, George W. Herlin,
401 N. Santa Fe St., P. O. Box 512, Main 7 and 8
Erie, Pa., P. A. Nash, 507 Cherry St., 24-325
Fond du Lac, Wis., A. N. Goff,
94 Eighth St., 6973
Grand Rapids, Mich., Jay K. Richmond,
Dygert Bldg., 1 Ionia Ave., S., 90241
Hartford, Conn., J. M. Augur, P. O. Box 744, 32-3465
Huntington, W. Va., Jack B. Ayres,
1127 9th St., 23893
Indianapolis, Ind., C. A. Will,
5402 Broadway, Broadway 0121
Jacksonville, Fla., H. L. McMurry,
P. O. Box 1911, 2861 College St., 7-8691
Kansas City, Mo., Disney-Leffel Co., Inc.,
3323 Main, Valentine 0488
Knoxville, Tenn., Plumbing & Heating Sales Co.,
408 W. Clinch Ave., P. O. Box 1363, 3-8212
Los Angeles, Calif., T. H. Creears Co.,
1824 S. Hope St., Prospect 1985
Louisville, Ky., J. R. Hancock,
314 Armory Place, Rm. 305, Jackson 8952
Memphis, Tenn., C. J. Gaskell,
1011 Falls Bldg., 8-3477
Milwaukee, Wis., W. F. Boden,
420 E. Wells St., Marquette 7626
Minneapolis, Minn., Heating Equipment Co.,
830 Plymouth Bldg., Atlantic 2235
Moline, Ill., A. H. Belouske, 2708 14th Ave., 3861
New Orleans, La., R. K. Rothrock,
5316 Dryades St., Upt. 3466
New York, N. Y., R. D. Tyler,
1734 Architects Bldg., 101 Park Ave.,
Ashland 4-4482
Oklahoma City, Okla., Loeffler-Greene Supply Co.,
1604 N. W. Fifth St., 3-5315
Omaha, Nebr., Air Conditioning Utilities, Inc.,
1810 Harney St., Webster 2900
Philadelphia, Pa., Wm. S. Kidd,
Rm. 106 Wilford Bldg., 33rd & Arch Sts.,
Evergreen 1708
Phoenix, Ariz., John W. Ladlow, Box 1784, 3-3825
Pittsburgh, Pa., P. F. Moser,
207 Fulton Bldg., Atlantic 3114
Portland, Ore., Howard B. Nielsen,
409 Couch Bldg., Atwater 2684
Racine, Wis., H. P. Connolly,
% Modine Mfg. Co., Jackson 500
Raleigh, N. C., B. C. Allen, 211 McDowell St., 2017
Richmond, Va., Shultz & James, Inc.,
7 N. Sixth St., 2-3965
Rockford, Ill., R. E. Burden,
232 Grand Ave., Parkside 404
St. Louis, Mo., R. J. Smith,
7707 Lile Avenue, Sterling 1313
Salt Lake City, Utah, A. A. Maycock Co.,
234 Seventh Ave., P. O. Box, 3, Wasatch 4871
San Antonio, Texas, E. G. Langhammer,
P. O. Box 367, 436 N. Main Ave., Fannin 1802
San Francisco, Calif., P. J. O'Meara,
50 Hawthorne St., Sutter 6743
Savannah, Ga., Bergen & Peck,
205 Mendel Bldg., 5528
Scranton, Pa., Leonard A. Howley,
210 Comerford Bldg., Linden at Wyoming Ave.,
4-5377
Seattle, Wash., R. H. Case,
417 Central Bldg., Elliot 6651
Shreveport, La., Ace Combustion Eng. Co.,
P. O. Box 784, 222½ Milam, 2-2245
Syracuse, N. Y., H. V. Boggs,
205 Harrison St., Rm. 307, 2-7664
Toledo, Ohio, Ralph Shawaker,
132 Summit St., Adams 7825
Wichita, Kan., J. M. O'Connor,
208 N. Waco St., 2-3484
Wilkes-Barre, Pa., F. A. Dockeray,
Rm. 718 Wilkes-Barre Deposit & Savings Bank
Bldg., 3-7536
York, Pa., Paul E. Sowers Co.,
139 W. King St., 2597

MODINE MANUFACTURING COMPANY

GENERAL OFFICES: RACINE, WISCONSIN

FACTORIES: RracINE, WIS., AND LAPORTE, IND.

FOREIGN OFFICES

Belgium, Antwerp, Jacques Ketels,
% Bureau Technique F. Hermans
Canada, Toronto, Ont., A. H. Hills,
Sarco Canada Limited
England, London, Utilities (London) Ltd.
Holland, Hilversum, N. V. Boometal-Hilversum
Mexico, D. F. Enrique Huber
Norway, Oslo, Rolf Berg
New Zealand, Christchurch, Taylors, Ltd.
South Africa, Johannesburg, Tullis (S.A.) Ltd.

SEE LIST OF DOMESTIC SALES OFFICES SHOWN AT LEFT . . . .


CONVECTORS


BLAST HEATERS


CONVECTORS


UNIT HEATERS


AIR CONDITIONERS



COOLING EQUIPMENT

TYPICAL MODINE INSTALLATIONS ARE SHOWN ABOVE

North Dakota Capitol, Bismarck, N. D.
Holabird & Root, Architects

The residence of W. E. Crowell,
Mt. Washington (Cincinnati), Ohio
Luigi J. Moroni, Architect

A handsome Chicago suburban home
(Winnetka, Ill.)
Ralph Huzagh, Architect
Dougherty Bros., Heating Contractors

Municipal Auditorium, Kansas City, Mo.
Alonzo H. Gentry, Voskamp & Neville, Architects
Hoit, Price and Barnes, Associate Architects
W. L. Cassell, Mechanical Engineer

Modern Indiana Industrial Plant constructed by the Austin Co., Cleveland, Ohio

W. T. Grant Company, Department Store, Wichita, Kan.
Overend and Boucher, Architects
Moore & Robertson, Contractors

SECTION 26

CONTINUED ⟶

RICHMOND RADIATOR COMPANY, INC.

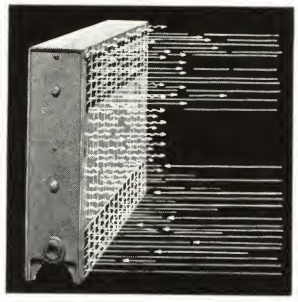
GENERAL OFFICES AND PLANTS

UNIONTOWN, PA.

Richmond Enameled Ware—"Richvar" Convector Radiators—Richmond Tube Radiators—
Richmond Sectional Boilers — "Heatomat" Gas Boilers — Air Conditioning Equipment

THE COMPANY

For seventy years RICHMOND RADIATOR COMPANY, INC., has specialized in the design and manufacture of high grade heating equipment. The reputation it has built up through these years is the architect's best guarantee of complete satisfaction. Our present line of products is backed by the most scientific research and experience in the field.



Direction of Air Flow

SERVICE

Architects are urged to consult our staff of heating engineers and take advantage of their expert knowledge in solving their problems. Complete specifications and installation details are available on request.

Our warehouses are conveniently located throughout the country. This means prompt service and considerable savings in costs.

THE "RICHVAR" CAST IRON CONVECTOR RADIATOR

What It Is

The Richvar radiator is an attractive compact, modern convector radiator, designed on the latest proven principles of modern heating. Made entirely of cast iron, it heats quickly and cools slowly, assuring even temperatures. It is adaptable to steam, hot water, vapor, vacuum, or orifice vacuum systems. It delivers a combination of convected and radiated heat and is equally good for recessed or exposed installation. A modern heating unit for modern heating demands.

Its Heating Principle

Cool air enters at the bottom of the convector, rises through the flue passages where it is heated and passes out into the room at chair height. Additional heat is radiated from the cast iron front of the radiator. The result is more heat in the "living zone" . . . warmer floors and cooler ceilings.

Sizes and Application

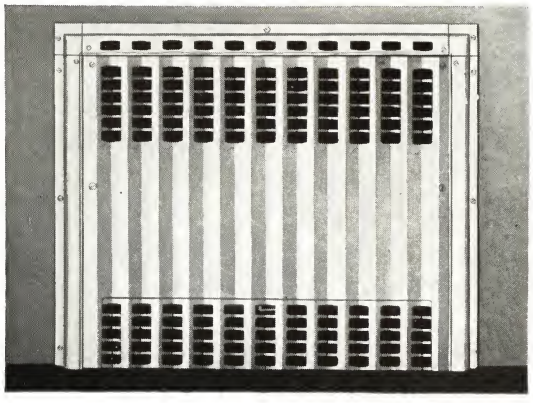
The Richmond Radiator comes in two standard sizes: 5 or 7½ in wide, 20 in. high. Tappings are available to adapt it for efficient use with any type of system using radiators. It is just as suitable for rental properties, apartments, schools, etc., as for the modern house. It is the ideal, efficient unit for all modernization and replacement installations.

RATINGS

The ratings listed below are arrived at from tests made in accordance with the A.S.H. & V.E. code for testing cast iron convectors.

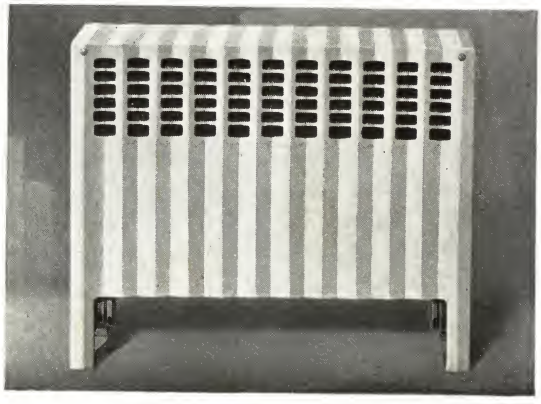
Sections	Length ins.	5-inch catalog rating, sq. ft. 2.15 per section	7½-in. catalog rating, sq. ft. 3.00 per section	Sections	Length ins.	5-inch catalog rating, sq. ft. 2.15 per section	7½-in catalog rating, sq. ft. 3.00 per section
4	8	8.60	12.00	19	38	40.85	57.00
5	10	10.75	15.00	20	40	43.00	60.00
6	12	12.90	18.00	21	42	45.15	63.00
7	14	15.05	21.00	22	44	47.30	66.00
8	16	17.20	24.00	23	46	49.45	69.00
9	18	19.35	27.00	24	48	51.60	72.00
10	20	21.50	30.00	25	50	53.75	75.00
11	22	23.65	33.00	26	52	55.90	78.00
12	24	25.80	36.00	27	54	58.05	81.00
13	26	27.95	39.00	28	56	60.20	84.00
14	28	30.10	42.00	29	58	62.35	87.00
15	30	32.25	45.00	30	60	64.50	90.00
16	32	34.40	48.00	31	62	66.65	93.00
17	34	36.55	51.00	32	64	68.80	96.00
18	36	38.70	54.00	33	66	70.95	99.00

Note—When radiation is recessed reduce the above ratings by 15% as a safety factor.



At Left:
Richvar with Bottom Grille and Metal Moulding

At Right:
Richvar without Grille and Metal Moulding





The Richvar Radiator saves space where space is valuable, does not interfere with decorations.



The Richvar Radiator is unobtrusive when recessed . . . it becomes a part of the wall itself.

Full Heat Utilization

No metal enclosure or panel, either over or in front of Richvar radiator, is needed to beautify it. The full heating benefit, therefore, is derived from the radiator itself, with none retarded by enclosures.

Elaborate and costly recess linings are not essential. A good grade wall, or plaster board, or Reynolds Foil Metallation is suggested. Metallation, in addition to serving as an insulator, also acts as a heat reflector.

Engineering and Construction Details

In the manufacture and assembly of Richvar, our engineers have made no radical departures, but concentrated on ideas their years of experience in this field had taught them.

Richvar is made in cast iron cored sections, provided with ample waterways. Each section has vertical flues, curving at the top to openings in front of the radiators. This arrangement directs the flow of heated air currents outward into the room at an efficient height.

Exterior Finish

When assembled in units with push nipples and tie rods, the flue openings present the appearance of a lattice pattern grille. All units are completely smoothed on buffing machines after assembly, making them adaptable for painting.

The Richvent Air Valve



Richvent concealed air valves are suggested for Richvar steam and vacuum systems for two reasons: They are certain to do a thorough venting job; they add materially to the appearance of the installation. The major portion of a Richvent valve is concealed within the radiator.

The Richvent valve is thermostatically operated and equipped with a simple hand port adjustment. Thus it is possible to regulate or adjust the volume of air released from each radiator, and assure an even heating of the entire system, or to provide more or less heat for any particular room, as desired.

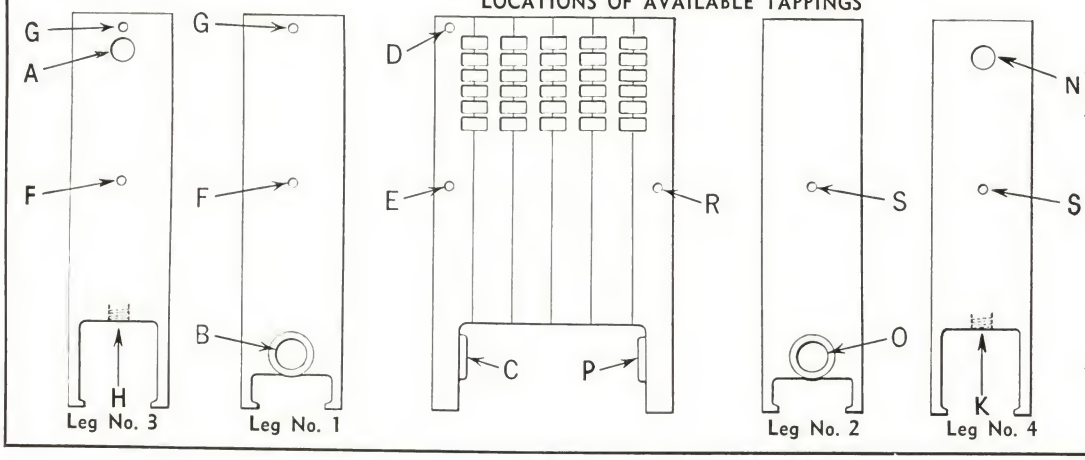
It is easily installed and can be conveniently taken apart for cleaning.

Metal Moulding

An attractive metal moulding is available for closing in the open space between the radiator and wall. Besides being decorative in its design, which harmonizes with the flue opening of the radiator, it permits the escape of heated air currents from the recess opening into the room.

The use of this moulding will add a rich finished touch to any Richvar installation.

LOCATIONS OF AVAILABLE TAPPINGS



Tapping	Sizes
A	1″, ¾″, ½″
B	1¼″, 1″, ¾″, ½″
C	1¼″, 1″, ¾″, ½″
*D	⅛″
*E	½″ or ⅛″
*F	⅛″
*G	⅛″
H	1″, ¾″, ½″
K	1″, ¾″, ½″
N	1″, ¾″, ½″
O	1¼″, 1″, ¾″, ½″
P	1¼″, 1″, ¾″, ½″
*R	½″ or ⅛″
*S	⅛″

*For Air Vents Only

RICHMOND RADIATOR COMPANY, INC.

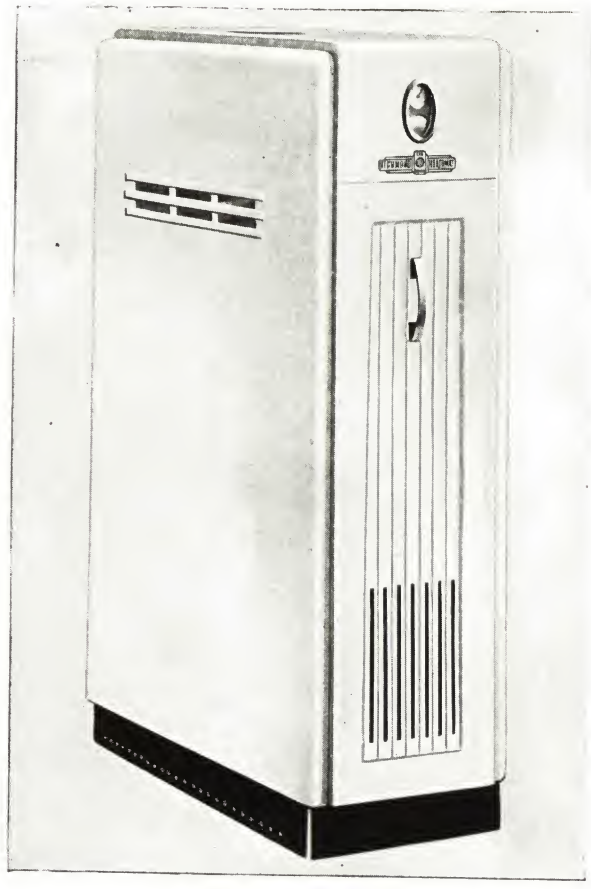
THE RICHMOND HEATOMAT GAS BOILER

Beauty Combined with Efficiency

The Richmond Heatomat Gas Boiler represents the latest development in modern automatic heating—combining style, beauty and utility in a compact, self-contained unit. The cast iron Heatomat sections are of the vertical tubular construction embodying the Scotch Marine principle of boiler design. A water jacket surrounding the Heatomat burners absorbs the heat of the burners in all directions, utilizing the maximum available heat of the burned gases. The vertical tubes, properly proportioned for heating surface, water capacity, and waterways, promote a free, rapid water circulation and eliminate accumulation of sediment within the boiler tubes, thus contributing to a long-lived boiler efficiency.

Sections are scientifically baffled and arranged so that the hot gases from the combustion chamber pass through a tortuous path of flue travel, thus producing a maximum rapid heat transfer from flue gases to sections, to water within. Only sufficient warmth is left in the flue gases to create the required flue draft when the gases leave the boiler to chimney.

The Richmond Heatomat Gas Boiler has no complicated operating machinery. It is equipped with simple and dependable controls, which prevent the plant from over-heating and closes the gas supply to the boiler if the pilot is not burning. Every single control of the Richmond Heatomat must operate correctly before any gas can pass to burners of boiler. They provide for every possible contingency and offer dependable heating service. You just light the pilot in the Fall—that's all.



For Hot Water, Steam and Vapor Heating

DATA AND DIMENSIONS FOR RICHMOND HEATOMAT GAS BOILER

Type WFD and SD

Boiler No.	A.G.A. rating, sq. ft. water	* Supplies sq. ft. direct radiation	B.t.u. output	Shipping weight, lb.	Height, including draft hood	Depth of boiler	Circulation Mains		Burner Capacity		Gas supply	Flue size to chimney
							Feed	Return	Mfg. gas 500 B.t.u.	Nat. gas 1000 B.t.u.		
3 WFD	430	275	64,800	480	4'4"	25½"	1—3"	1—3"	162	81	1"	5"
4 WFD	580	370	86,400	550	4'4"	28⅞"	1—3"	1—3"	216	108	1"	6"
5 WFD	720	460	108,000	650	4'4"	32¼"	1—3"	1—3"	270	135	1"	6"
6 WFD	860	550	129,600	720	4'4"	35⅝"	1—3"	1—3"	324	162	1¼"	7"
7 WFD	1010	650	151,200	790	4'9"	43"	2—3"	2—3"	378	189	1¼"	8"
8 WFD	1150	750	172,000	860	4'9"	45⅜"	2—3"	2—3"	430	215	1½"	8"
9 WFD	1300	860	194,000	1040	4'9"	48¾"	2—3"	2—3"	486	243	1½"	9"
10 WFD	1440	960	216,000	1120	4'9"	51⅞"	2—3"	2—3"	540	270	1½"	9"
WIDTH OF BOILER—15½"												
14SD	390	250	93,000	800	5'½"	31¼"	1—3"	1—3"	233	116	1"	5"
15SD	485	320	116,250	900	5'½"	34¾"	1—3"	1—3"	291	146	1"	5"
16SD	580	385	139,500	1000	5'½"	38¼"	1—3"	1—3"	349	175	1¼"	5"
17SD	680	460	162,750	1100	5'2"	45¾"	2—3"	1—3"	407	204	1¼"	6"
18SD	775	530	186,000	1200	5'2"	49¼"	2—3"	1—3"	465	233	1½"	6"
19SD	870	610	209,250	1350	5'2"	52¾"	2—3"	1—3"	523	262	1½"	7"
110SD	970	690	232,500	1450	5'2"	56¼"	2—3"	1—3"	582	291	1½"	7"
WIDTH OF BOILER—16½". WATER LINE—36"												

Information on Larger Gas Boilers for Hot Water, Steam and Vapor, Sent on Application

GAS AND OIL FIRED AIR CONDITIONERS, SPLIT SYSTEM AIR CONDITIONERS AND STREAMLINED AIR DUCTS

The Richmond Heatomat Gas Air Conditioner

Provides complete winter air conditioning properly heated, filtered, humidified and circulated in large volume. Equipped with corrosion-resisting cast iron streamlined heat exchangers of unusual efficiency. It is enclosed by an inner casing and a deluxe heavy steel outer casing which houses the blower, motor, humidifier, filters and all automatic operating controls.

Model	Input	Output	Del. c.f.m.	Over-all height	Over-all width	Over-all length	Air discharge opening		Air intake opening	
							Width	Depth	Width	Depth
GA 1	93,000	75,000	930	53¾"	37"	50¼"	20¾"	14"	32"	11"
GA 2	122,250	98,000	1220	53¾"	37"	50¼"	20¾"	14"	32"	11"
GA 3	151,500	121,000	1520	53¾"	37"	50¼"	27"	14"	32"	11"
GA 4	180,750	145,000	1810	57"	45"	56¼"	32¾"	14"	38"	16"
GA 5	210,000	168,000	2100	57"	45"	56¼"	35"	14"	38"	16"
GA 6	244,500	196,000	2450	53¾"	72"	50¼"	46"	14"	66"	11"
GA 7	303 000	242,000	3030	53¾"	72"	50¼"	54"	14"	66"	11"
GA 8	361,500	289,000	3620	57"	88"	56¼"	62"	14"	66"	16"
GA 9	420,000	336,000	4200	57"	88"	56¼"	70"	14"	72"	16"



Type GA—Richmond Heatomat Gas Air Conditioner
Type SA—Split System Air Conditioner

Richmond Split System Air Conditioner

A floor model type of winter air conditioner, designed to use with gas, coal or oil fired hot water or steam boilers. Circulates properly heated and humidified air.

Model No.	C.f.m. at 2" ext. static pressure	B.t.u. per hour Average water temperature			
		170° F	180° F	190° F	200° F
SA-1	1500	92,000	100,000	108,000	117,000
SA-2	2000	121,000	133,000	143 000	156,000



Type GAV Richmond Heatomat Gas Air Conditioner

Reynolds Oil Fired Air Conditioners

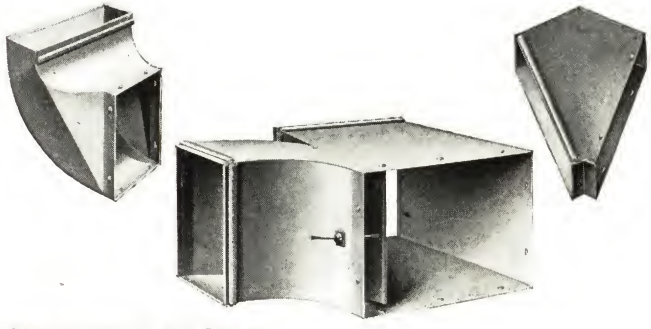
These are equipped with corrosion-resisting cast iron heat exchangers provided with a multiplicity of heating surfaces for the circulating air. Highly efficient—beautiful in appearance—economical in operation.

Unit Size	Unit No. 1-B	Unit No. 2-B	Unit No. 3-B	Unit No. 4-B
C.f.m. at 70° F	1100	1600	2300	2800
Max. B.t.u. output at plenum chamber	100,000	130,000	190,000	250,000
Max. oil input in lbs. per hr. at 19,000 B.t.u. per lb.	7.8	9.15	13.40	17.60
Over-all length	40"	52"	66"	66"
Over-all width	34"	34"	32"	40"
Over-all height	59"	59"	59"	59"
Air discharge opening	10" x 24"	12" x 24"	20" x 20"	20" x 20"
Air intake opening	10" x 24"	12" x 24"	20" x 20"	20" x 20"
Motor size in hp	⅙	⅓	⅓	⅓

All capacities are based on—62° entering air; 88° temperature rise; 150° final temperature.



Reynolds Oil Fired Air Conditioner



Standardized Air Ducts

For summer and winter air conditioning. Scientifically designed for ease of installation and correct proportionate air distribution.

The Richmond Heatomat is fully approved by the American Gas Association for efficiency and safety of operation. The American Gas Association Laboratory Approval Seal is a guarantee of compliance with basic, national requirements for safety.

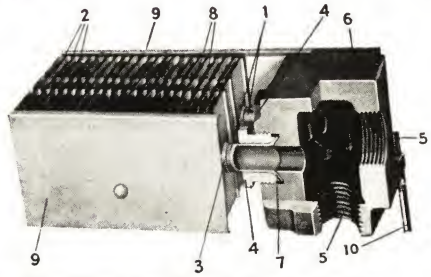
THE ROME-TURNEY RADIATOR COMPANY

ROME, N. Y.

ROCOP

COPPER CONVECTION RADIATORS
IDEAL FOR FORCED HOT WATER SYSTEMS

Rocop Convection Radiators (also known as Rome Copper Convectors and Enclosures) have met with wide acceptance where light but sturdy convectors are required. They are designed for use on two-pipe steam systems and on forced hot water systems. They have been approved and used by the U. S. Navy. Thousands of Rome Convectors have been installed during the past seven years and without exception they have given unusually good service and satisfaction.



Architectural Data

Rocop (Rome Copper) Convectors are made in a wide variety of standard sizes and are well suited for unusual installations; also are adaptable to special architectural treatment. Though light in weight, they are strong, durable and capable of withstanding excessive internal pressure.

Rocop Convectors can be furnished with piping connections to suit installation conditions: with two bottom tappings, two end tappings; or one end tapping in combination with either top or bottom tapping at opposite end; except K9 and K11 Convectors do not have end tappings.

The *desired location* of *tappings* should always be given when ordering. The compression screw method of joining tubes and headers makes possible a supply connection in the top of the header if desired, by simply inverting any standard header. Because of the light weight of Rome Convectors, as compared to cast iron radiators, they can usually be supported by the piping.

DIMENSIONS

CL	18″	22″	26″	30″	36″	42″	48″	54″	60″	66″	72″
N	15¾″	19¾″	23¾″	27¾″	33¾″	39¾″	45¾″	51¾″	57¾″	63¾″	69¾″
Type		K3		K5		K7		K9		K11	
Tappings		¾″		1″		1″		1″		1″	
P		8⅛		8⅛		8⅝		8⅝		9	
R		7 15/16		7 15/16		7 15/16		7 15/16		7 15/16	
S		3½		5½		7½		9½		11½	

Rome Copper Convectors are designated length and depth. For example, 26K3 indicates a Rome Convector 26 in. long with a header 3½ in. deep.

Suggested Specifications for Rocop Convectors

(also known as Rome Copper Convectors)

The Heating contractor shall furnish and install, where indicated on the plans or schedule, Rome Copper Convectors manufactured by the Radiation Division of The Rome-Turney Radiator Company.

Grilles shall be made of steel, of grade known as furniture steel and of not less than 18-gauge. The area of the openings in the grille shall be not less than the area of standard grilles as furnished by The Rome-Turney Radiator Company.

Enclosures for convectors shall be made of steel of not less than 20-gauge; properly reinforced.

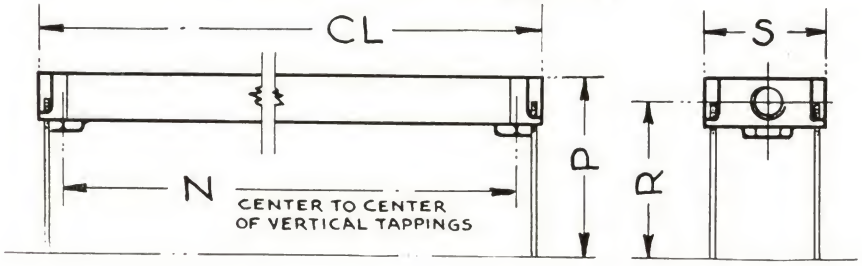
Heating units shall be made of deoxidized seamless copper tubing, copper fins and headers of fine grain iron castings. The fins shall be permanently bonded to the tubes with a solder bond to insure maintenance of the rated heat output over a long period of years.

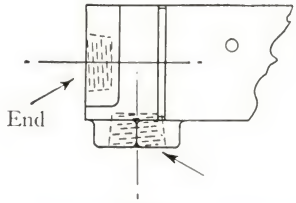
Headers shall be reversible and be tapped for supply and return connections at locations best suited to meet conditions. Headers shall be attached to the tubes of the heating element by means of steel compression nuts and then tested and approved at not less than 150 lbs. of air pressure under water. Manufacturer shall be required to submit copy of letter of approved test by U. S. Navy Department, Bureau of Standards, or other established, independent testing laboratory.

Extensive Experience

The Rome-Turney Radiator Company began making extended surface heat transfer products over 30 years ago. The manufacture of Rome Concealed Copper Radiators was the outgrowth of this long experience. A widely established reputation for quality products and dependable service insures satisfaction to users.

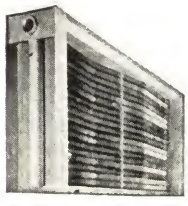
Rome Convector Roughing Data



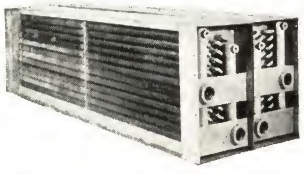


Tappings

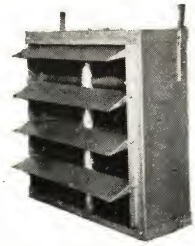
Rocop Convectors are tapped at bottom and reversed for top tappings. End tappings are furnished if so specified.



Rome Blast Air Heater



Rome Blast Air Cooling Coils



Rome Unit Heaters



Rome Helical Finned Tube

Other Rome Heat Transfer Products Bulletins Mailed on Request

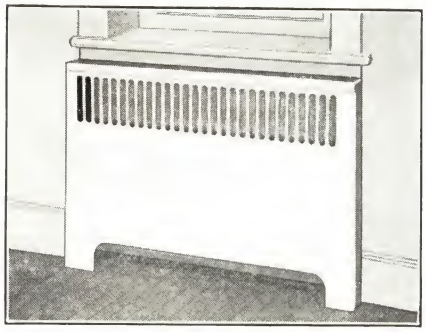
ROCOP CONVECTOR CAPACITIES

Heating effect in Equivalent Square Feet (240 B.t.u.). Steam temperature 215°. Entering air temperature 65°.
B.t.u. requirements divided by 240 will equal the corresponding convector capacity in square feet.

Enc'l Ht.	ROCOP Convestors 3½ Inches Deep										
	18K3	22K3	26K3	30K3	36K3	42K3	48K3	54K3	60K3	66K3	72K3
16	8	10¼	12¼	14½	17¼	20¼	23	26	29	32	35
20	10	12½	15	17¼	21	24¾	28½	32¼	36	39¾	43½
23	11	13¾	16½	19	23¼	27¼	31½	35¾	40	44¼	48½
26	12	15	17¾	20½	25¼	30	34½	39	43½	48	52½
29	12½	16	19	22¼	27	32	37	41¼	46¼	51½	56¼
32	13	16½	19¾	23¼	28½	33½	38½	43¾	48¾	53¾	59
36	14	17½	21	24¾	30	35½	40½	45¾	51½	56¾	62
48	15½	19¼	23¼	27¼	33¼	39	45	50¼	56½	62½	68½
60	16¼	20¼	24¼	28½	34¾	41	47½	53	59¼	65½	72½
Enc'l Ht.	ROCOP Convectors 5½ Inches Deep										
	18K5	22K5	26K5	30K5	36K5	42K5	48K5	54K5	60K5	66K5	72K5
16	11½	14½	17¼	20	24¾	29½	34	38½	43	47½	52
20	14	17½	21½	26	32	38	44	50	55¾	61½	67½
23	15¼	19½	24	28¾	35¼	42	48½	55	61½	68	74½
26	16½	21¼	26	31	38¼	45¼	52½	59½	66¼	73½	80¾
29	17¼	22½	27¾	33	40	47¾	55¼	63	70¼	77½	85¼
32	18	23½	29	34	41¾	49¾	57¾	65¾	73	81	89
36	19	24¾	30½	35¾	44	52½	60½	69	76¾	84¾	92¾
48	21¼	27½	33½	39	48¼	57½	66	74¾	83¾	93	102
60	22¾	29	35½	41½	51	60¾	69½	78¾	88¼	97½	107
Enc'l Ht.	ROCOP Convectors 7½ Inches Deep										
	18K7	22K7	26K7	30K7	36K7	42K7	48K7	54K7	60K7	66K7	72K7
16	14¼	18¼	22½	26½	32½	38½	44¾	51¼	57	63¼	69½
20	18¼	23¾	29¼	34¾	43	50¼	59¼	66½	74¾	82½	91¼
23	20½	26	32	38	47	56	65	74	83	91½	100½
26	21¾	28	34½	41	50½	60¼	69½	79½	90	98¼	107¾
29	23	29¾	36½	43	53	63	73	83½	93½	103¾	113½
32	24	31	38	45	55	65½	76	86½	98	108	118
36	25	32¼	39¾	47	57¾	69	79	90½	102½	113	123½
48	27	35	43¾	51¼	63	74¾	86½	98½	111½	123	136
60	28¾	36¾	46¼	54	66½	78½	91½	103¾	117	130	143½
Ht. Enc'l	ROCOP Convectors 9½ Inches Deep										
	18K9	22K9	26K9	30K9	36K9	42K9	48K9	54K9	60K9	66K9	72K9
20	21¼	27	32¾	38½	46½	55¼	64	71½	80½	88	97½
23	23¾	30	36¼	42½	52¼	61¾	71¼	81	90¼	99½	108¾
26	25¾	32½	39	46	56½	67	77	88	98	108¼	118½
29	27½	34¼	41½	48¾	59½	70½	81¼	92¼	103¼	114	124¾
32	28¾	36	43¾	51	62¼	73¾	85	96½	108	119½	130½
36	30	37¾	45¾	53¾	65¼	77¼	88½	100¾	112½	124½	136
48	32¾	41	50	58½	70½	84	96¾	110	122½	136	149¼
60	34¼	43	52½	61¼	74¼	87¾	102¼	115½	129¾	143½	157½
72	35½	44¼	54½	63¼	77	90½	106	119½	134½	149	163½
84	36¼	45½	55¾	64¾	78¾	92½	108½	122½	138	152½	167½
96	37	46	56½	65¾	80	94¼	110	124½	140	154¾	170
120	38	47½	57½	67¼	81½	96½	111½	126¾	142	156½	172½
Enc'l Ht.	ROCOP Convectors 11½ Inches Deep										
	18K11	22K11	26K11	30K11	36K11	42K11	48K11	54K11	60K11	66K11	72K11
23	27½	33½	40	47	57	67½	77½	87½	97½	107	117
26	29¾	36½	43½	51	62	73¼	84	95	105½	116	127
29	31½	39	46½	54¼	66¼	78	89½	101½	112½	123¾	135¼
32	33¼	40¾	49¼	57	69½	81½	93¾	106½	118½	130½	141¾
36	34¾	43	51¾	60	72½	85½	98½	111½	124¼	137¼	149½
48	37¾	46½	55¾	64¾	78½	93	106¾	120¾	134½	148¾	162½
60	39½	48½	58	67¼	81¾	97	111	125¾	140	154¾	171
72	40½	49½	59½	69	83¾	99¾	114¼	129½	144¼	159	176¾
84	41	50½	60½	70	85½	102	116½	132¼	147¼	162½	180½
96	41½	51	61¼	71	86½	103¼	118	134	149½	164¾	183
120	42	51¾	62½	72½	89	105	121	137	153	169	185

For Convector Enclosures See Following Page.

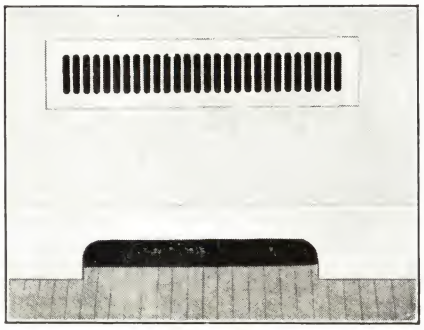
ROME ENCLOSURES



Type 1

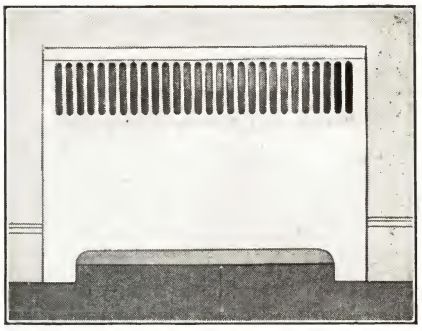
Type 1—Rome Enclosures have removable panel front with face outlet grille and arched inlet opening at bottom. Can be installed either partially or completely recessed.

Type 2 (not illustrated)—Rome Enclosures are the same as Type 1, except for inlet and outlet face grilles. (See drawings below)



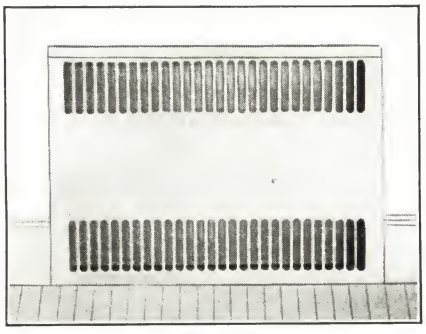
Type 3

Type 3—Rome Enclosures are intended to be completely recessed with the plaster carried across the front



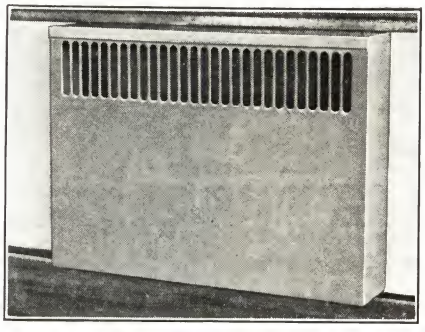
Type 01

Type 01—Rome Enclosures have a removable panel front that overlaps the liner ¾ in. on ends and ½ in. at top. They are intended to be completely recessed; otherwise the same as Type 1



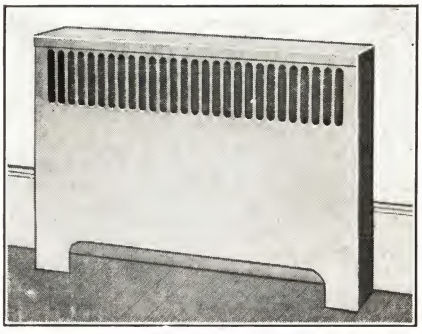
Type 02

Type 02—Rome Enclosures are similar to Type 01, except for inlet and outlet face grilles



Type W—Wall Hung

Type W—Rome Enclosures are known as *wall hung* and are furnished with a removable panel front, a face grille, and open bottom. Top outlet grilles will be furnished, if specified



Type FS—Free Standing

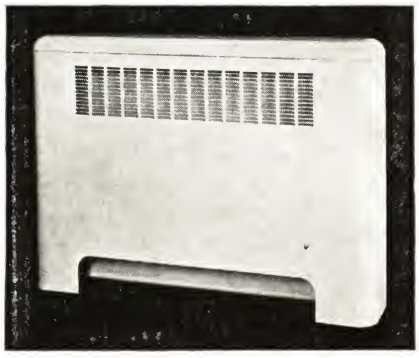
Type FS—Rome Enclosures are *free standing* and equipped with a removable panel front having a face outlet grille and arched opening at the bottom. Top outlet grilles will be furnished if specified

Rome Enclosures are rigidly constructed and attractive. The fronts are 18-gauge furniture steel and the liners (backs and ends) are 20-gauge. Priming coat gray duco.

Standard bar grilles are 5-in. in height with edges of perforations slightly rounded and turned inward. (¾-in. square lattice grilles also available without extra charge if specified.) A more decorative grille 5-in. high can be furnished with ¼-in. bars having a pointed projection half way down each side.

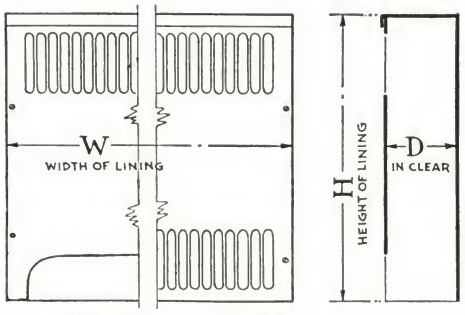
CONVECTOR GUARANTEE

The workmanship and material of Rome Convectors are guaranteed, and all material found to be defective in manufacture will be replaced by us f.o.b. Rome, N. Y. Rome Convectors are guaranteed for use on steam systems carrying an operating pressure of not over 50 lbs. per sq. in. Careful and rigid inspection of all finished convectors is made at our plant prior to shipment.

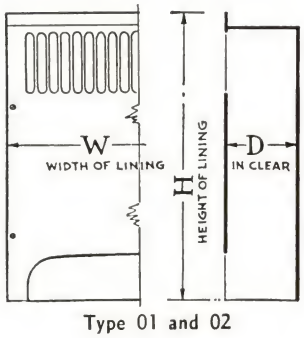


Rome Free-Standing Enclosure with Rounded Corners

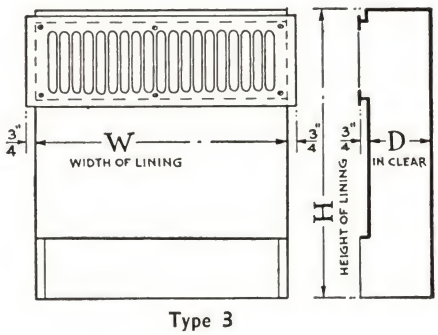
Ordering Dimensions



Type 1 Type 2



Type 01 and 02



Type 3

MEMORANDA

AMERICAN FOUNDRY & FURNACE COMPANY

Air Controlling Specialties

BLOOMINGTON, ILL.

Products

WIRE GRILLES and GUARDS; ALUMINUM BACK PRESSURE DAMPERS; FAN LOUVRES; LOUVRE DAMPERS; DIFFUSERS; BY-PASS DAMPERS.

Also Warm Air Heating Apparatus for all services, Mixing Dampers, Access Doors, Manhole Doors, Belt Guards and Ventilators, Penthouses.

Finishes

The standard finish on all grilles and dampers is black duco, black enamel paint or prime coat. Colors at slight extra cost.

Sizes

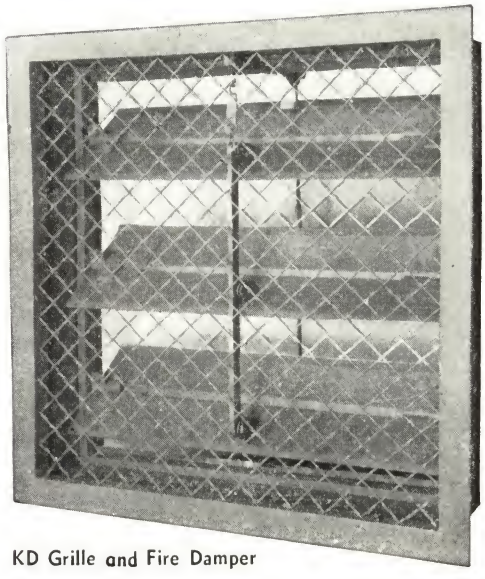
All grilles, diffusers and dampers made in any sizes.

When ordering, give the exact size of opening. An allowance of $\frac{1}{4}$ in. (smaller) will be made for irregularities, unless ordered otherwise.

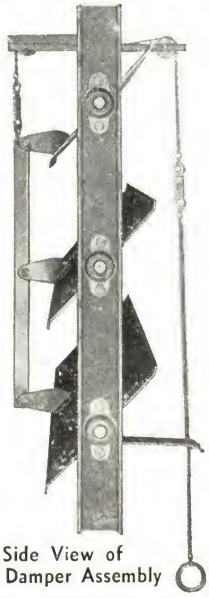
Use this form in ordering: Opening ..... inches wide, by ..... inches high.

Catalogue

Our catalogue "AFFCO Specialties" will be sent on request.

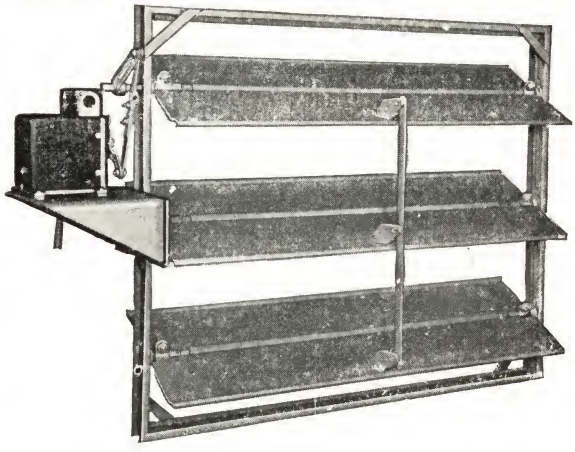


KD Grille and Fire Damper



Side View of KD Damper Assembly

A wire grille and angle iron border, with 6" steel frame extending back into wall and with louvres at rear, for use in fresh air or vent openings. Dampers are ball bearing equipped and operate by chain working through two pulleys and a claw. Pull chain is equipped with fusible link, on both front and rear of louvres. Links melt at 160°—in case of fire, on either side of the louvres, they close automatically by their own weight.



F-12 Louvre Damper

F-12 Dampers made to fit any size opening. Adaptable to automatic or hand control. Blades of 16-gauge, 2x½x⅛-in. channel frames, standard except in large sizes—optional ¼x2-in. bar iron frame. Standard, steel black enamel painted—optional, galvanized iron. Copper at extra charge. Ball bearings standard (brass trunnion bearings optional at lower cost). Made for vertical or horizontal installation. For powerhouses, hotels, schools, churches, theaters, etc. *Extra charge for motor brackets for internal or external mounting. Motors and connecting linkage furnished by others.*

F-12 Dampers without brackets are standard



Left:

F-16-Q Mixing Damper

This type of double mixing damper with more than one blade in warm air and tempered air openings furnished when blades are over 24 in. wide; under 24 in., single blades are used (12 in. is maximum width of blade used on F-16-Q). Blade width is dimension other than axle length. *Motor brackets furnished when required at extra charge.* Motors and connecting linkage by others

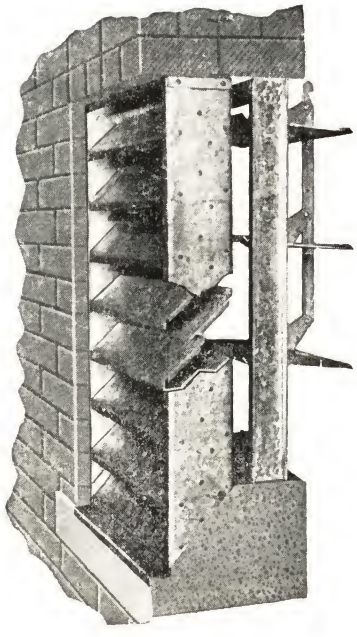
Right:

S-454 Radio Range Stormproof Louvre Combination

Consists of a galvanized iron frame with 26 gauge galvanized iron stationary horizontal stormproof louvre blades, riveted securely to outside frame and all built into outside wall. At back of stormproof louvres there is a No. 16 copper screen.

Back of louvre is an F-12 multiple blade, ball bearing louvre damper to control volume of air admitted. Louvre damper blades of 16-gauge aluminum. Frame of 2x½x⅛-in. galvanized channel iron.

The F-12 louvre damper can be automatically or manually controlled. Blades all work in unison



Miscellaneous Air Controlling Specialties

We manufacture a large variety of standard and special louvres, dampers, diffusers, etc. We call particular attention to our Field Combination Diffuser and Adjustable Louvre. On this combination rear louvres may be adjusted, to divert air up or down, from the front with a screwdriver. Front louvres to divert air sideways are friction controlled. Send for circular.

We specialize on special dampers for air conditioning units

ANEMOSTAT CORPORATION OF AMERICA

Manufacturers of High Velocity Air Diffusers
10 East 39th Street, NEW YORK, N. Y.

THE ANEMOSTAT HIGH VELOCITY AIR DIFFUSER

The Anemostat is an air diffusion device which assures draftless distribution of any volume of air at any velocity.

The principle employed in handling air through the Anemostat is the creation of a multiplicity of air currents traveling in planes or blankets at a variety of angles to each other, together with the creation of a multiplicity of counter currents. This principle is directly opposed to that of a single plane discharge along the ceiling which is the principle of all forms of ceiling plaques.

The Anemostat consists of hollow flaring members placed in certain relationship within each other or in front of each other and *by virtue of this construction draws 35% of room air into its hollow members, where the room air mixes with the cooled or heated air before the latter is discharged.* (See smoke test illustration). Two of the flaring members act as injectors only while the other members have the dual function of ejectors and injectors.

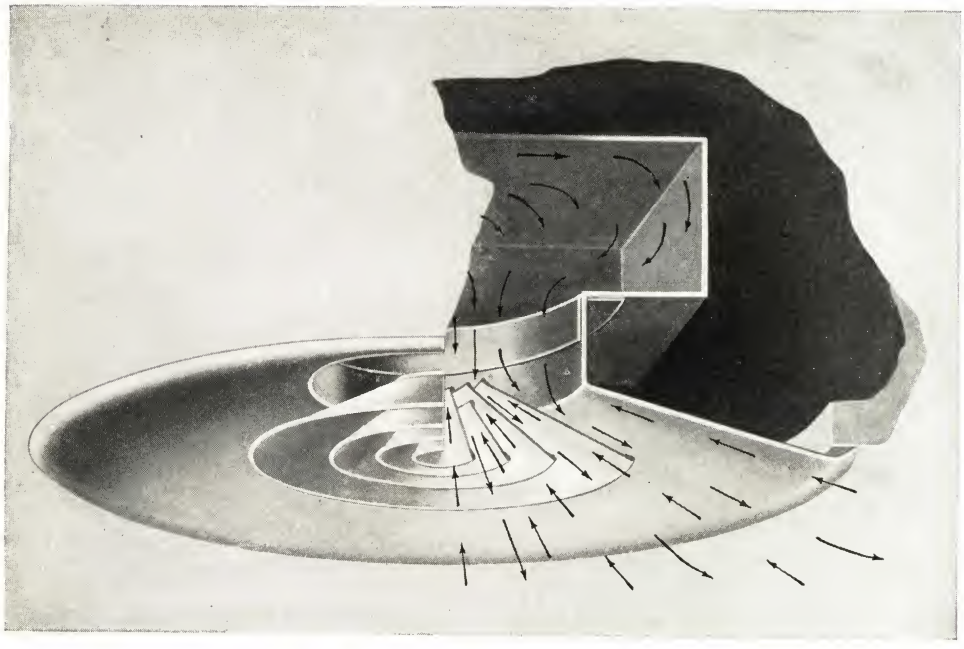
When introducing large quantities of air into a room air motion results. The series of cones which form the *Anemostat discharge the air in definite proportions in all directions in a series of planes.* This diffusion together with the aspiration (suction) effect causes prompt equalization of temperature and, therefore, humidity throughout the room, horizontally, and definitely prevents air pockets and dissipates the evaporation aura around the human body.

The air-mixing effect of the Anemostat causes the predetermined room temperature to be established at a point well above the breathing level, which permits the use of higher temperature differentials. This in turn results in smaller volumes of air to be conditioned and therefore in smaller plants, reduced operating expenses and smaller ducts, while the high velocities which may be employed because of the draftless diffusion, result in further reduction of duct sizes and simplification of duct layouts.



From an Actual Photograph of First Stage of Smoke Test

Note the diffusion and aspiration effect of the Anemostat



At the different velocities recommended for rooms used for different purposes, the increase in decibel rating through the use of anemostats is negligible.

The Anemostat is pleasing in appearance and accommodates itself to modern schemes of decoration.

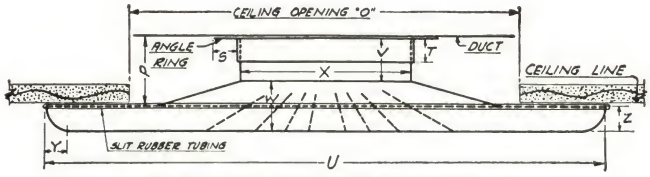
The Anemostat may be combined with light fixtures or light effects.

The Anemostat is easily fastened to the duct.

The Anemostat has no moving parts.

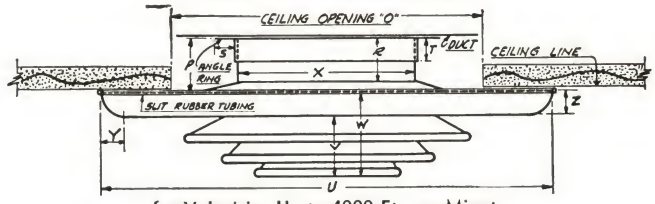
"No Air Conditioning System Is Better Than Its Air Distribution"

TYPE "C" ANEMOSTAT



for Velocities Up to 2500 Ft. per Minute

TYPE "B" ANEMOSTAT



for Velocities Up to 4000 Ft. per Minute
Most generally used for factory or commercial installations

TYPE "C"

Size No.	X	U	S	T	V	W	Y	Z	O	P
5	2	6	.....	.....	1	$17/32$	$1/4$	$1/4$	5	$1\ 9/32$
10	4	12	1	1	2	$1\ 1/16$	$1/2$	$1/4$	10	$2\ 13/16$
12.5	5	15	1	1	2	$1\ 11/32$	$1/2$	$1/4$	13	$3\ 1/32$
15	6	18	1	1	2	$1\ 5/8$	$1/2$	$1/4$	16	$3\ 3/8$
20	8	24	1	1	2	$2\ 1/8$	$1/2$	$3/8$	21	$3\ 3/4$
25	10	30	1	1	2	$2\ 5/8$	$1/2$	$1/2$	26	$4\ 1/8$
30	12	36	1	1	2	$3\ 1/4$	$5/8$	$5/8$	31	$4\ 5/8$
35	14	42	1	1	2	$3\ 3/4$	$3/4$	$3/4$	37	5
40	16	45	$1\ 1/2$	$1\ 1/2$	3	$4\ 3/32$	$3/4$	$3/4$	40	$6\ 17/32$
45	18	48	$1\ 1/2$	$1\ 1/2$	3	$4\ 13/16$	$3/4$	$3/4$	43	$7\ 1/16$
50	20	50	$1\ 1/2$	$1\ 1/2$	3	$5\ 11/32$	1	1	44	$7\ 11/32$
55	22	55	$1\ 1/2$	$1\ 1/2$	3	$5\ 7/8$	1	1	49	$7\ 7/8$
60	24	60	$1\ 1/2$	$1\ 1/2$	3	$6\ 1/32$	1	1	54	$8\ 1/32$
65	26	65	$1\ 1/2$	$1\ 1/2$	3	$6\ 1/16$	1	1	60	$8\ 1/16$
75	30	68	$1\ 1/2$	$1\ 1/2$	3	$8\ 1/32$	1	1	63	$10\ 1/32$
95	38	68	$1\ 1/2$	$1\ 1/2$	3	8	1	1	63	10

TYPE "B"

Size No.	X	U	R	S	T	V	W	Y	Z	O	P
6	$2\ 1/2$	$6\ 1/4$	2	1	1	$2\ 7/32$	$1\ 7/32$	$3/8$	$3/8$	5	$2\ 1/32$
10	4	10	2	1	1	$1\ 5/16$	$1\ 13/16$	$1/2$	$1/2$	8	$2\ 13/16$
12.5	5	$12\ 1/2$	2	1	1	$1\ 5/8$	$2\ 1/8$	$1/2$	$1/2$	10	$2\ 3/8$
15	6	15	2	1	1	2	$2\ 3/4$	$3/4$	$3/4$	12	$2\ 1/4$
20	8	20	2	1	1	$2\ 11/16$	$3\ 11/16$	1	1	16	$2\ 1/16$
25	10	25	2	1	1	$3\ 5/16$	$4\ 5/16$	1	1	20	$2\ 11/16$
30	12	30	2	1	1	$3\ 7/8$	$4\ 7/8$	1	1	24	$3\ 1/8$
35	14	35	3	$1\ 1/2$	$1\ 1/2$	$4\ 9/16$	$5\ 13/16$	$1\ 1/4$	$1\ 1/4$	28	$4\ 1/16$
40	16	40	3	$1\ 1/2$	$1\ 1/2$	$5\ 1/8$	$6\ 3/8$	$1\ 1/4$	$1\ 1/4$	32	$4\ 5/8$
45	18	45	3	$1\ 1/2$	$1\ 1/2$	$5\ 11/16$	$6\ 15/16$	$1\ 1/4$	$1\ 1/4$	36	$5\ 1/16$
50	20	50	3	$1\ 1/2$	$1\ 1/2$	$6\ 5/16$	$7\ 15/16$	$1\ 1/2$	$1\ 1/2$	40	$5\ 1/16$
55	22	55	3	$1\ 1/2$	$1\ 1/2$	$7\ 1/16$	$8\ 9/16$	$1\ 1/2$	$1\ 1/2$	44	$5\ 7/16$
60	24	60	3	$1\ 1/2$	$1\ 1/2$	$7\ 3/4$	$9\ 1/4$	$1\ 1/2$	$1\ 1/2$	48	$5\ 3/4$
65	26	65	3	$1\ 1/2$	$1\ 1/2$	$8\ 1/8$	$9\ 5/8$	$1\ 1/2$	$1\ 1/2$	55	$6\ 3/8$
75	30	68	3	$1\ 1/2$	$1\ 1/2$	$8\ 7/8$	$10\ 3/8$	$1\ 1/2$	$1\ 1/2$	60	$7\ 5/8$
95	38	68	3	$1\ 1/2$	$1\ 1/2$	$10\ 3/8$	$11\ 7/8$	$1\ 1/2$	$1\ 1/2$	60	$6\ 1/8$

ANEMOSTAT CAPACITY TABLE

First: Determine the air velocity in duct leading to the Anemostat neck.
Second: Determine the volume of air to be distributed through the Anemostat.
Third: Select in the first horizontal line the figure corresponding to the determined velocity.
Fourth: Follow the column below this figure down to the figure corresponding to the determined volume.
Fifth: Follow the column to the left of this figure to find the size number, neck diameter and area of neck.
Example: Velocity through the Anemostat neck (or duct), 1200 f.p.m. Volume, 650 c.f.m. Anemostat size number, 25. Neck diameter, 10 in. Neck area, 78.54 in.

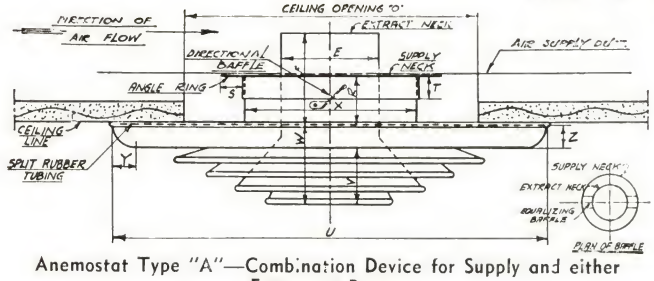
VOLUME AND VELOCITY TABLE, TYPES "B" AND "C" ANEMOSTAT

Size No.	Neck Dia. In.	Neck Area Sq. In.	Neck Area Sq. Ft.	VELOCITY IN FEET PER MINUTE																	Neck Dia. In.	Size No.
				600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2500	3000	4000	5000		
				CAPACITY IN CUBIC FEET PER MINUTE																		
5	**2**	**3.141**	**.021**	**13.1**	**15.3**	**17.5**	**19.6**	**21.8**	**24.0**	**26.2**	**28.4**	**30.5**	**32.7**	**34.9**	**37.1**	**39.3**	**41.5**	**43.6**	**54.5**	**65.5**	**87.3**	**109**	**2**	**5**
6	**2½**	**4.909**	**.034**	**20.5**	**23.9**	**27.3**	**30.7**	**34.1**	**37.5**	**40.9**	**44.3**	**47.7**	**51.1**	**54.5**	**57.9**	**61.4**	**64.8**	**68.2**	**85.2**	**102**	**136**	**170**	**2½**	**6**
10	**4**	**12.566**	**.087**	**52.4**	**61.1**	**69.8**	**78.5**	**87.3**	**96.0**	**105**	**113**	**122**	**131**	**140**	**148**	**157**	**166**	**175**	**218**	**262**	**349**	**436**	**4**	**10**
12.5	**5**	**19.635**	**.136**	**81.8**	**95.4**	**109**	**123**	**136**	**150**	**164**	**177**	**191**	**205**	**218**	**232**	**245**	**259**	**273**	**341**	**409**	**545**	**682**	**5**	**12.5**
15	**6**	**28.274**	**.196**	**118**	**137**	**157**	**177**	**196**	**216**	**236**	**255**	**275**	**295**	**314**	**334**	**353**	**373**	**393**	**491**	**589**	**785**	**982**	**6**	**15**
17.5	7	38.485	.267	160	187	214	241	267	294	321	347	374	401	428	454	481	508	535	668	802	1069	1336	7	17.5
20	**8**	**50.265**	**.349**	**209**	**244**	**279**	**314**	**349**	**384**	**419**	**454**	**489**	**524**	**558**	**593**	**628**	**663**	**698**	**873**	**1047**	**1396**	**1745**	**8**	**20**
22.5	9	63.617	.441	265	309	353	398	442	486	530	574	618	663	707	751	795	839	884	1104	1325	1767	2209	9	22.5
25	**10**	**78.54**	**.545**	**327**	**382**	**436**	**491**	**545**	**600**	**655**	**709**	**764**	**818**	**873**	**927**	**982**	**1036**	**1091**	**1364**	**1636**	**2182**	**2727**	**10**	**25**
27.5	11	95.033	.659	396	462	528	594	660	726	792	858	924	990	1056	1122	1188	1254	1320	1650	1980	2640	3300	11	27.5
30	**12**	**113.1**	**.785**	**471**	**550**	**628**	**707**	**785**	**864**	**942**	**1021**	**1100**	**1178**	**1257**	**1335**	**1414**	**1492**	**1571**	**1964**	**2356**	**3142**	**3927**	**12**	**30**
35	**14**	**153.94**	**1.069**	**641**	**748**	**855**	**962**	**1069**	**1176**	**1283**	**1390**	**1497**	**1604**	**1710**	**1817**	**1924**	**2031**	**2138**	**2673**	**3207**	**4276**	**5345**	**14**	**35**
40	**16**	**201.06**	**1.396**	**838**	**977**	**1117**	**1257**	**1396**	**1536**	**1676**	**1815**	**1955**	**2094**	**2234**	**2374**	**2513**	**2653**	**2793**	**3491**	**4189**	**5585**	**6982**	**16**	**40**
45	**18**	**254.47**	**1.767**	**1060**	**1237**	**1414**	**1590**	**1767**	**1944**	**2121**	**2297**	**2474**	**2651**	**2828**	**3004**	**3181**	**3358**	**3534**	**4418**	**5302**	**7069**	**8836**	**18**	**45**
50	**20**	**314.16**	**2.181**	**1309**	**1527**	**1745**	**1963**	**2182**	**2400**	**2618**	**2836**	**3054**	**3272**	**3491**	**3709**	**3927**	**4145**	**4363**	**5454**	**6545**	**8727**	**10908**	**20**	**50**
55	**22**	**380.13**	**2.639**	**1584**	**1848**	**2112**	**2376**	**2640**	**2904**	**3168**	**3432**	**3696**	**3960**	**4224**	**4488**	**4752**	**5016**	**5280**	**6600**	**7919**	**10559**	**13199**	**22**	**55**
60	**24**	**452.39**	**3.141**	**1885**	**2199**	**2513**	**2827**	**3142**	**3456**	**3770**	**4084**	**4398**	**4712**	**5027**	**5341**	**5655**	**5969**	**6283**	**7854**	**9425**	**12566**	**15708**	**24**	**60**
65	**26**	**530.93**	**3.687**	**2212**	**2581**	**2950**	**3318**	**3687**	**4056**	**4424**	**4793**	**5162**	**5531**	**5899**	**6268**	**6637**	**7005**	**7374**	**9218**	**11061**	**14748**	**18435**	**26**	**65**
70	28	615.75	4.276	2566	2993	3421	3848	4276	4704	5131	5559	5986	6414	6842	7269	7697	8124	8552	10690	12828	17104	21380	28	70
75	**30**	**706.86**	**4.908**	**2945**	**3436**	**3927**	**4418**	**4909**	**5400**	**5891**	**6381**	**6872**	**7363**	**7854**	**8345**	**8836**	**9327**	**9818**	**12272**	**14726**	**19635**	**24544**	**30**	**75**
80	32	804.25	5.585	3351	3910	4468	5027	5585	6144	6702	7261	7819	8378	8936	9495	10053	10612	11170	13963	16755	22340	27926	32	80
85	34	907.92	6.305	3783	4414	5044	5675	6305	6936	7566	8197	8827	9458	10088	10719	11349	11980	12610	15763	18915	25220	31525	34	85
90	36	1017.9	7.068	4241	4948	5655	6362	7069	7776	8482	9189	9896	10603	11310	12017	12724	13431	14137	17672	21206	28275	35344	36	90
95	**38**	**1134.1**	**7.875**	**4725**	**5513**	**6301**	**7088**	**7876**	**8663**	**9451**	**10238**	**11026**	**11814**	**12601**	**13389**	**14176**	**14964**	**15751**	**19689**	**23627**	**31503**	**39378**	**38**	**95**
100	40	1256.6	8.726	5236	6108	6981	7854	8726	9599	10472	11344	12217	13090	13962	14835	15708	16580	17453	21816	26179	34906	43632	40	100
105	42	1385.4	9.621	5773	6735	7697	8659	9621	10583	11545	12508	13470	14432	15394	16356	17318	18280	19242	24053	28864	38485	48106	42	105
110	44	1520.5	10.559	6335	7391	8447	9503	10559	11615	12671	13727	14783	15839	16894	17950	19006	20062	21118	26398	31677	42236	52795	44	110
115	46	1661.7	11.540	6924	8078	9232	10386	11540	12694	13848	15001	16155	17309	18463	19617	20771	21925	23079	28849	34619	46158	57698	46	115
120	48	1809.6	12.566	7540	8796	10053	11310	12566	13823	15080	16336	17593	18850	20106	21363	22620	23876	25133	31416	37699	50266	62832	48	120
125	50	1963.5	13.635	8181	9545	10908	12272	13635	14999	16362	17726	19090	20453	21817	23180	24544	25907	27271	34089	40906	54542	68177	50	125

When sizes shown in light type are specified next larger sizes in heavy type will be furnished.
Anemostats are only available in sizes shown in bold type.

"No Air Conditioning System Is Better Than Its Air Distribution"

TYPE "A" ANEMOSTAT



Anemostat Type "A"—Combination Device for Supply and either Extract or Return

DIMENSIONS FOR TYPE "A" ANEMOSTAT

Size No.	X	E	U	R	F	S	T	V	W	Y	Z	O
15	6	3½	15	2	4	1	1	2¼	3	¾	¾	12
20	8	5	20	2	4	1	1	3	4	1	1	16
25	10	6	25	2	4	1	1	4	5	1	1	20
30	12	7	30	2	4	1	1	5	6	1	1	24
35	14	8	35	3	5	1½	1½	5¾	7	1¼	1¼	28
40	16	9	40	3	5	1½	1½	6¾	8	1¼	1¼	32
45	18	10	45	3	5	1½	1½	7¾	9	1¼	1¼	36
50	20	11	50	3	5	1½	1½	8½	10	1½	1½	40

HOW TO USE VOLUME AND VELOCITY TABLE—TYPE "A" ANEMOSTAT

(1) Determine the air velocity in supply duct leading to the supply Anemostat Neck.
(2) Determine the volume of air to be distributed through the Anemostat.
(3) Select in the first horizontal line the figure corresponding to the determined velocity.
(4) Follow the colume below this figure, down to the figure corresponding to the determined volume.
(5) Follow the column to the left of this figure to find the size number, neck diameter and area of supply neck.
(6) With standard Anemostat "A." using about equal velocities in supply and extract (or return) duct, extract (or return) volumes are about 50% of supply volumes.

Example—Velocity in supply duct 1200 f.p.m., Air supply volume 621 c.f.m., Size No. 30, Neck Diameter 12 in. Velocity in extract (or return) duct, 1200 f.p.m. extract (or return) air volume 321 c.f.m. (about 52% of supply) extract neck 7 in.

(7) Without changing the construction of the device, extract or recirculation air volume may increase to a maximum of 70% and decrease below 50% to any desired volume. In order to accomplish this, the air velocity in the extract duct must be increased or decreased.

Example—Velocity in supply duct 1200 f.p.m., Air supply volume 621 c.f.m., Size No. 30, neck diameter 12 in. Desired extract volume 70% of supply air—435 c.f.m.—1600 f.p.m., in extract neck.

Larger velocity differences between supply and extract are to be avoided as they might cause short circuiting of air between supply and extract (or return).

Remarks—The supply net neck area (sq. in.) is the balance remaining after deducting the area of extract neck from total neck area.

Example—

Supply 6 in. = 28.27 sq. in. Total Neck Area.
Extract 3½ in. = 9.62 sq. in.

Supply Net Neck Area = 18.65 sq. in.

Type "A" Anemostats should not be used in rooms having a ceiling height of more than 16 ft. They cannot be used as wall outlets.

Type "A" Anemostats can be used for air heating and air cooling installations.

SHOWING AIR SUPPLY & EXTRACT (OR RETURN) VOLUMES IN APPROXIMATE RELATION OF 100 TO 50

SIZE NUMBER		NECK DIA. IN	NET NECK AREA SQ. IN.	VELOCITY IN FEET PER MINUTE																		
				600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400	2500
				OUTPUT IN CUBIC FEET PER MINUTE																		
15	SUPPLY	6	18.65	78	91	104	117	130	143	156	169	181	194	207	220	233	246	259	272	285	298	311	324
	EXTRACT	3½	9.62	40	47	53	60	67	74	80	87	94	100	107	114	120	127	134	140	147	154	160	167
20	SUPPLY	8	30.63	128	149	170	191	213	234	255	277	298	319	341	362	383	404	426	447	468	489	511	532
	EXTRACT	5	19.64	82	96	109	123	136	150	164	177	191	205	218	232	246	259	273	287	300	314	328	341
25	SUPPLY	10	50.27	210	244	280	314	349	384	419	454	489	524	559	594	629	663	699	733	768	803	838	873
	EXTRACT	6	28.27	118	137	157	177	196	216	236	255	275	295	314	334	354	373	393	413	432	452	471	491
30	SUPPLY	12	74.62	311	363	415	466	519	570	621	674	726	777	829	881	934	985	1038	1090	1140	1193	1245	1297
	EXTRACT	7	38.48	160	187	214	241	268	294	321	348	374	401	428	455	481	508	535	561	588	615	642	669
35	SUPPLY	14	103.7	432	504	575	647	720	791	863	935	1008	1079	1150	1222	1294	1366	1439	1510	1581	1652	1726	1798
	EXTRACT	8	50.27	210	244	280	314	349	384	419	454	489	524	559	594	629	663	699	733	768	803	838	873
40	SUPPLY	16	137.4	573	668	764	860	955	1050	1147	1241	1338	1432	1528	1623	1720	1815	1910	2005	2100	2196	2292	2386
	EXTRACT	9	63.62	265	310	354	398	442	486	530	574	618	663	707	751	795	839	884	928	972	1018	1060	1106
45	SUPPLY	18	176.0	734	855	978	1100	1221	1344	1467	1589	1710	1832	1955	2078	2200	2320	2442	2565	2689	2810	2935	3055
	EXTRACT	10	78.54	328	382	437	491	545	600	654	709	763	818	872	927	981	1037	1090	1145	1200	1254	1309	1363
50	SUPPLY	20	219.2	913	1065	1218	1369	1521	1673	1827	1978	2130	2282	2437	2585	2740	2893	3043	3197	3348	3500	3653	3805
	EXTRACT	11	95.03	396	462	528	594	660	726	792	858	924	990	1057	1122	1188	1263	1320	1387	1451	1519	1583	1650

ANEMOSTATS WITH LIGHT FIXTURES

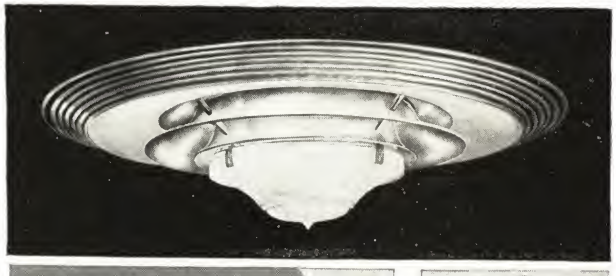
Many unusually attractive combinations with lighting fixtures are possible. The "Anemo-lite" is a combination of the "Anemostat" High Velocity Air Diffuser and a built in lighting unit. This combination simultaneously solves the problem of draftless air distribution and illumination. It is an attractive fixture of polished and natural finish aluminum, fitting tightly against the ceiling and blending with any scheme of interior decoration.

The combination of an indirect cove lighting unit with a Type "CSL" Anemostat has been designed for use where indirect cove lighting is desired. This type of unit is particularly suitable for use in theatres and auditoriums and wherever unusual lighting effects are desired. The reflecting unit and wiring trough are mounted on top of the largest cone of the Anemostat and are entirely concealed when the Anemostat is installed.

Pendent lighting fixtures of all types can be hung from the center of the Anemostat. Any standard or special pendent lighting fixture may be hung in this manner. The pendent lighting fixture is not sold with the Anemostat but may be selected from the stock of any manufacturers of lighting fixtures.

The uses and application of the Anemostat in conjunction with lighting units are practically limitless within the field that the Anemostat serves.

The services of our engineering staff are available for the solution of your engineering problem.



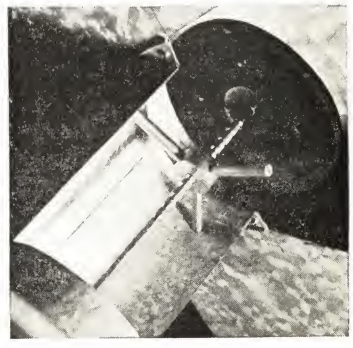




"No Air Conditioning System Is Better Than Its Air Distribution"



THE ANEMO-TROL DAMPER



The Anemo-trol is a scientifically developed damper of the valve seat type, especially designed to easily regulate the volume of air distributed through the Anemostat High Velocity Air Diffuser.

The Anemo-trol, as illustrated, consists of a damper plate of ½-inch thick Rubatex reinforced with aluminum disks on top and bottom of smaller diameter than the damper plate. This damper plate is regulated by a brass rod which extends from the damper plate to below the Anemostat.

The entire device is held in position by means of three brass support rods which are fastened directly to the branch duct supplying the Anemostat or to the neck of the Anemostat itself when there is no branch duct. The support rods have concealed coiled springs and pins which fitting into grooves in the control rod, permit the damper to remain in five or more positions depending upon the size of the Anemo-trol, from completely closed to completely opened. No air leakage can occur when the damper is in the closed position.

The Rubatex is a special rubber compound, light in weight and impervious to moisture. It will not harden or become brittle with age.

The Anemo-trol is silent in operation and will not create noise in any position.

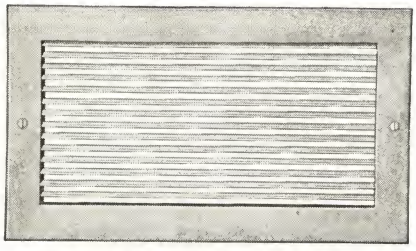
"No Air Conditioning System Is Better Than Its Air Distribution"

THE AUER REGISTER CO.

Manufacturers of Registers and Grilles for Heating, Ventilating and Air Conditioning

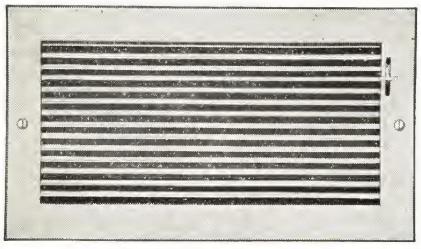
3608 Payne Avenue
CLEVELAND, OHIO

REGISTERS—FOR AIR CONDITIONING—GRILLES



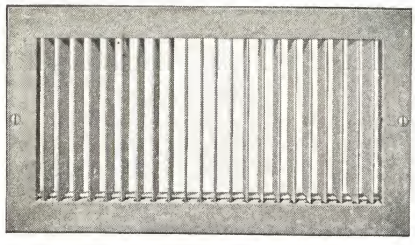
Fin-Flex No. 5035 Grille with Band Iron Frame

Flexible fins ⅜ in. on center offer satisfactory one-time adjustment. Adjusting tool furnished with each order. Horizontal fins furnished as standard. Vertical fins furnished if specified



Fin-Flex No. 5030 Register with Band Iron Frame

Flexible fins ⅜ in. on center offer satisfactory one-time adjustment. Adjusting tool furnished with every order. Horizontal fins, furnished as standard. Vertical fins furnished if specified



Dura-Flo No. 8105 Grille—No Frame

Adjustable bars ½ in. on center.
Also furnished with horizontal bars (adjustable). Small convenient adjusting tool furnished with each order

The Auer line of registers and grilles for heating and air conditioning systems is modern and complete, offering a wide choice of styles for every purpose. Only a few representative models are shown on these pages.

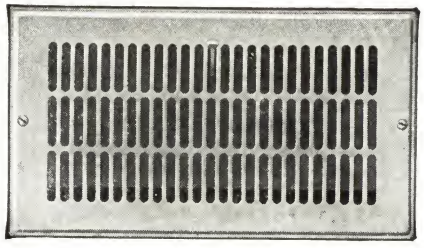
Fin-Flex Registers and Grilles are made with either vertical or horizontal fins which are easily adjusted at time of installation for single or multiple air current in any direction. Ample free air capacity for modern forced air systems.

Dura-Flo Registers and Grilles are also furnished with blades adjustable for any desired air flow. Fin-Flo Registers and Grilles are furnished with either vertical or horizontal fins for any specified air flow, and are not adjustable.

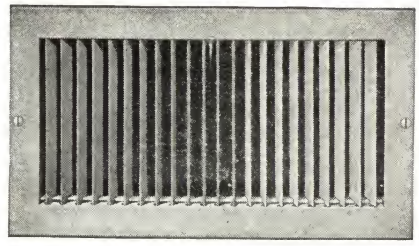
DuraBilt Floor Registers and Cold Air Faces are assembled with steel cross-bar construction, all cross joints locked and mortised. These should be specified wherever extra strength is required. They come in medium or narrow mesh.

The Auer Classic face has wide popularity for air conditioning and heating uses. It is an unusually attractive face, appropriate to most interior decorative schemes.

All Auer models are designed with due regard for air capacity, and supplied in all required sizes and finishes. Complete Catalog 38, showing all types for air conditioning and gravity heating, furnished on request.

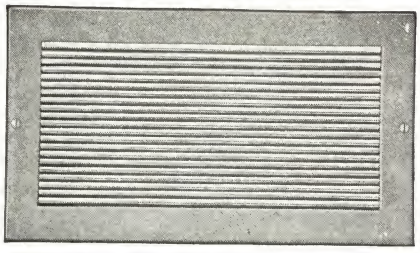


No. 2030 for Wall Classic—Register (with Valve) with Band Frame



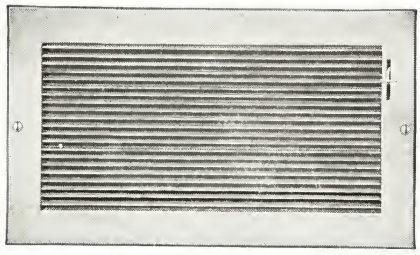
Dura-Flo No. 8132 Register—No Frame

Adjustable bars ½ in. on center
Also furnished with horizontal bars (adjustable). Small, convenient adjusting tool furnished with each order



Fin-Flo No. 9005 Grille—No Frame

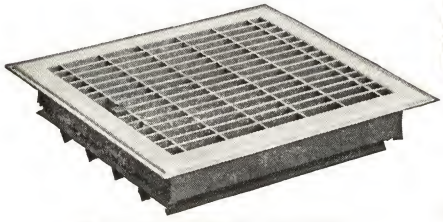
Horizontal Fin-Flo for upward and downward deflection is standard. Vertical Fin-Flo for two-way side deflection also furnished



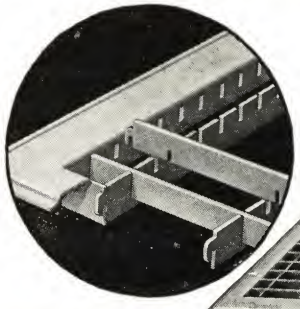
Fin-Flo No. 9030 Register—with Band Iron Frame

Horizontal Fin-Flo for upward and downward deflection is standard. Vertical Fin-Flo for two-way side deflection also furnished

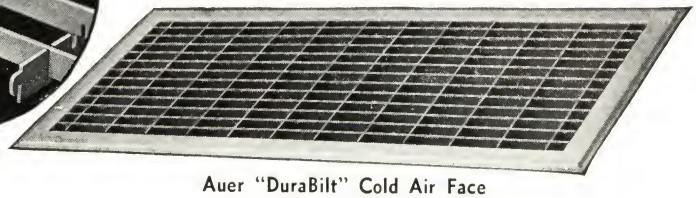
DURABILT REGISTERS AND COLD AIR FACES



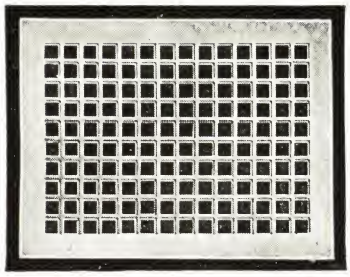
Auer "DuraBilt" Floor Register



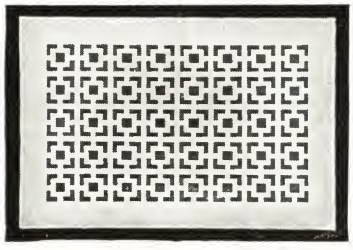
Detail of "DuraBilt" Construction



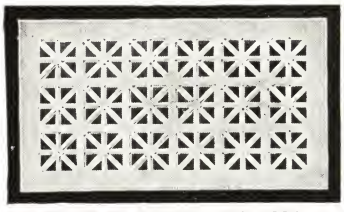
Auer "DuraBilt" Cold Air Face



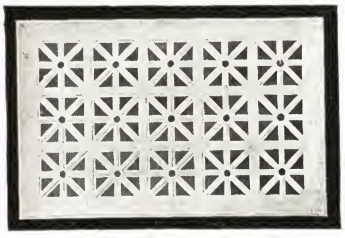
Square Lattice Design No. 5A



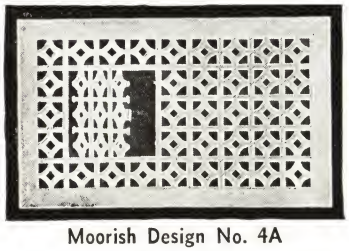
Square Link Design No. 35A



Union Jack Design No. 12A



Grecian Design No. 7A



Moorish Design No. 4A

Some Types and Dimensions of Auer Grilles

Made in all commercial metals, all standard finishes and platings—12 and 10-gauge standard. We also make 16-gauge to ¼ in. thick, on specifications.

All grilles are roller level straightened after perforating.

Invisible access to valve doors can be incorporated in all designs, as shown in No. 4A.

State whether daylight opening or over-all measurement.

SQUARE LATTICE DESIGN

Design No.	Holes, in., sq.	Bars, in.	Free area
8A	½	¼	50%
5A	¾	¼	64%
3AA	15/16	¼	73%
10A	1¾	¼	85%

Design No. 5A (inch multiples) works best to all daylight and over-all sizes. Best adapted for louver registers.

No. 5A can be made ¼ in. and lighter.

No. 3A and No. 8A made 3/16 in. and lighter.

No. 10A made 10-gauge and lighter.

SQUARE LINK NO. 35A

Squares, in.	Bars, in.	Multiples, in., sq.	Free area
1¾	¼	2	51%

Made in 10-gauge and lighter.

UNION JACK DESIGN

No.	Squares, in.	Bars, in.	Multiples, in., sq.	Free area
12A	2½	¼	2¾	50%
12A	2½	½	3	45%
14A	3	3/8	3⅜	55%
14A	3	½	3½	53%
20A	4¼	¾	4½	76%

Made in 10-gauge and lighter.

No. 20A made in 3/16 in. and lighter.

GRECIAN DESIGN NO. 7A

Squares, in.	Bars, in.	Multiples, in., sq.	Free area
3	⅜	3⅜	55%
3	½	3½	53%
3	¾	3¾	50%

Made in 10-gauge and lighter.

MOORISH DESIGN NO. 4A

Squares, in.	Bars, in.	Multiples, in., sq.	Free area
1¾	¼	2	51%

37A DESIGN

Openings, in.	Bars, in.	Free area
¾x2¾	¼	75%

38A DESIGN

Openings, in.	Bars, in.	Free area
¾ square	¼	64%

A Complete Grille Service

Auer Stamped Metal Grilles can be supplied, on special order, to suit ANY individual requirements as to size and shape, and to harmonize with any particular interior decorative scheme. Steel, stainless steel, brass, or bronze. Get the complete AUER Catalog No. 39.

36A DESIGN

Openings, in.	Bars, in.	Free area
1x1	¼	45%

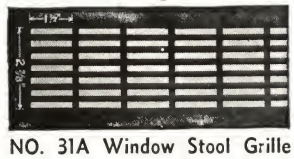
OBLONG DESIGN

No.	Openings, in.	Bars, in.
15A	¾x1½	¼
17A	¾x2¾	¼
31A	5/16x1½	5/16
11A	5/16x1⅝	1/8

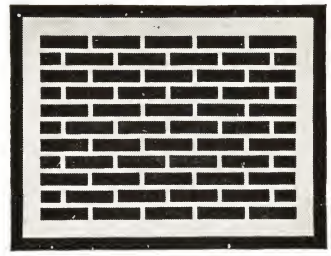
Popular for radiator furniture and concealed radiation.

Shell Design Nos. 13A and 33A

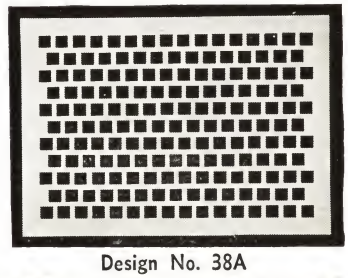
Works in multiples 2x1 in. *No. 13A,* no fractional piercing around outer margins or border.



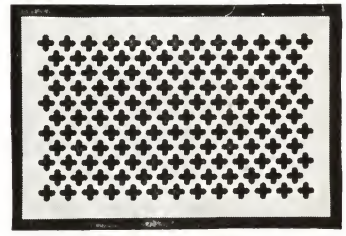
NO. 31A Window Stool Grille



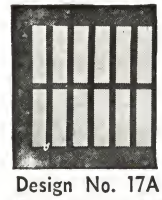
Design No. 37A



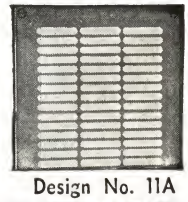
Design No. 38A



Design No. 36A



Design No. 17A



Design No. 11A



Shell Design No. 33A

AUER MULTIPLE LOUVER STEEL REGISTERS

Fig. K (Pat'd) All-Steel Register for Wall or Ceiling Use

Approved for Government, Hospital and Commercial Buildings. Face is of extra heavy gauge steel, having appearance of *cast* but the unbreakable strength of steel. Made in any size.

Louvers are baked-on japan to prevent rusting.

Faces or grilles can be made in all designs shown on this page.

No. 5-A being 1-in. square multiples works best to all daylight openings.

Register faces can be furnished in all standard metals.

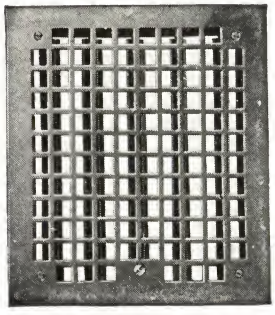


Fig. KL—Key Lock Register

The louvers are operated and locked in various positions by a key



Fig. K—Hand Operated All-steel Register for Wall or Ceiling



Fig. KR—Pole Operating Register

Fitted with ring operating lever so that a window pole can be used to open and close it

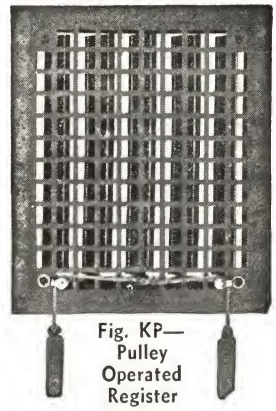


Fig. KP—Pulley Operated Register

Designate whether wall or ceiling pulleys required

THE BEST REGISTER COMPANY

Registers, Ventilators, Grilles and Screens

3137 So. Twentieth Street, MILWAUKEE, WIS.

Products

REGISTERS, VENTILATORS, GRILLES and SCREENS, of stock or special designs and finishes, made in cast iron, semi-steel, brass, bronze metal and steel.

AIR CONDITIONING REGISTERS.

MUSHROOM VENTILATORS—SEMI-STEEL REGISTERS.

Also Gratings, Wall Frames, Steel Boxes, Borders, Perforated Steel Grilles, Screens, Special Grilles.

"Best" Wrought Steel Baseboard Registers



Made of heavy sheet steel, with solid one-piece frame and removable face. No riveted or welded corners. Neat in appearance, durably constructed, maximum free air area, quickly and easily installed, simple and positive in operation.

Furnished in all standard sizes and finishes, *i.e.*, white japan, black japan, lacquered, and electroplated.

Air Conditioning Registers

Supplied in a wide range of sizes and styles for use in either side walls or baseboard. Furnished in all standard lacquered or plated finishes, but usually supplied with prime coat to permit painting to match room decorations. Complete specifications and data upon request.

Mushroom Ventilators

For use in schools, theatres, churches, and public buildings. Easily and positively adjusted to distribute an equal volume of air.



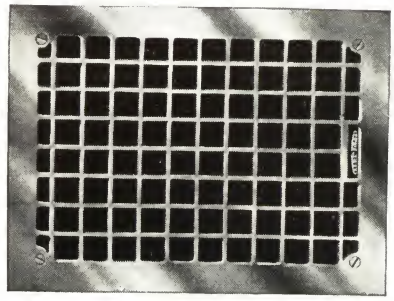
"Best" Mushroom Ventilator

The "Best" Mushroom Ventilator has the following advantages: positive locking feature; no depression in cap to collect dirt; no set-screw projecting; easy, quick and permanent adjustment.

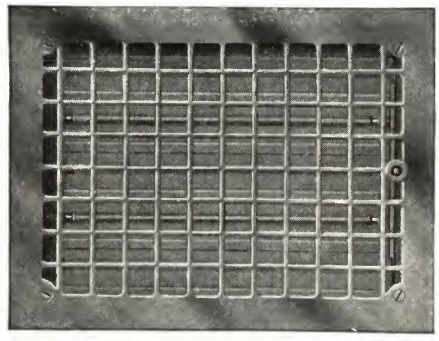
Carried in six sizes: 4, 5, 6, 7, 8 and 10 in. diameter.

"Best" Semi-steel Registers

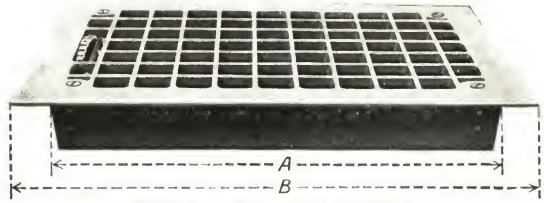
Faces are of cast iron; boxes, valves, operator, etc., of sheet steel. Plain lattice design. Carried in stock in all standard sizes and finishes. Made to special order in any size. Each register is coated with heavy rust-proof metal coating, and carefully inspected. Prices on application.



Plain Lattice Design
Made in any style



Key-operated Register
Phosphor bronze operator parts. Cannot wear or rust out



Method of Measuring Registers
A—Flue or opening size
B—Extreme measurement

Special Designs

Special design goods are made to order only. In all cases, pattern work is necessary to produce. Any design can be produced from architect's drawings or sketches, and can be made to conform to any conditions, and be supplied in any finish.

uni-flo

GRILLES *and* REGISTERS

ENGINEERED
AIR DISTRIBUTION
OUTLETS

featuring

DIFFUSION
DISTRIBUTION
DIRECTIONAL FLOW

and

ASPIRATION
AT HIGH *and* LOW
VELOCITIES

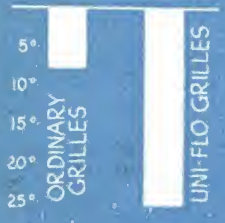
CATALOG NO. 3

BARBER-COLMAN COMPANY
Rockford · Illinois · U.S.A.



(SHOWN ON BLUEPRINT)

PERMISSIBLE TEMPERATURE DIFFERENTIAL
(BELOW ROOM TEMPERATURE)



VELOCITY AT OUTLET
(FEET PER MINUTE)



DIRECTIONAL FINS



UNI-FLO TYPE
(ANY COMBINATION)



UNI-FLO GRILLES & REGISTERS

IMPORTANT FUNCTIONAL UNITS

for Effective Air Conditioning and Ventilation

A VITAL PART OF THE AIR DISTRIBUTION SYSTEM

UNI-FLO Grilles and Registers perform *definite air distributing functions* in the air conditioning or ventilating system in which they are used. Their type, shape, size, and position is *planned* by the designing engineer with the same kind of accurate foreknowledge on which he bases the selection of blowers, duct sizes, and other important parts of the system. They are not merely decorative closures for the stack heads; they serve precise, planned purposes.

LOWER AIR TEMPERATURES AND HIGHER VELOCITIES

In air conditioning work, the air should be introduced as cool as possible and at as high a velocity as possible in order to keep down the size of the ducts and outlets. The velocity must not be so high as to cause objectionable noise, nor should the combination of high velocity and low temperature be such as to cause excessive cooling in certain areas. In addition, the cooling air should be uniformly distributed throughout the entire space.

Former practice used air temperatures of only 5° to 10° below room temperature and low discharge velocities seldom over 500 feet per minute. Higher velocities were noisy and caused objectionable currents. Lower temperatures produced cold drafts.

With UNI-FLO Grilles it is now common practice to introduce air at temperatures 20° to 25° below room temperature and at velocities well over 1,000 feet per minute.

DIRECTIONAL FINS CONTROL AIR DISTRIBUTION

UNI-FLO Directional Fins enable the designing engineer to distribute the supply air wherever he wants it, in the desired quantity, and with economical outlet locations. Directional fins may be combined as desired, the proper arrangement depending upon the size and shape of the room, the position of the outlet, etc.

DIFFUSING EDGES CAUSE RAPID TEMPERING

The discharge edges of UNI-FLO fins are punched to form small projections which produce much minor turbulence; and smoke tests show a multitude of small eddies at the edges of the air stream. The cool air is thus rapidly mixed with the room air, raising the temperature and decreasing the velocity. Also, the contact area with the un-entrained warmer room air is increased, producing greater heat conduction and thus raising the air stream temperature without decreasing its velocity.

LOWER NOISE LEVEL

UNI-FLO Grilles and Registers are characterized by a minimum of "air whistle," or noise produced by the air passing through the grille. The thin fins and supporting members permit the use of discharge velocities of 1,000 feet per minute, and on many installations as high as 1,500 feet per minute, without objectionable noise.

UNI-FLO GRILLES FOR EXTREMELY LONG "THROW"

Certain UNI-FLO Grilles are available that will project the air stream 40 to 60 feet or more permitting much more economical duct arrangements. That these longer "throws" are possible is partly due to the relatively high velocities that can be used without producing objectionable noise, and partly due to accurate directional control which keeps the cool air near the ceiling until it is well distributed over the room.

MEETING UP-TO-DATE NEEDS IN GRILLES AND REGISTERS

Whether the system be for summer cooling, ventilation, humidification, or year-'round air conditioning, proper distribution of the supply air is now universally recognized as a factor of primary importance. UNI-FLO Grilles and Registers have been specifically and scientifically designed to meet these modern needs after consultation with many recognized experts in the field. A number of outstanding examples from the thousands of successful installations are listed on the back cover.

NOISE LEVEL
(DECIBELS ABOVE THRESHOLD)

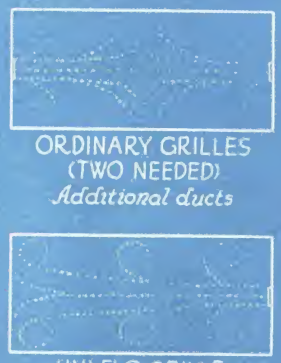


(AT 1000 FT PER MIN.)

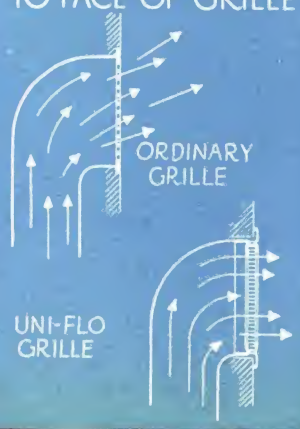
UNIFORM AIR DISTRIBUTION



LONGER "THROW"



AIR FLOW PERPENDICULAR TO FACE OF GRILLE



CONSTRUCTION DETAILS

GRILLES

CORE ASSEMBLY

1. Fin core. Comprises one or more sections of UNI-FLO directional diffusing fins (see page 10) fabricated as a single unit.
2. U-shaped core moulding, wrapped around fin core and welded at one corner.
3. SCREW-LOCK (see below).

FRAME

4. Rigid sheet-steel frame of special form, bent and spot-welded into proper shape and size to hold core assembly.
5. Round ¼ in. bead on edge of frame provides additional strength and covers plaster joint or irregular edge of outlet opening. Other models have wide flange for additional strength and coverage.
6. Stop bead for core.
7. Mounting lugs, for fastening frame to studding with screws which will be concealed by plaster, wall surface, or baseboard (see details on pages 5, 7 and 9). These lugs are omitted on panel frames.
8. Apron, which fits into end of duct or stack head and may be fastened with sheet metal screws.

REGISTERS

A Register is a Grille with a damper attached. In UNI-FLO registers, the fins, core moulding, and frame have the same construction details as the grilles, the damper being attached to the back of the core moulding, as shown.

1. Leak-proof, noise-proof, continuous hinge on damper, extending completely across opening.
2. Spring tension on damper keeps control chain taut.
3. Flat sheet-steel damper with bent-up lower edge to provide rigidity.
4. Spring mounting for end of bead control chain. Spiral spring is compressed when damper is closed, thus imposing pressure which closes damper tightly.
5. Control lock for bead chain. Chain guide (mounted in fin core) has slot in which any bead of chain may be engaged to maintain required damper position.
6. Bead control chain is small and inconspicuous. Extra length chains can be furnished for high sidewall or ceiling mountings.
7. Stop collar for attachment to chain at any bead to limit maximum opening of damper. Used when proper adjustments to balance entire system have been determined.

Note: Key-operated damper control can be furnished in place of the chain type described above, to prevent tampering with damper adjustment. Details are shown in drawings on pages 5, 7 and 9.

CORE CONSTRUCTION

1. UNI-FLO fins are made from .018 in. sheet steel ½ in. wide. These thin fins offer very little resistance to air flow and also provide a high percentage of "free air opening." The noise level is extremely low, no "air whistle" being produced even at velocities higher than previously considered maximum.
2. Each fin has special edge formations which vary for different directional flow requirements (see page 10). These formations on the discharge edge are primarily responsible for the turbulence characteristic of the UNI-FLO air stream (see opposite page), and they also add rigidity to the fins.
3. Each fin strip is folded, as shown, to produce a firm, interlocking assembly. Through these folds, which are spaced at 1 in. intervals, the ¼ x .062 in. support bars are pressed, forming a rigid assembly.
4. The fins are spaced 3/16 in. apart, making the opening between fins less than half their depth. These closely-spaced thin fins form a grille face which is very inconspicuous. Toys, pencils, erasers, and other foreign objects cannot be pushed through the small apertures, and the stack head or duct back of the grille is well masked. The closely-spaced, thin, parallel fins also have the effect of "straightening out" the flow in the duct so that the air leaves the grille in parallel lines at right angles to the face; this is especially useful if the grille is near the curved top of a stack head.

SCREW-LOCK

(Standard construction on all grilles and registers)

1. Operating screw head.
2. Compression spring between nut and moulding. Holds nut in position to engage bead on frame, and provides friction to cause nut to turn and hook in behind bead when screw is turned.
3. Special nut, with hook to engage bead on frame. Turning screw hooks nut on bead, and further turning tightens grille against bead. When screw is loosened, hook disengages bead as soon as tension is relieved.

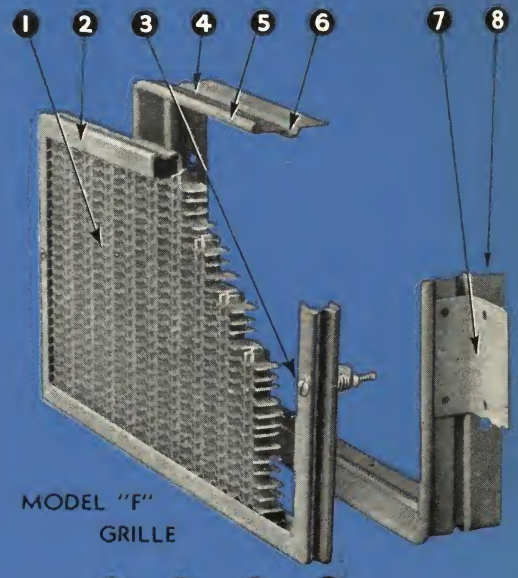
   Pinched tip maintains assembly.

SNAP-LOCK (OPTIONAL)

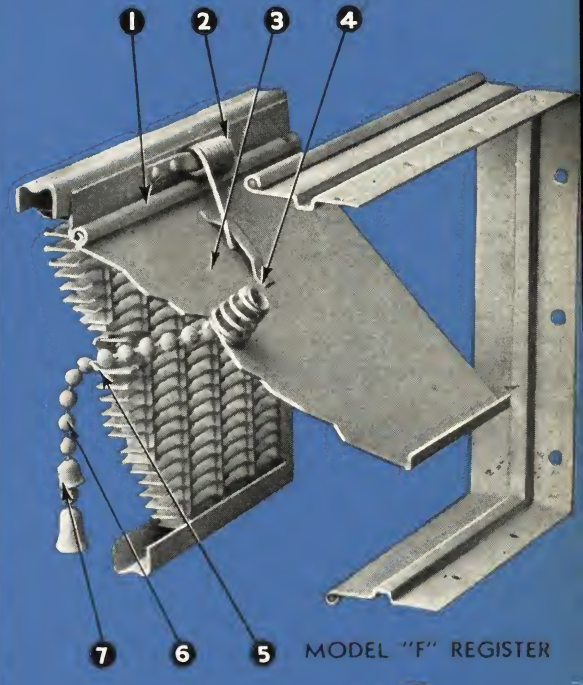
4. The groove in the core moulding engages small lugs pressed in the frame and holds the core firmly. "Snap-Lock" is optional, but only on Model "F" and Model "M" Grilles of less than 360 sq. in. nominal area; it is not available on Registers.

uni-flo

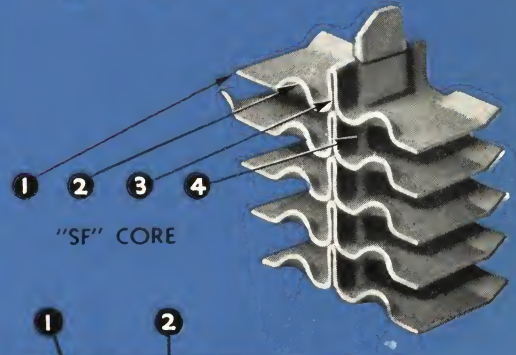
ENGINEERED AIR DISTRIBUTION



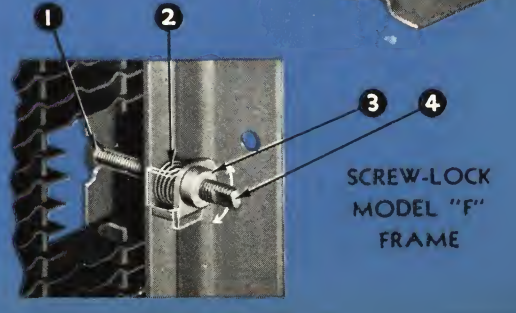
MODEL "F" GRILLE



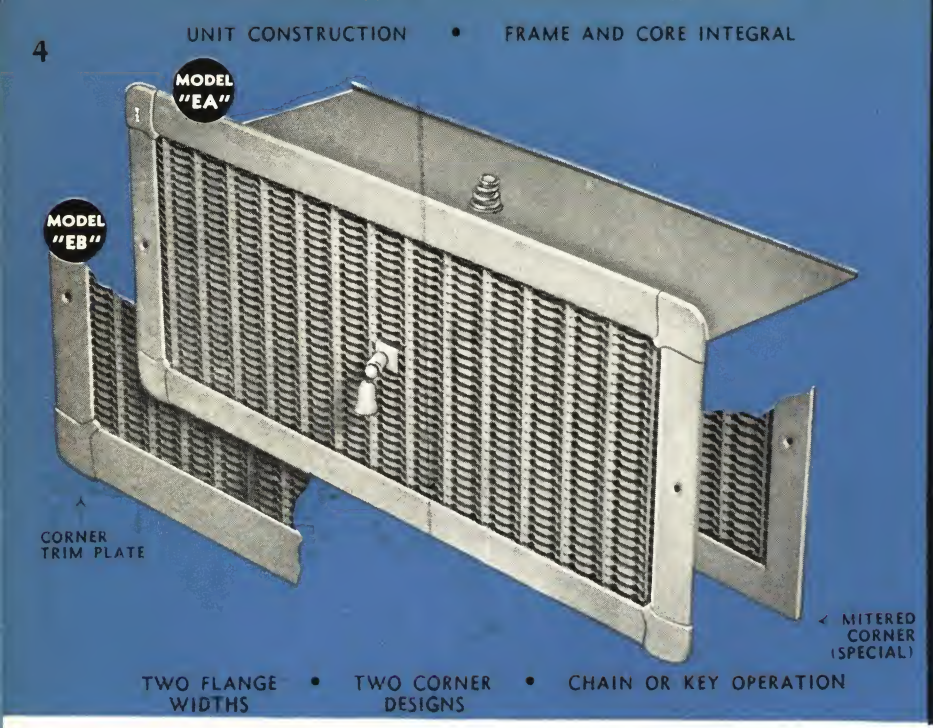
MODEL "F" REGISTER



"SF" CORE



SCREW-LOCK MODEL "F" FRAME





Model "E" Registers

(TWO MODELS: "EA" AND "EB")

UNI-FLO Model "E" Registers are distinguished by a unit construction in which an extended flange on the core moulding acts as the supporting frame. The outer edge of the flange is turned back to add stiffness and give a good contact with the mounting surface.

Two flange widths are available, Model "EA" (7/8 in. flange) and Model "EB" (1 1/4 in. flange), the latter being intended to provide greater strength and better appearance on the larger sizes. Two types of corner construction can be furnished, as above. The corner with trim plate is standard; plain mitered corner will be furnished on special order. A light Roughing-In Frame can also be supplied, if desired, its purpose being to maintain the proper size opening during the framing stage and to provide support for the stackhead.

The registers are fastened in place after the wall is finished, either before or after decorating.

Model "E" Registers are fastened directly to the wall surface, not to the duct. The duct should be extended so that the core moulding can slip inside to minimize the possibility of leakage. Since the outside dimensions of the moulding correspond to the nominal size of the duct or stackhead, a snug fit is obtainable. If the register is more than 36 in. wide or more than 24 in. high, the core is fabricated in two or more symmetrical sections assembled into a single unit.

One form of Model "E" Register is used for sidewall, panel, or baseboard installations. In baseboard installations, where the register extends above the baseboard, a special angle strip is furnished to snap in place behind the flange and cover the gap between the frame and the wall. This strip extends across the top and down both sides to give a finished appearance.

The damper is attached to the frame with a continuous piano-type hinge, leakproof and rattleproof. A coil spring on the hinge holds the damper open; it is positioned by engaging a bead of the control chain in a slot on the chain guide. When the damper is pulled shut, a conical spring on the chain anchor imposes a positive closing pressure to prevent leaks or whistle. A stop collar is provided which can be attached at any bead to limit the maximum opening of the damper to maintain a proper balance of air distribution. Long chains and special control locks are available for high sidewall and ceiling locations. To circumvent unauthorized adjustment, key-operated dampers should be specified.

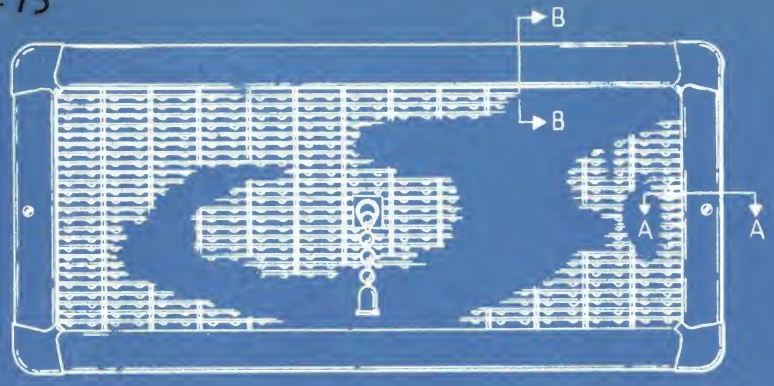
Chain-operated registers greater than 216 sq. in. or more than 12 in. high, and key-operated registers wider than 36 in. or higher than 12 in. are equipped with two or more dampers. Dampers are hinged at top as standard, but may, by special order, be hinged at sides or at the bottom, or at both top and bottom.

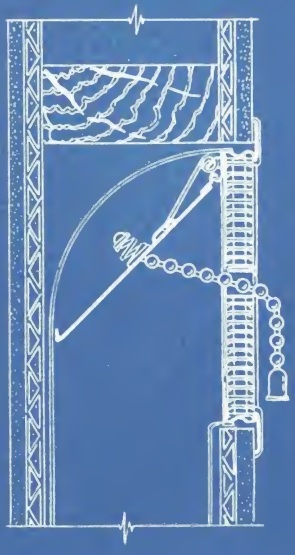
Model "E" Grilles

Model "E" Grilles are identical to the Model "E" Registers described above and shown in detail on page 5 except that they have neither dampers nor damper operating equipment.

Model "E" Registers

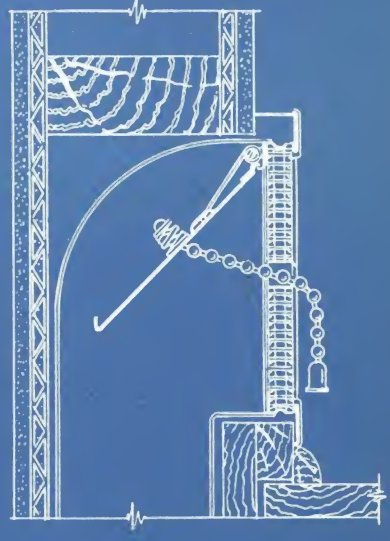
(TWO MODELS: "EA" AND "EB")



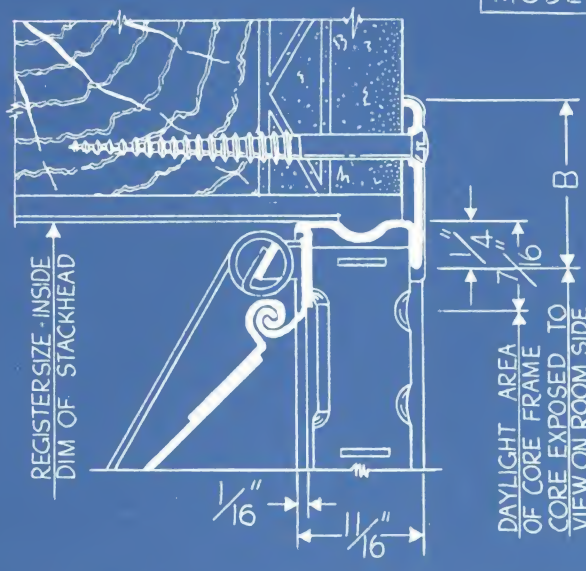




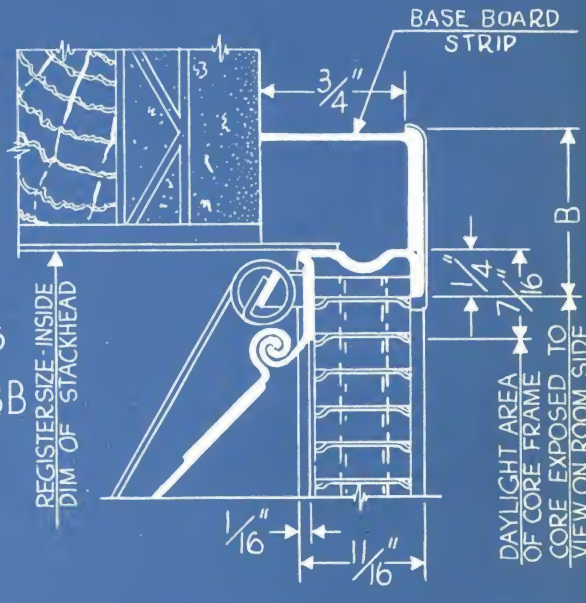
DETAIL OF KEY OPERATED CONSTRUCTION



DIMENSION – B –	
MODEL "EA"	7/8"
MODEL "EB"	1 1/4"



SECTIONS at AA ⟷ BB



SIDEWALL OR PANEL REGISTER

BASEBOARD REGISTER

UNI-FLO

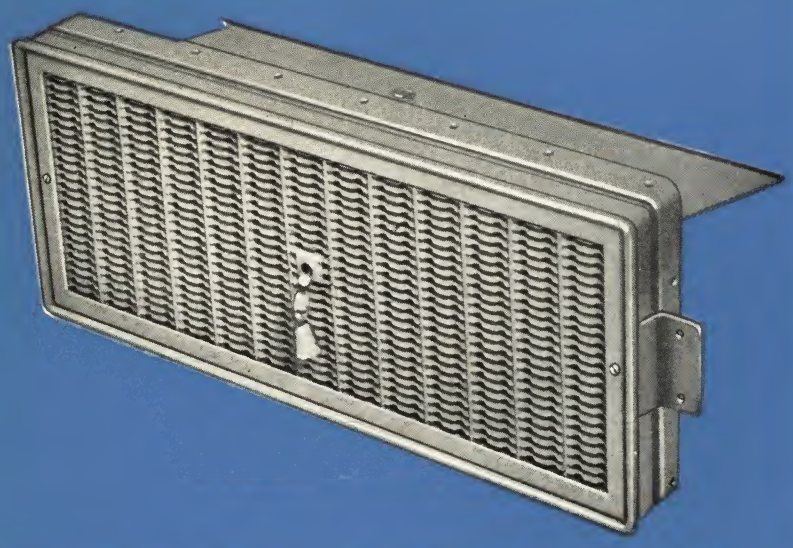
ENGINEERED AIR DISTRIBUTION

UNI-FLO Grilles and Registers are available in any one of twelve standard FINISHES, as described on page 11. Be sure to specify the finish desired on each unit when ordering.

For DIRECTIONAL FINS, which can be arranged as desired, see page 10. In units having horizontal fins, the DIFFUSERS are pointed upward for cooling service and downward for heating service (specify which is required).

DIRECTIONS FOR ORDERING—Always give size, model, type, fin arrangement, finish, and state whether grille or register. Unless otherwise stated, the first dimension given will be assumed to be the width.

NARROW BEAD • FRAME AND CORE SEPARATE



SCREW-LOCK • CHAIN OR KEY-OPERATED DAMPER



Model "F" Registers

UNI-FLO Model "F" Registers feature a separate Roughing-in Frame which shows only as a narrow 1/4-in. bead around the Core Member. They are suitable for the smaller and medium-size outlets where a removable core is desired, with an inconspicuous frame. The Core Member is held firmly in the frame by SCREW-LOCKS.

The frame may be roughed-in any time after studding is in place, thus maintaining the size of the opening during remaining construction work, and forestalling the possibility of having to order special size grilles later. Steel angle mounting lugs, punched for screws, are spot-welded to the frame on sidewall and baseboard units. They are omitted on panel units. A minimum of one lug is furnished for each vertical dimension; additional lugs on 12 in. centers for the horizontal dimensions. Shims may be placed under the lugs to take care of irregularities in the studding.

The core assembly is set in place after all construction work is finished, or after the decorating. SCREW-LOCK construction (or "Snap-Lock," which is optional up to 360 sq. in.) permits removal of the core assembly at any time for cleaning purposes, or for reversal of the grille (as in some year-round systems).

The apron of the frame is punched for attachment to the duct or stackhead with sheet-metal screws.

Different forms of Model "F" frames are available for sidewall, panel, and baseboard installations, as shown in detail drawings on the opposite page. The panel type has no mounting lugs; the frame, in panel installations, is held in place by attachment to the duct.

Core assemblies which are more than 36 in. wide or more than 24 in. high are fabricated in two or more symmetrical sections assembled into a single unit, which fits into a frame having additional corner reinforcement. Each section may be removed independently of the others. Details of construction are shown in the drawings of the Model "M" Registers and Grilles on page 9.

The damper is attached to the frame with a continuous piano-type hinge, leakproof and rattleproof. A coil spring on the hinge holds the damper open, positioned by engaging a bead of the control chain in a slot on the chain guide. When the damper is pulled shut, a conical spring on the chain anchor imposes a positive closing pressure to prevent leaks or whistle. A stop collar is provided which can be attached at any bead to limit the maximum opening of the damper to maintain a proper balance of air distribution. Long chains and special control locks are available for high sidewall and ceiling locations. To circumvent unauthorized adjustment, key-operated dampers should be specified.

Model "F" Grilles

Model "F" Grilles are identical to the Model **"F"** Registers described above and shown in detail on page 7 except that they have neither dampers nor damper operating equipment.

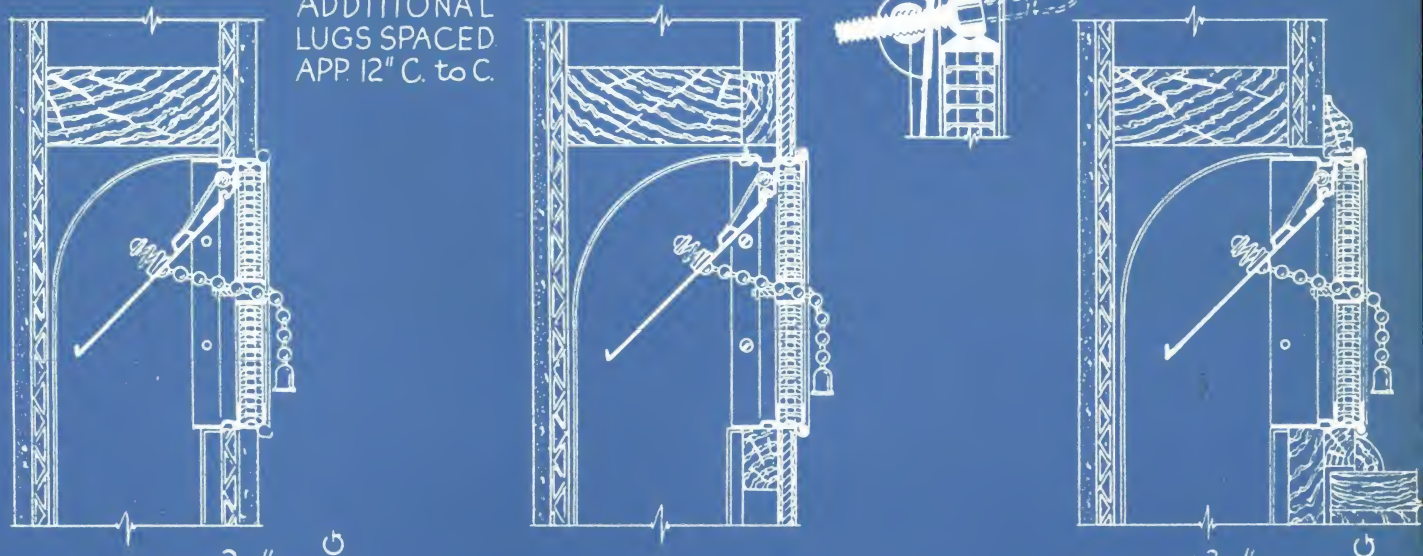
Model "F" Registers

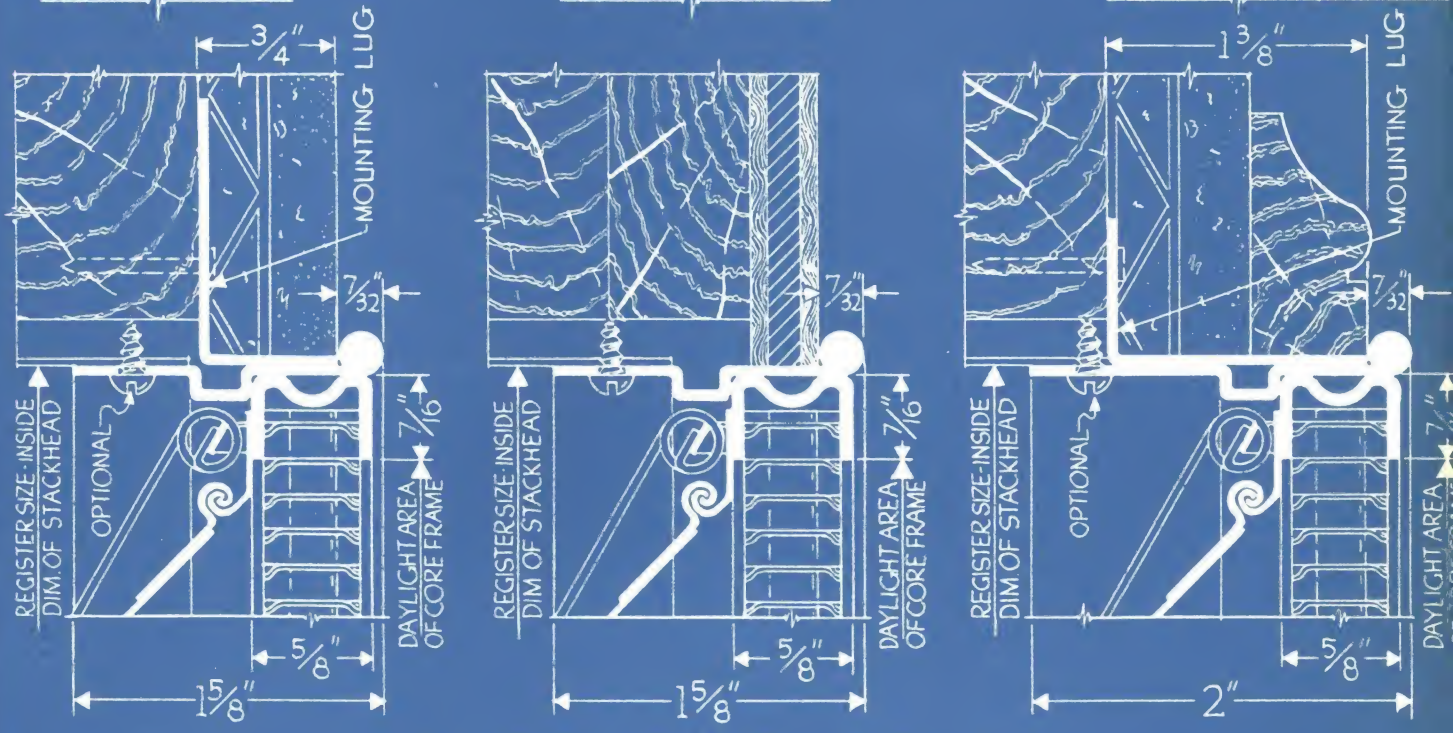




DETAIL OF KEY OPERATED CONSTRUCTION

ADDITIONAL LUGS SPACED APP. 12" C. to C.





SECTIONS AT A-A

SIDEWALL REGISTER * PANEL REGISTER * BASEBOARD REGISTER

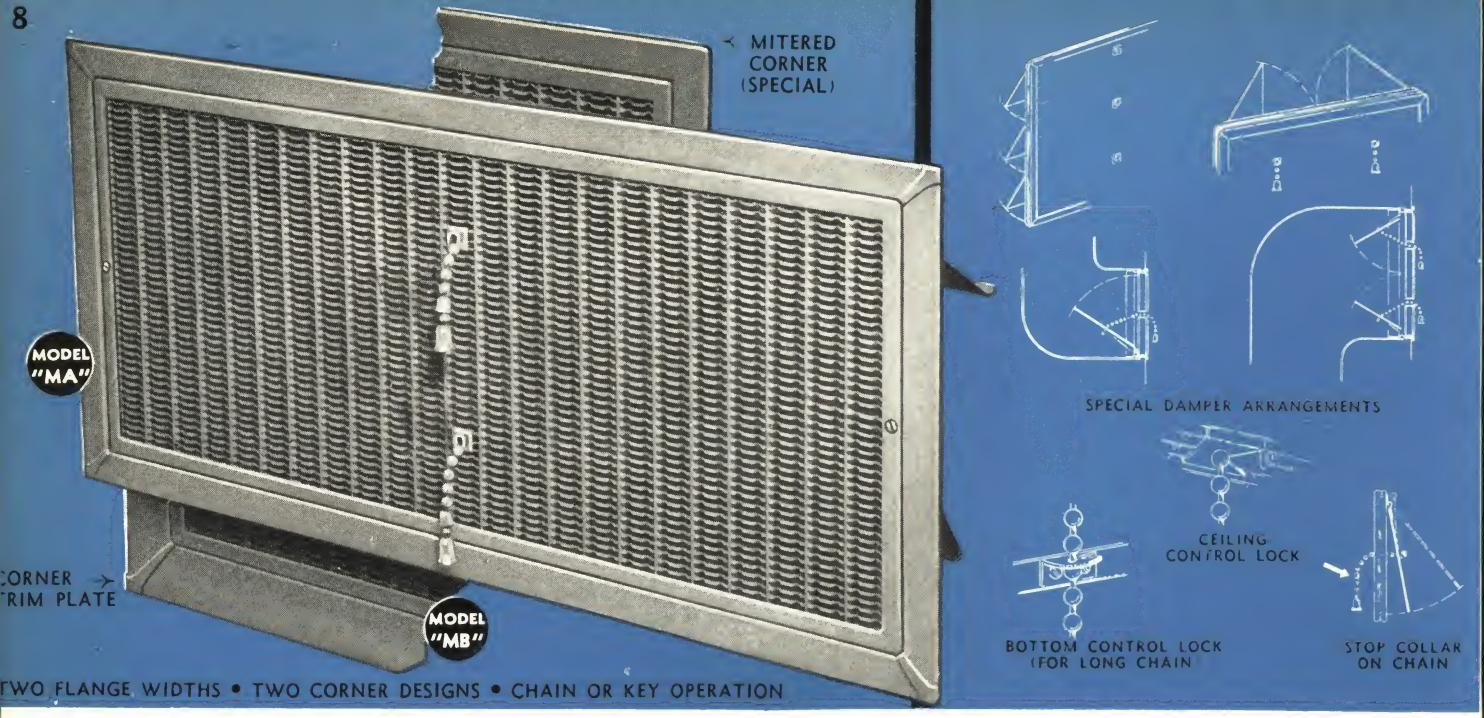
UNI-FLO Grilles and Registers are available in any one of twelve standard FINISHES, as described on page 11. Be sure to specify the finish desired on each unit when ordering

For DIRECTIONAL FINS, which can be arranged as desired, see page 10. In units having horizontal fins, the DIFFUSERS are pointed upward for cooling service and downward for heating service (specify which is required).

DIRECTIONS FOR ORDERING—Always give size, model, type, fin arrangement, finish, and state whether grille or register. Unless otherwise stated, the first dimension given will be assumed to be the width.

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ENGINEERED AIR DISTRIBUTION



Model "M" Registers

(TWO MODELS: "MA" AND "MB")

UNI-FLO Model "M" Registers are similar in construction to the Model "F" except that the bead frame of the latter is replaced by a flanged frame for rigidity and to provide coverage for irregularities in the opening.

The Model "M" frame is fastened in place after the wall has been surfaced, and before or after decoration. The frame is furnished *without* mounting holes in the flange; these are to be punched or drilled where required when installed (necessitated by the variety of conditions encountered). The apron of the frame is drilled so that it may be attached to the duct or stackhead with sheet-metal screws.

The core assembly is set in place after all construction work is finished, or after decorating. SCREW-LOCK construction (or "Snap-Lock," which is optional on Model "M" Grilles up to 360 sq. in.) also permits removal of the core member at any time for cleaning purposes, or for reversal of the grille (as in some year-round systems), without disturbing the frame.

Two flange widths are available, Model "MA" (7/8-in. flange) and Model "MB" (1 1/16-in. flange). Two types of corner construction can be furnished, as shown above. The corner with small trim plate is standard; the plain mitered corner will be furnished on special order.

Model "M" Registers are used largely in sidewall applications; therefore only one form of frame is made.

If the register is more than 36 in. wide or more than 24 in. high, the core is fabricated in two or more symmetrical sections assembled into a single unit. Each section may be removed independently of the others. Large frames have additional corner reinforcement as required.

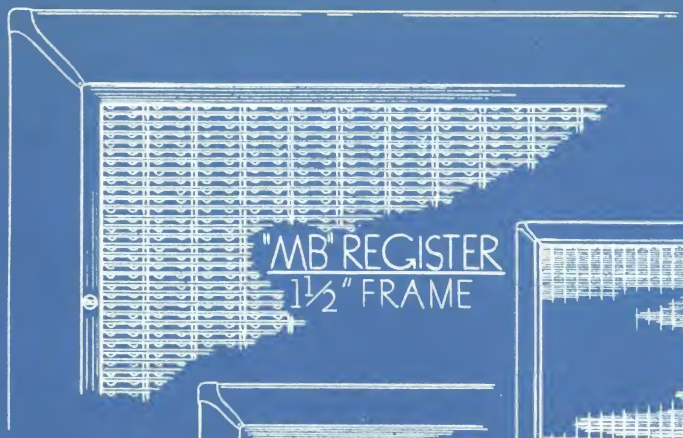
The damper is attached to the frame with a continuous piano-type hinge, leakproof and rattleproof. A coil spring on the hinge holds the damper open, positioned by engaging a bead of the control chain in a slot on the chain guide. When the damper is pulled shut, a conical spring on the chain anchor imposes a positive closing pressure to prevent leaks or whistle. A stop collar is provided which can be attached at any bead to limit the maximum opening of the damper to maintain a proper balance of air distribution. Long chains and special control locks are available for high sidewall and ceiling locations. To circumvent unauthorized adjustment, key-operated dampers should be specified.

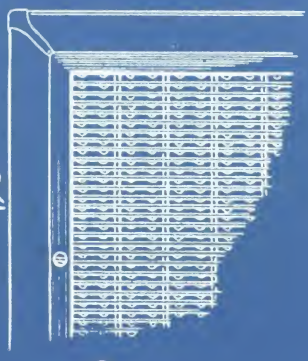
Model "M" Grilles

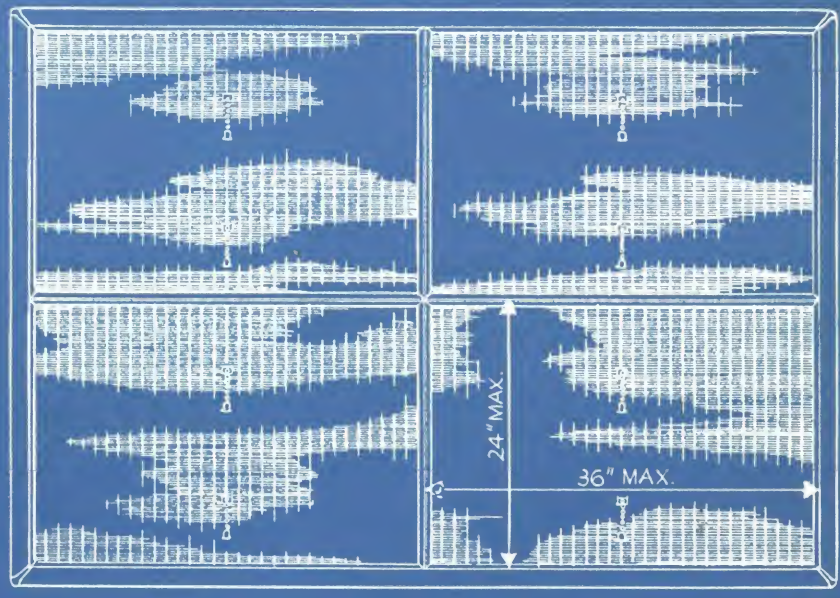
Model "M" Grilles are identical with the Model "M" Registers described above and shown in detail on page 9 except that they have neither dampers nor damper operating equipment.

Model "M" Registers

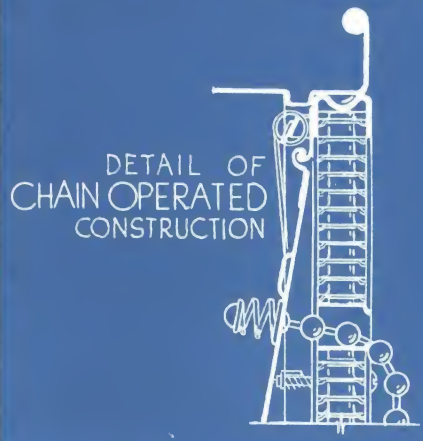
(TWO MODELS: "MA" AND "MB")



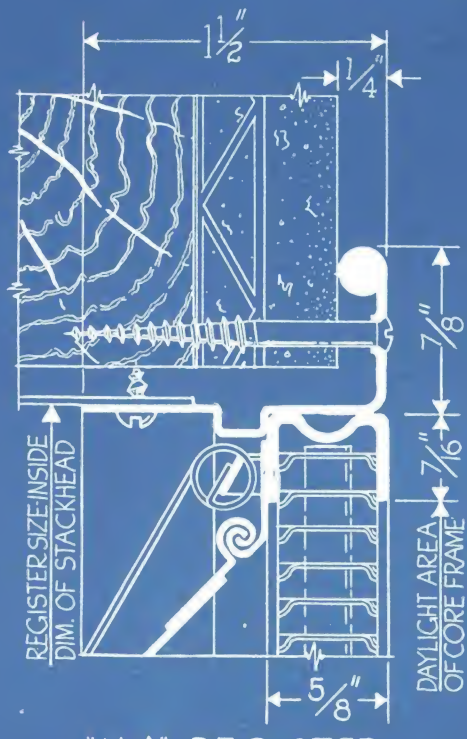




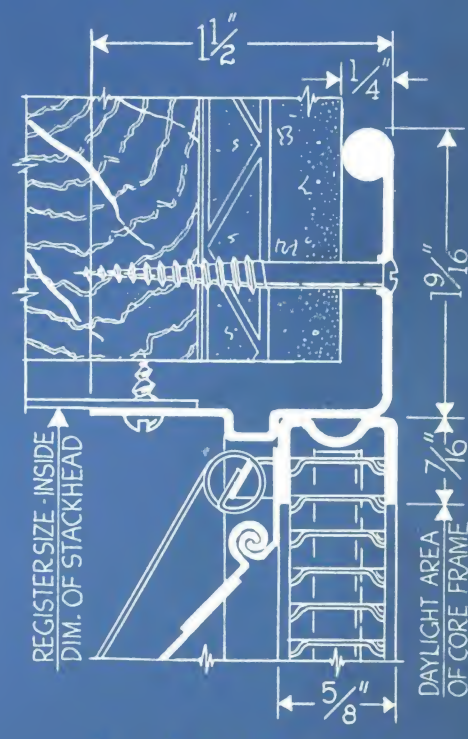
METHOD OF FABRICATING LARGE SIZE REGISTERS







"MA" REGISTER SECTION



"MB" REGISTER SECTION

uni-flo

ENGINEERED AIR DISTRIBUTION

UNI-FLO Grilles and Registers are available in any one of twelve standard FINISHES, as described on page 11. Be sure to specify the finish desired on each unit when ordering.

For DIRECTIONAL FINS, which can be arranged as desired, see page 10. In units having horizontal fins, the DIFFUSERS are pointed upward for cooling service and downward for heating service (specify which is required).

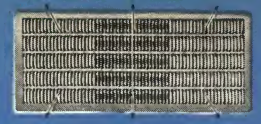
DIRECTIONS FOR ORDERING—Always give size, model, type, fin arrangement, finish, and state whether grille or register. Unless otherwise stated, the first dimension given will be assumed to be the width.

Deflecting Fin *Arrangements*

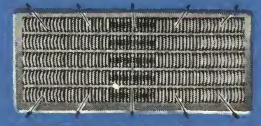
UNI-FLO Directional Diffusing Fins may be arranged in any desired manner in the core assembly of any Grille or Register. The desired arrangement must be specified. Three types of standard fins, SF, DF, and CF (see opposite page), are suitable for almost any desired combination. The drawings below show some of the common arrangements available; these should be ordered by number to minimize the possibility of misunderstanding and consequent delays in shipment.

Orders for special arrangements should be accompanied by a sketch or a clear description. Unless otherwise indicated, sketches will be understood to show the grille as it appears from the room after installation.

S = SPLIT R = RIGHT L = LEFT U = UP D = DOWN FH = FINS HORIZONTAL FV = FINS VERTICAL
Examples: SFU = "SF" Fins with diffusers up; DFR = Fins directional to the right.



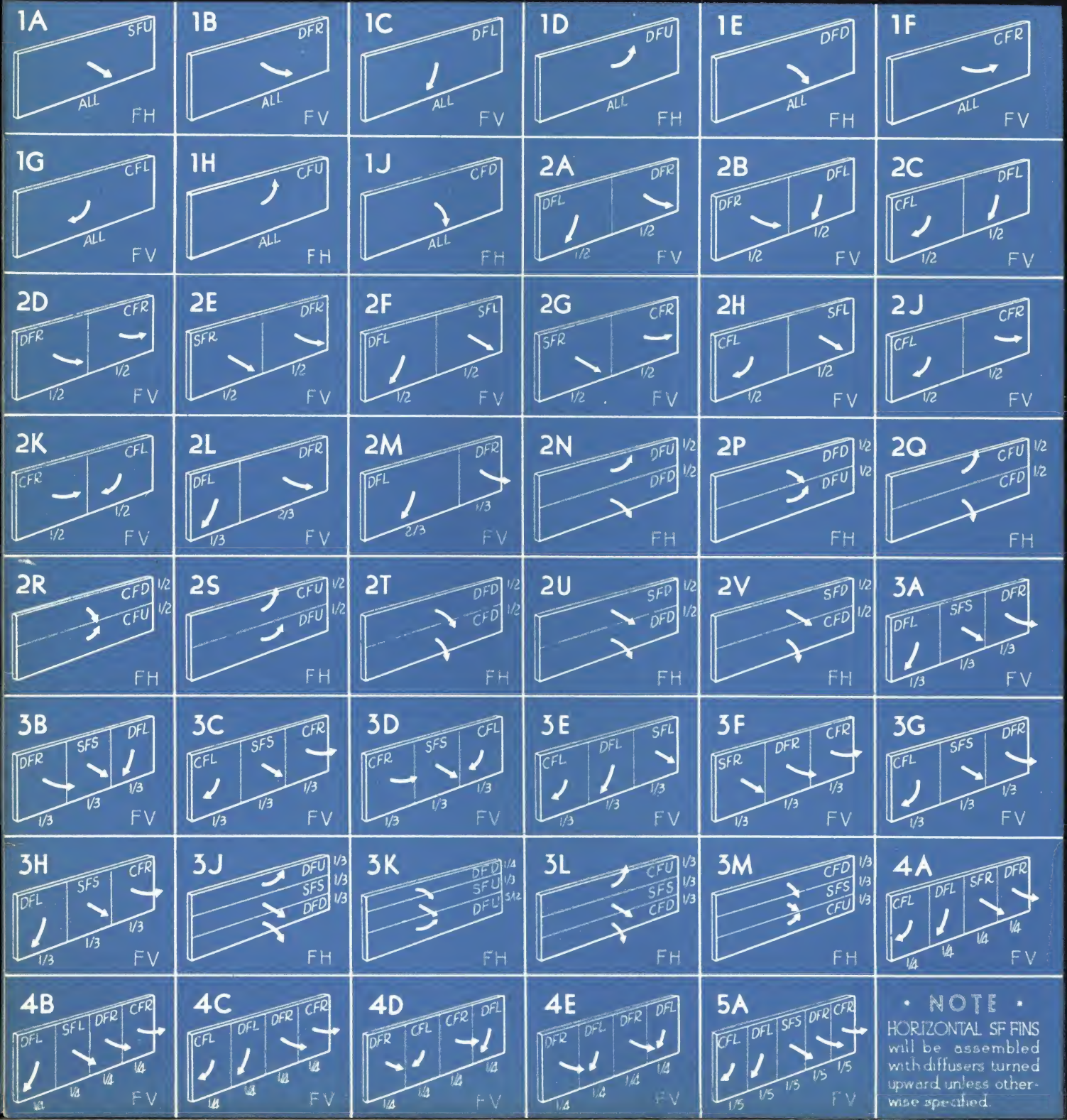
3A Fin Arrangement



5A Fin Arrangement



3K Fin Arrangement



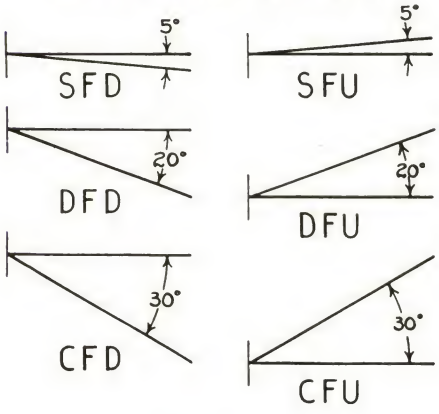
· NOTE ·

HORIZONTAL SF FINS will be assembled with diffusers turned upward unless otherwise specified.

FINS *and* FINISHES

Six standard types of UNI-FLO fins are made, five of which are shown in the pictures and cross-section drawings below. The SF, DF, and CF fins can be combined in accordance with the arrangements shown and described on the opposite page. The RF fins are intended primarily for Recirculating units described on page 12. The VF fins are used in Sight-Tite units, also shown on page 12. The RF and VF fins cannot be combined with each other, or with the SF, DF, and CF fins, in a common moulding without the use of partition bars. There is also a DDF fin (with DF type diffusers on both sides of the fin) used only in the Elbow Turn and Volume Control Deflector described on page 19.

DIVERGENCE CHARTS



Finishes

No. 1 Plain Metal Finish *Mill finish*

No. 2 Gray Prime Coat Finish *Lacquer dip*

No. 3 Gun-Metal Finish *Electroplated Oxidized Copper*

No. 4 Clear Lacquer Finish *Lacquer dip*

No. 5 Brushed Bronze Finish *Electroplated Oxidized Copper—Brushed*

No. 6 Plain Zinc Finish *Electroplated*

No. 7 Satin Nickel Finish *Electroplated Nickel on Copperplated base*

No. 8 Satin Copper Finish *Electroplated Copper*

No. 9 Buffed Zinc Finish *Electroplated—Buffed*

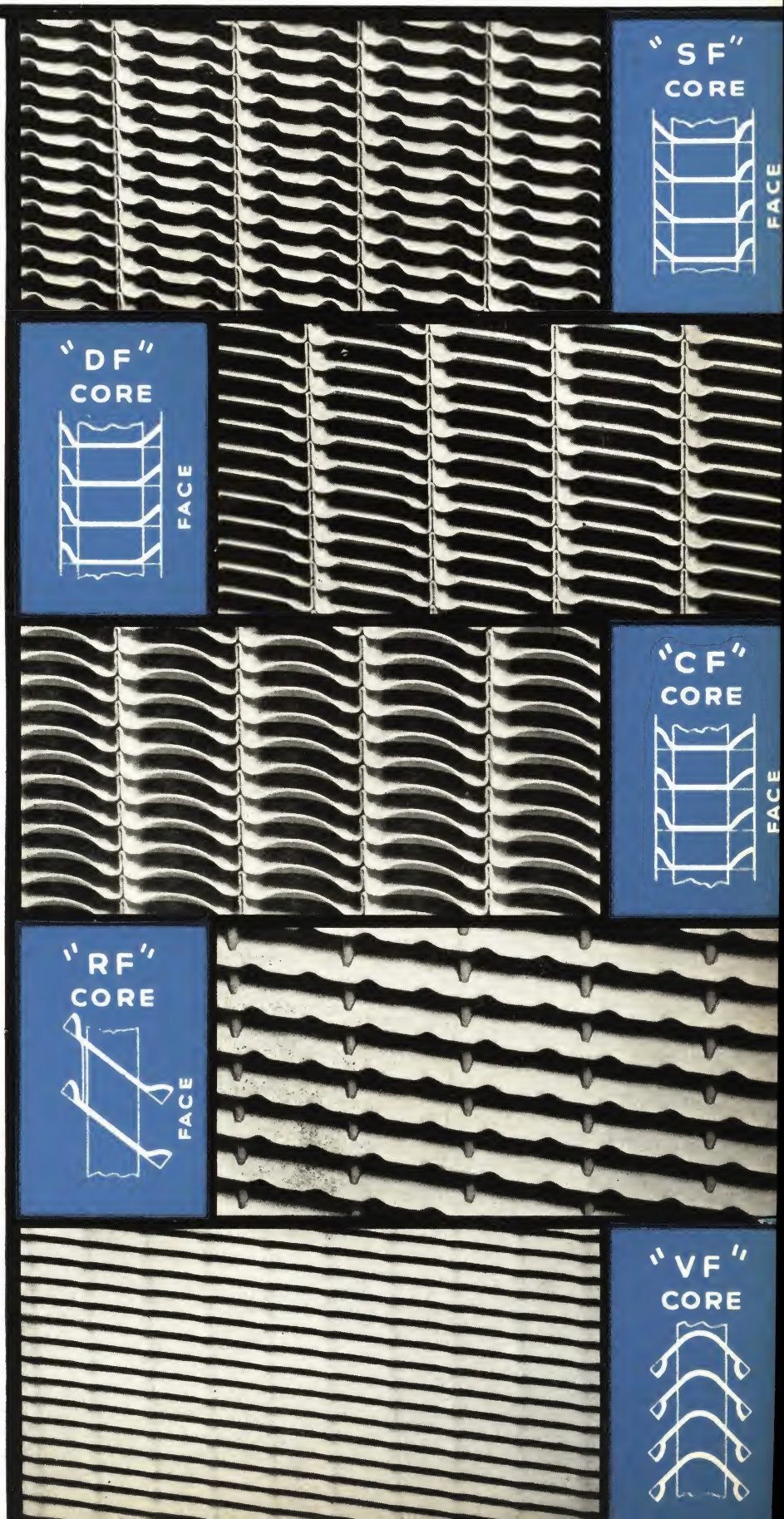
No. 10 Brushed Zinc Finish *Electroplated—Brushed*

No. 11 Polished Nickel Finish *Electroplated Nickel on Copperplated base*

No. 12 Rust-Resistant Finish *Baked Gray Prime Coat*

uni-flo

ENGINEERED AIR DISTRIBUTION



RECIRCULATING

Grilles and Registers

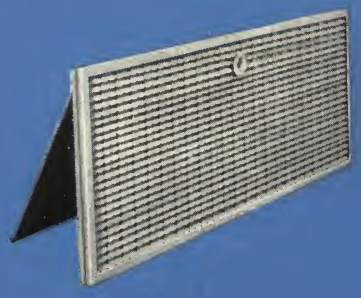
UNI-FLO Recirculating Grilles and Registers are specially designed for use in return air openings. A special form of UNI-FLO fin (type "RF," see page 11) characterized by greater free air opening, less tendency to clog, and better masking of the duct or stack head is used. The fins are set at an angle of approximately 35° and are wider spaced than those used in supply units. While a grille is satisfactory in many return air outlets, a register is generally recommended because the dampers are a decided aid in balancing the system, and they also serve as a means of producing a slight positive pressure in the conditioned space where such practice is desirable to eliminate infiltration.

To obtain a unit of this special type, simply order a grille or register of the desired model (EA, EB, F, MA, or MB, as shown on pages 4 to 9) and specify "RF" fins. Large units will be fabricated in sections. "RF" fins cannot, however, be combined with other UNI-FLO fins (SF, DF, CF, DDF, and VF as shown on page 11) in a common frame without the use of partition bars. Dampers may be chain-operated or key-operated, the latter being recommended for this service to prevent tampering.

REINFORCED GRILLES AND REGISTERS (with SF, DF, CF or DDF fins) suitable for use as floor units, or for any application requiring greater than normal rigidity and strength, are also available.

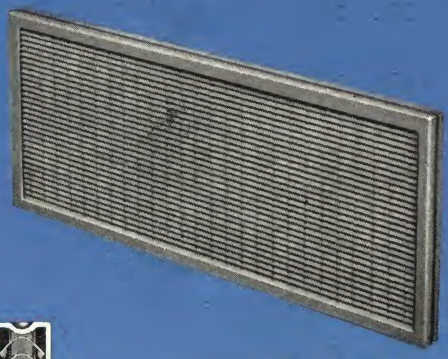


MODEL A GRILLE WITH RF CORE



MODEL A

Model A grilles and registers have no frame other than the U-shaped molding which holds the fin assembly, as illustrated at the right. They are identical with Models F and M except they have neither frame nor Screw-lock.



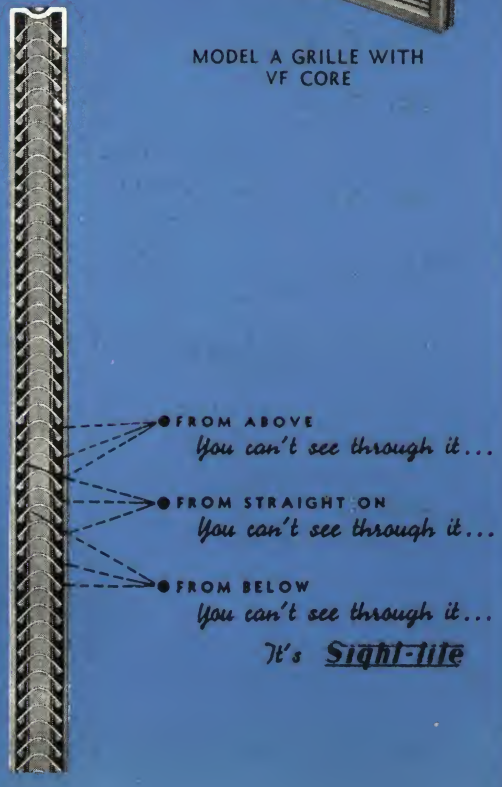
MODEL A GRILLE WITH VF CORE

Sight-Tite

Ventilation Grilles

The UNI-FLO "Sight-Tite" grille meets the demand for a ventilation unit which cannot be seen through from any angle. As shown in the sectional view, the fins are of an inverted V-shape and overlap. Diffusers on the edges of the fins add rigidity and make for a pleasing appearance. This special type of grille is useful for ventilation openings in doors, walls, panels, baseboards, etc. It may also be used for exterior fresh air intake openings, as it provides an effective barrier to rain or snow. The "Sight-Tite" core carries the symbol "VF."

UNI-FLO "Sight-Tite" units may be obtained in any of the standard models (EA, EB, F, MA, or MB, as shown on pages 4 to 9) and in any of the listed finishes by simply ordering standard model grilles or registers and specifying the "VF" core. Large units will be fabricated in sections. VF fins cannot, however, be combined with other Uni-Flo fins (SF, DF, CF, DDF and RF, as shown on page 11) in a common frame without the use of partition bars.



Ceiling Outlets



Venturi-Flo

The Venturi-Flo is a new type of ceiling outlet based on the Venturi principle adapted to air distribution and circulation, designed to properly mix and distribute the air, quietly and efficiently. They are available for handling small as well as very large volumes of air.

The units are constructed entirely of stamped and spun steel members available in finishes Nos. 1, 2, 3, 4, 5, 6, 8, 9, 10 as described on page 11. They are shipped in two pieces: the ceiling plate assembly and the diffuser assembly. Fittings are available for the attaching of any standard lighting fixture below the outlet.

Venturi-Flo is made in four standard models, each designed for a particular range of air volume, velocity, and distribution.

Features

- ★ QUIET OPERATION
- ★ HIGH DIFFUSION EFFICIENCY
- ★ ATTRACTIVE APPEARANCE
- ★ WIDE RANGE OF CAPACITIES
- ★ HIGH RATE OF INTERNAL MIXING
- ★ RIGID CONSTRUCTION

DETAILS OF CONSTRUCTION

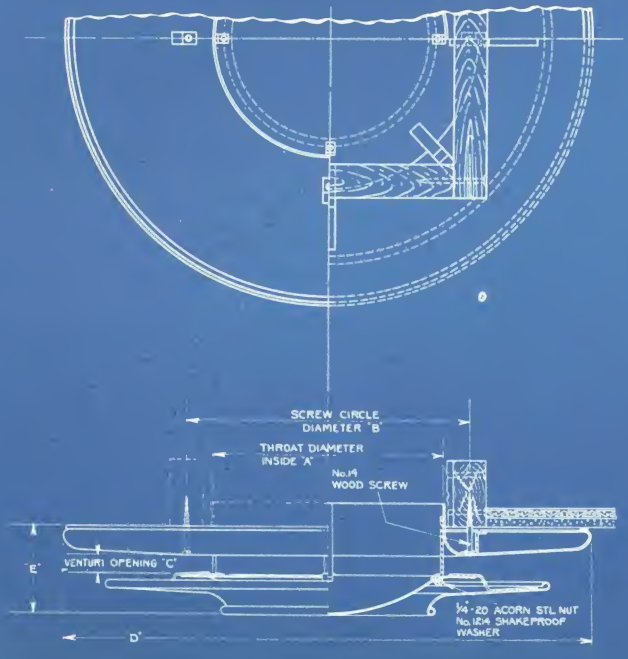


TABLE OF DIMENSIONS

Model	Part No.	Dimensions in Inches				
		A	B	C	D	E
616	YUb 523	6	9	½	16	3¼
	" 524	"	"	1	"	3¾
	" 525	"	"	1½	"	4¼
1024	" 526	10	13¼	1	24	4⅝
	" 527	"	"	1½	"	5⅛
	" 528	"	"	2	"	5⅝
1432	" 516	14	17¼	1	32	5⅛
	" 517	"	"	2	"	6⅛
	" 518	"	"	3	"	7⅛
2454	" 519	24	29	2	54	8
	" 520	"	"	3	"	9
	" 521	"	"	4	"	10
	" 522	"	"	5	"	11



UNI-FLO-LITE



MODEL "P" CIRCULAR OUTLET



MODEL "S" CIRCULAR OUTLET



SQUARE OR RECTANGULAR OUTLET



SQUARE OR RECTANGULAR OUTLET
SUPPLY AND EXHAUST

Ceiling Outlets

UNI-FLO-LITE

The UNI-FLO-LITE is a special unit with which it is possible to supply both ventilation and illumination from a single ceiling fixture. Besides being an adequate lighting unit of attractive appearance, it affords an effective means for uniform, diffused air distribution.

The all-aluminum, satin-finish hanger supports a cylindrical grille of UNI-FLO diffusing fins and a flat-bottom, bowl-shaped, frosted glass light globe. The globe is held in place by a single thumb-nut of decorative pattern. A dome-shaped member deflects the air through the grille and also serves as a light reflector.

For sizes available, see opposite page.

CIRCULAR

UNI-FLO Circular Ceiling Outlets meet the demand for an attractive and effective form of ceiling unit. Until recently, common practice has limited the location of air outlets to the walls only, with the exception of theatres and other large structures where special treatment was possible, but now the desirability of introducing air into the conditioned space from one or more ceiling locations has become recognized.

Two models are available. The Model "P" unit is made up of pressed steel members and can be furnished in any of the standard finishes. (See page 11). The Model "S" unit has a spun aluminum hanger and is available only with satin finish. Two sizes, 16-in. core diameter and 12-in. core diameter, are available in each model. The hanger supports a cylindrical UNI-FLO diffusing-fin core inside of which is an air deflecting member. Specifications for the four standard models appear in the table on page 17. Details of construction are shown in the drawings on page 16.

SQUARE and RECTANGULAR

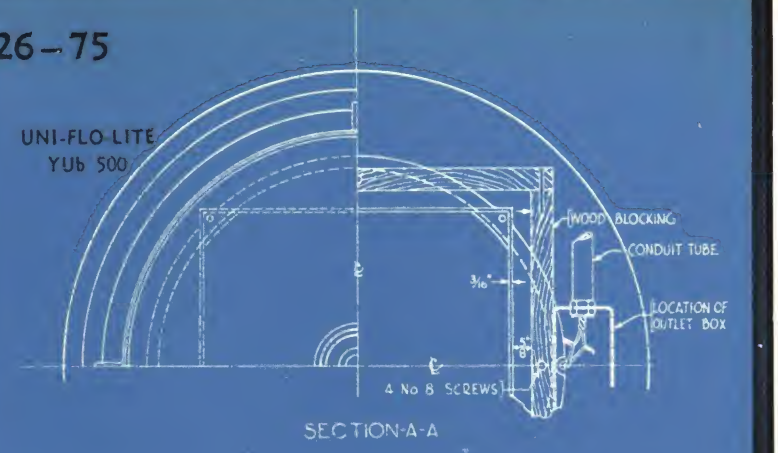
UNI-FLO Square and Rectangular Ceiling Outlets meet the demand for a simple and attractive ceiling unit capable of supplying more air in one direction than another, and in which there is more flexibility of air distribution control from the various faces. Rectangular units are sometimes better adapted to long and narrow rooms than the Circular Ceiling Grilles, and in some cases the square or rectangular form will fit more attractively into the decorative scheme.

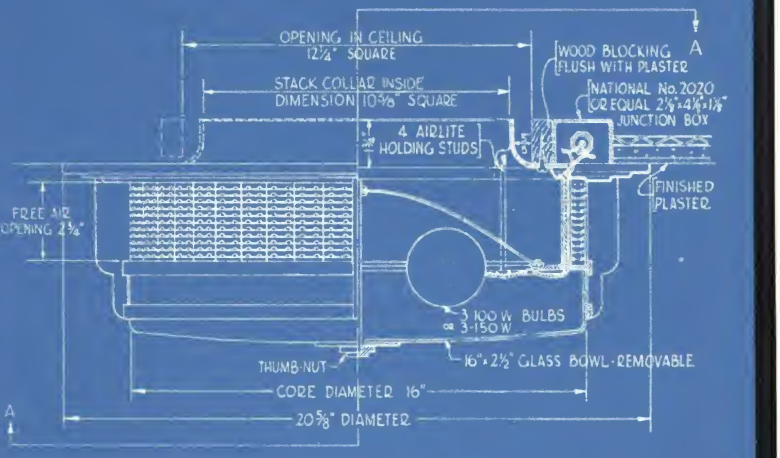
These units are fabricated from pressed steel forms, with standard UNI-FLO grille cores set into the sides. They are available in nearly all of the standard finishes listed on page 11. The unit is designed to be attached directly to wood blocking in the manner shown on page 17.

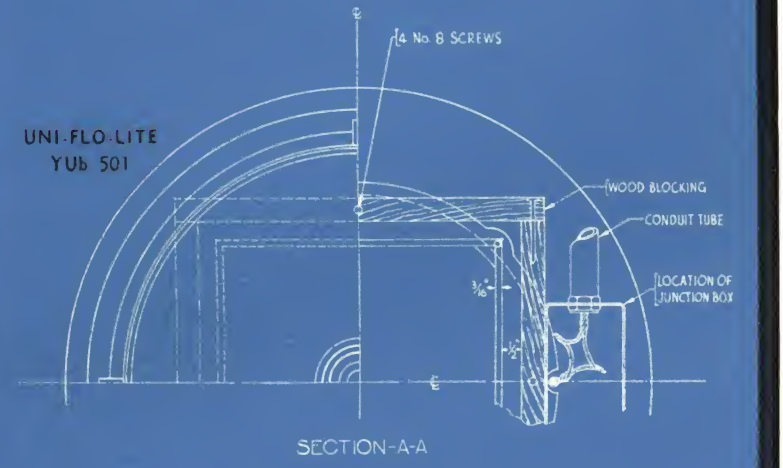
SUPPLY AND EXHAUST

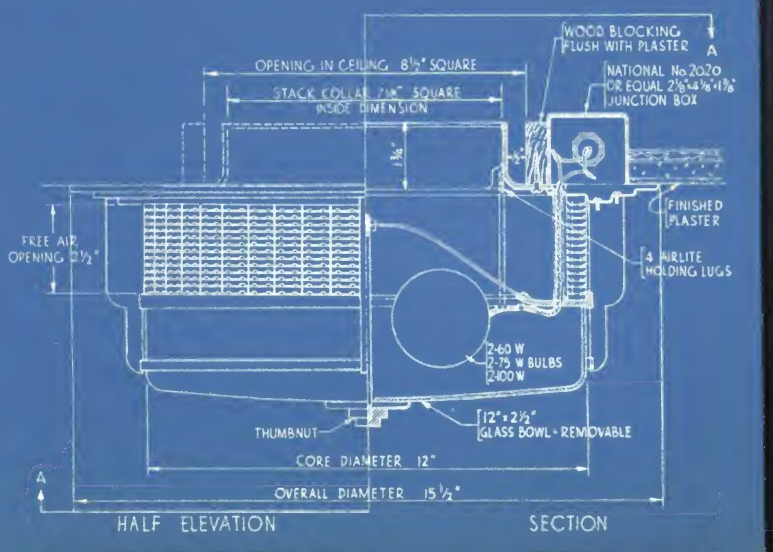
These units are similar to those described above, but are equipped with a return outlet on the underside. Available sizes and details of construction are shown on page 17.

Ceiling Outlets









DETAILS OF CONSTRUCTION

UNI-FLO-LITE

The hanger is roughed-in to a square frame in the ceiling outlet after the finish plaster coat has been applied and before or after the decorating has been completed. The grille unit and light assembly may be installed any time during or after the decorating, thus precluding any possibility of damaging these parts.

The UNI-FLO diffusing fins which are used in the grille core produce a blanket of air that spreads uniformly in all directions and mixes rapidly with the room air so that the temperature of the supply air quickly approaches the temperature of the room. As in other UNI-FLO units, supply air may be introduced at lower temperatures and higher velocities than with ordinary types of outlets, without producing cold drafts or "air whistle".

If a UNI-FLO-LITE should have to be placed where near-by column or corner construction obstructs the air flow, part of the grille may easily be blocked off inconspicuously from inside the core.

UNI-FLO-LITES are available in two models, as shown in the drawings at the left.

YUb 500 has a 16-in. diameter grille and light bowl, and receptacles for three 150-watt bulbs.

YUb 501 has a 12-in. diameter grille and light bowl, and receptacles for two 100-watt bulbs.

The grille core has a gun-metal finish as standard, affording a pleasing contrast with the rest of the fixture. Light bulbs and wiring are not furnished with the unit.

Special

UNI-FLO-LITES

There are several special UNI-FLO-LITE designs which are available on order.

For Railroad Service. These designs are characterized by specially rugged construction to withstand extra vibration. Two sizes are available: YUb 502 (and YUb 503) have about 50% greater air capacity than YUb 500; YUb 504 has the same capacity as YUb 501. They have the same lighting capacity as the standard units.

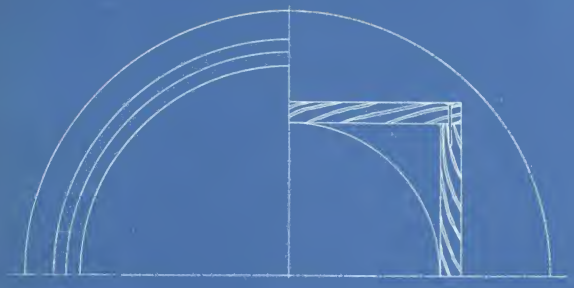
For Greater Lighting Capacity. YUb 1001 is a modified design of the 16-in. size. (YUb 500) in which the light compartment is large enough to accommodate up to 1000 watts lighting capacity. A section of grille core has been added to provide ventilation for the additional heat generated.

Part No.	Size, Inches	Maximum Lighting Capacity	Core Area sq. ft.
YUb 500	16	450 W	1.4
YUb 501	12	200 W	.656
YUb 502	16	450 W	2.1
YUb 503	16	450 W	2.1
YUb 504	12	200 W	.656
YUb 1001	16	1000 W	1.4

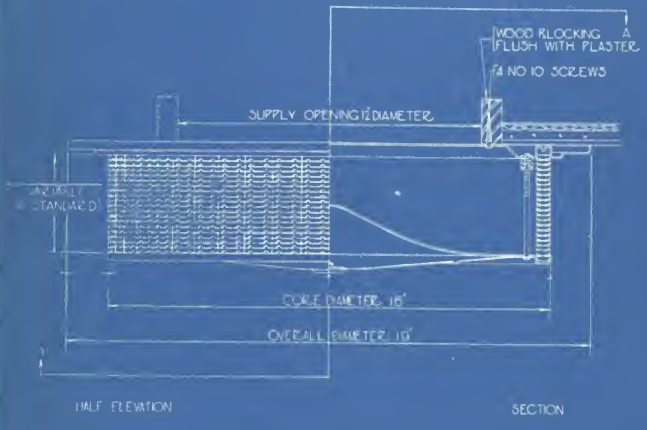
CIRCULAR

Ceiling Outlets

MODEL P-16

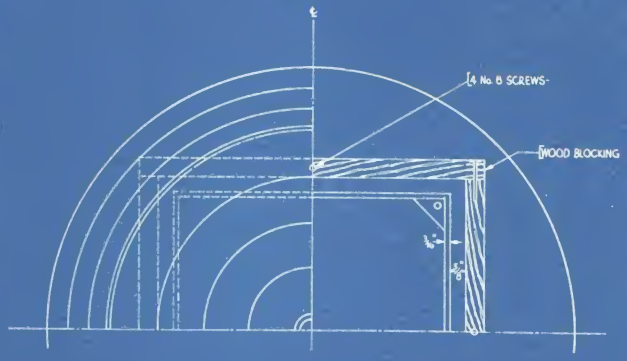


SECTION A-A

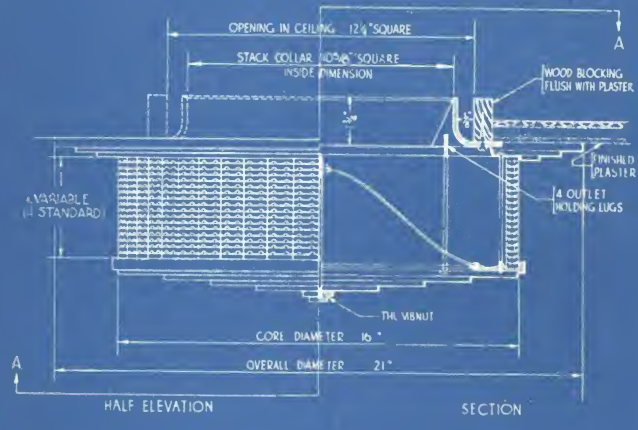


HALF ELEVATION SECTION

MODEL S-16

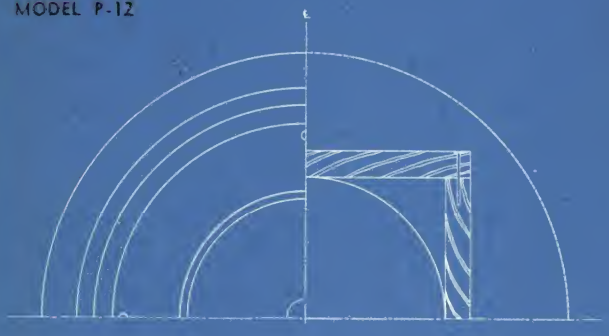


SECTION-A-A

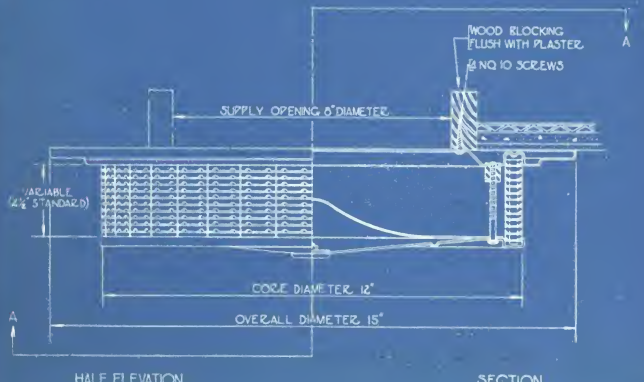


HALF ELEVATION SECTION

MODEL P-12

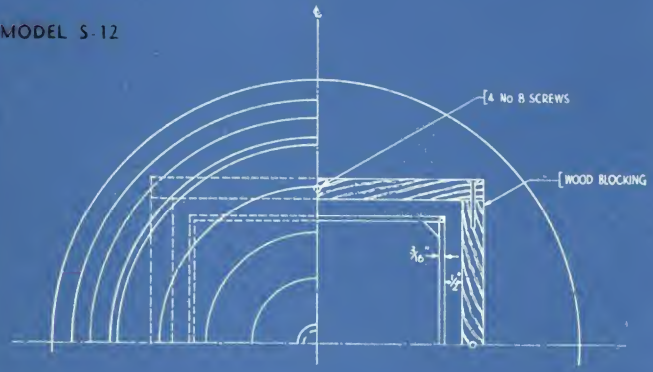


SECTION A-A

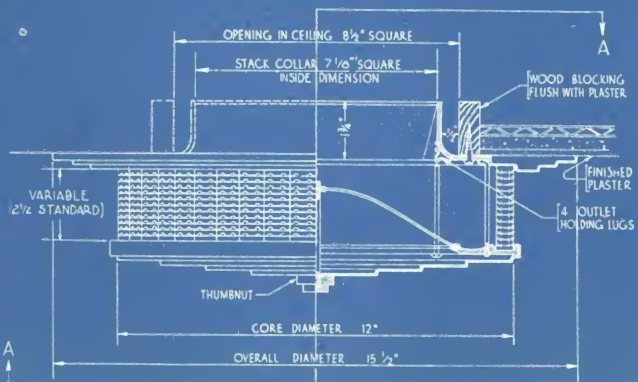


HALF ELEVATION SECTION

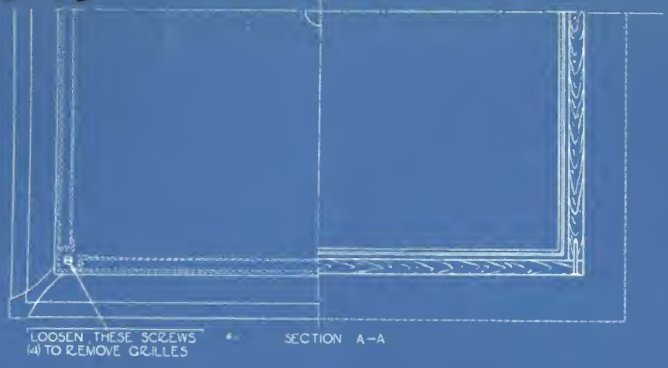
MODEL S-12

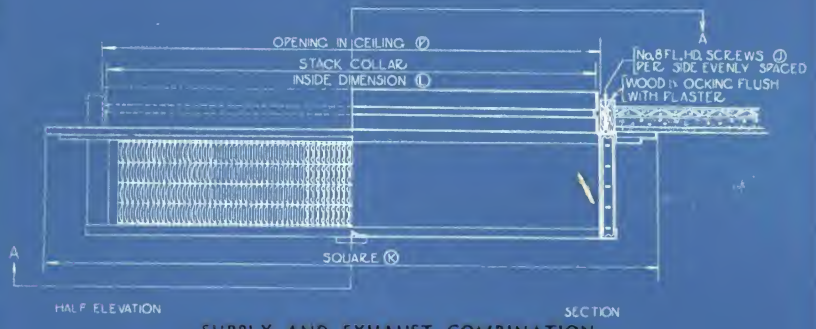


SECTION-A-A

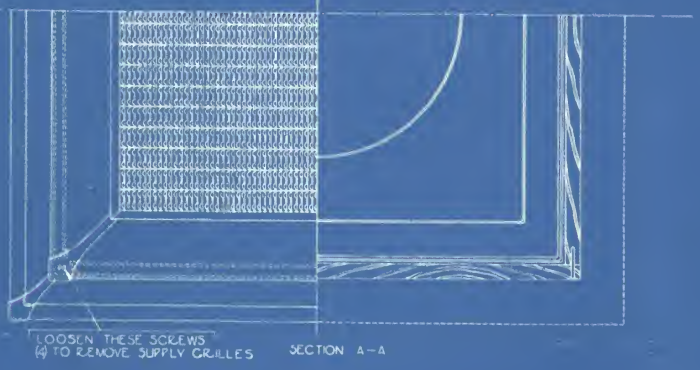


HALF ELEVATION SECTION





SUPPLY AND EXHAUST COMBINATION



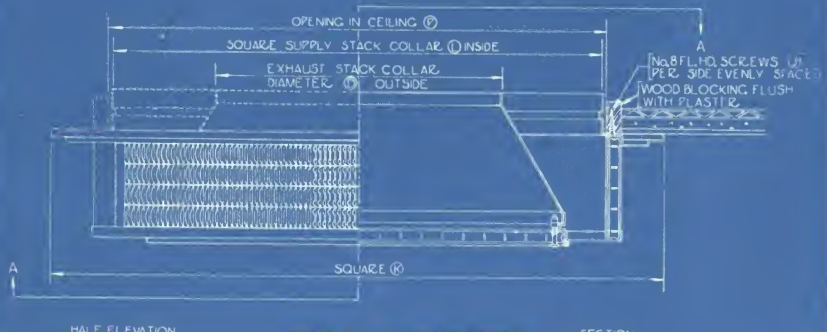


TABLE OF DIMENSIONS

Part Number	Supply Grille Size (4)	Supply Grille Core Area Sq. Ft. (Total)	D	J	K	L	P	Return Grille (1) Core Area Sq. Ft.
YUb-510	20 x 4	1.48	..	3	26	20	12½	....
YUb-511	24 x 5	2.48	..	3	30	24	14½	....
YUb-512	30 x 6	3.88	..	4	36	30	18½	....
YUb-513	32 x 7	4.96	..	4	38	32	20½	....
YUb-1002-A	20 x 4	1.48	12	3	26	20	20½	1.48
YUb-1002-B	24 x 5	2.48	14	4	30	24	24½	2.48
YUb-1002-C	30 x 6	3.88	18	4	36	30	30½	3.88
YUb-1002-D	32 x 7	4.96	20	5	38	32	32½	4.96

Ceiling Outlets

DETAILS OF CONSTRUCTION

CIRCULAR

The UNI-FLO diffusing fins which are used in the grille core produce a blanket of air that spreads uniformly in all directions and mixes rapidly with the room air so that the temperature of the supply air quickly approaches the temperature of the room. As in other UNI-FLO units, supply air may be introduced at lower temperatures and higher velocities than with ordinary types of outlets, without producing cold drafts or "air whistle."

If a UNIT should have to be placed where near-by column or corner construction obstructs the air flow, part of the grille may easily be blocked off inconspicuously from inside the core.

The Model "S" unit is equipped with a square or demountable stack collar which should be attached to wood blocking in the manner shown on page 16. Ordinarily, the stack collar is set at the time the stack head is installed while the hanger proper is mounted after the decorating is completed. The possibility of accidental damage during construction is thereby precluded. The Model "P" unit has no stack collar; a *round* stack head should, therefore, be extended about one-half inch below the wood blocking so that the intake of the unit may be slipped over it after the decorating is completed.

Model "P" units may be equipped with adjustable dampers. Either of these units may be supplied with fittings for the attaching of any standard lighting fixture below the outlet.

Part No.	Model	Core Area, sq. ft.
YUb 505	S-16	1.4
YUb 506	S-12	.656
YUb 508	P-16	1.4
YUb 509	P-12	.656

SQUARE and RECTANGULAR

UNI-FLO diffusing fins in the grille cores assure uniform distribution of a diffused blanket of air throughout the conditioned space. As in other UNI-FLO units, supply air may be introduced at lower temperatures and higher velocities than with ordinary types of outlets, without producing "air whistle" or unpleasant drafts. To obtain the broadest air distribution from each face, cores with "5-A" directional fins (see page 10) will usually be used, although other fin arrangements will be furnished if necessary to meet given conditions. Specifications for the four sizes for which parts and partial assemblies will be carried in stock appear in the table.

These units may be supplied with fittings for the attaching of any standard lighting fixture below the outlet.

SUPPLY AND EXHAUST COMBINATION

Units similar to those described above, but equipped with a return outlet on the under side, are also available. It offers an ideal solution to the problem of locating the exhaust outlet most advantageously, with respect to the supply outlets. The combination unit overcomes the disadvantages of remotely separated supply and return outlets, the air being forced out across the ceiling, from where it falls along the walls, is drawn through the occupancy zone, and up and out at the center of the room. Specifications for the four sizes for which parts and partial assemblies will be carried in stock appear in the table. The core area of the return grille is the same as that shown for the supply grilles. Other sizes and shapes will be made up to order.

uni-flo

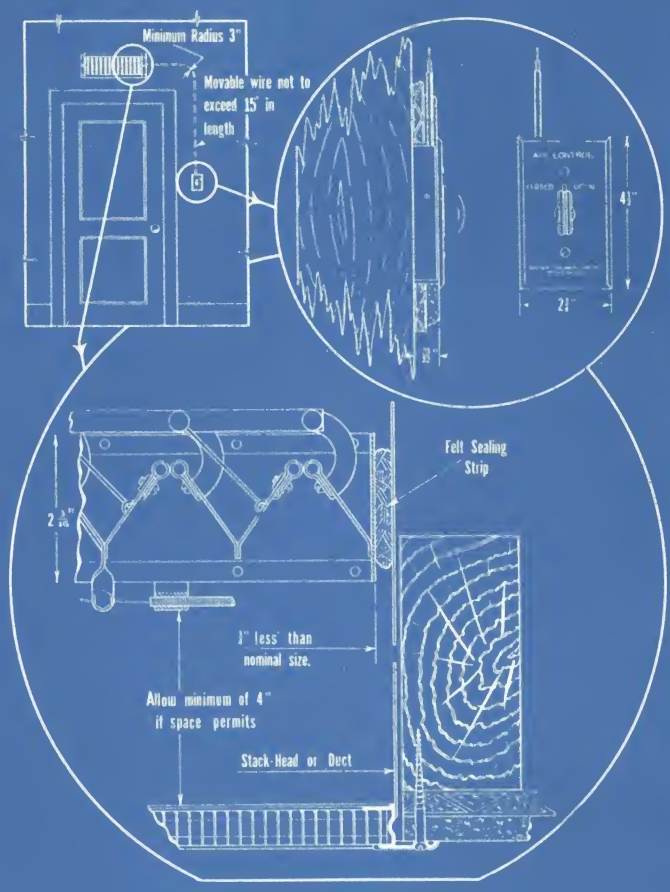
VOLADJUSTER

The Voladjuster, A Manually Operated Remote Volume Control, is similar in construction to the standard Volocitrol described on page 19 except that all blades are moved simultaneously by linkage. The blades move toward or away from each other in pairs, thus avoiding the directional effect imparted to the air stream by single or multi-blade types of dampers. The Voladjuster should be installed in the duct back of the grille, as shown in the adjacent detail.

The manual control unit consists of a small pressed steel case which houses a sector-drum that carries a flexible cable-covered wire similar to that previously used for the manual choke on automobiles. This wire and cable are carried inside ¼ in. O.D. copper tubing which may be concealed inside the wall or concealed in the thickness of the plaster. The manual control box is of such a depth that when it is nailed to the studding it will be flush with plaster of standard thickness. A standard flush type plate, similar to a switch plate, appropriately marked, is attached to the box after the installation is complete. The sector-drum of the manual control is rotated with detent action by a black molded handle. The distance between the Voladjuster and the manual control should not exceed 15 feet actual length of wire. If longer lengths are absolutely necessary, submit full particulars to the factory.

The Voladjuster proper is furnished in plain metal (No. 1 finish) and the manual control plate in plain electro-plated zinc (No. 6 finish) as standard. Finishes Nos. 1, 2, 3, 4, and 5 are optional for the plate only (see page 11).

MANUAL REMOTE CONTROL



uni-flo

MULTI-LOUVER REGISTERS

Multi-louver registers are available in Model EA and EB frames as standard; Model MA and MB frames are available on special order. This type of register is designed particularly for installations which do not have room enough to allow full opening of a single louver damper. The multi-louvers control the volume of air and still permit equal air distribution over the entire face of the register.

The register consists of a series of blades 1 inch wide, parallel to the first dimension, unless otherwise specified, and carried in a frame welded to the back of the grille frame. Blades are connected with a link which is driven by the operating handle. The handle of the operating mechanism projects through a slot in the flange of the frame. This slot is in the right hand flange if the blades are horizontal and in either the top or bottom flange if the blades are vertical.



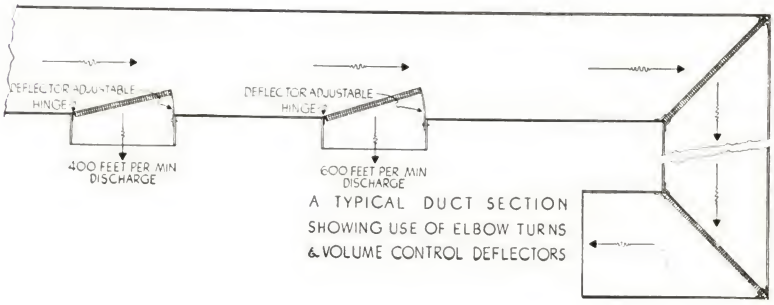


The illustration at the right shows an Elbow Turn installed in a large duct which makes a right-angle downward turn at this point.

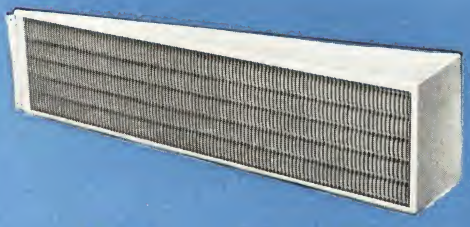


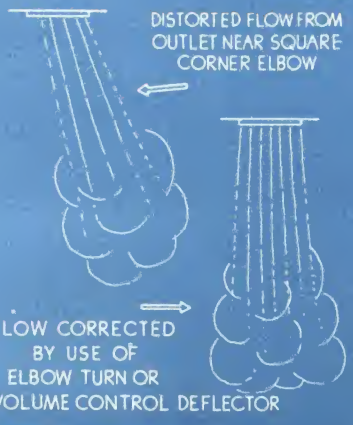
Elbow TURN

The UNI-FLO Elbow Turn is a section of special core material (designated as "DDF") with deflecting edges on both sides of the fins. It is designed for use in square-cornered duct elbows, as illustrated, to provide uniform air flow around and beyond the turn and to reduce materially the resistance caused by eddies, reverse air flow, and low pressure areas in such elbows. Curved elbows, commonly used, can be replaced by square-cornered elbows, thus decreasing the space required for duct work. Square cornered elbows, when installed in existing buildings impart a beam-like appearance to the duct work. Elbow turns are also useful at the top of stack heads, to provide straight and uniform air delivery to the outlet.



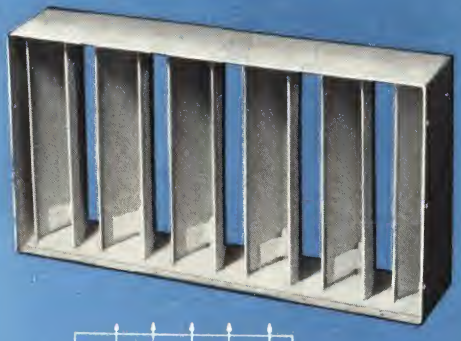
A TYPICAL DUCT SECTION SHOWING USE OF ELBOW TURNS & VOLUME CONTROL DEFLECTORS





Volume Control DEFLECTOR

UNI-FLO Volume Control Deflectors are recommended for use in trunk ducts, as illustrated above, to control accurately the volume of air deflected into branch ducts and also to provide straight and uniformly distributed air flow in each branch duct. In short branches, they prevent piling up and distortion of the discharge air stream; and the junctions with the main duct may be of square construction, as shown, thus conserving space. The UNI-FLO Volume Control Deflector consists of a section of special core material (designated as "DDF") with deflecting edges on both sides of the fins, mounted in a hinged frame the same size as the branch duct and having a hood extension to prevent leakage around the unit. When the Deflector has been adjusted so that it scoops out the desired amount of air, it is secured to the duct work by sheet metal screws.





The VOLOCITROL

The UNI-FLO Volocitrol is useful for a number of purposes in the control of air distribution. As shown at the left, the unit is composed of a frame which holds several pairs of pivoted louvres, each of which may be positioned independently. When mounted in a duct, the louvres may be set as an air valve to restrict the flow across the whole duct or partially in any portion of it. Directional control can be obtained by swinging one louvre of each pair forward, and setting the pair at whatever angle is desired, or the louvres can be set at an angle with each other to give somewhat the same effect as an Elbow Turn or Volume Control Deflector (see above). The louvres, which can be set by hand, turn on friction pivot pins and will maintain their positions when once set. A felt edging strip, to fit between the frame and the duct and prevent leaks or rattles, is furnished as standard. Air conditioning engineers who have had to face unusual or unanticipated air flow conditions will appreciate the flexibility of the Volocitrol for handling such problems. The overall dimensions of the Volocitrol are ¼ in. less than its nominal size.



RCA Building, Rockefeller Center, New York (Grilles in many new offices). Engineer: Clyde R. Place. Architects: Corbett, Harrison & McMurray; Hood & Fouilhoux; Reinhard & Hofmeister. General Contractor: Hegeman-Harris Company, Inc. Heating Contractor: Baker, Smith & Co., Inc. (Photograph by Samuel H. Gottscho.)



Chicago Daily News Building, Chicago (Grilles in Offices, CHICAGO DAILY NEWS). Architect: Holabird & Root. Air Conditioning Contractor: Kroeschell Engineering Co. Heating Contractor: Robert Gordon Company. (Photograph by Chicago Architectural Photographing Company).



The Waldorf-Astoria, New York (Grilles in Lounge Cafe only). Architects: Schultze & Weaver. Engineer: Clyde R. Place.

A Few

OF THE THOUSANDS OF INSTALLATIONS

Uni-flo GRILLES & REGISTERS

Courier Journal Bldg., Louisville, Ky.
Engineer and Contractor: Peerless Air Conditioning Co.

Brown Palace Hotel, Denver, Colo.
Architect: Walter H. Simon. Contractor: York Ice Machinery Co.

University of Washington Library, Seattle, Wash. Architect: Bebb & Gould. Contractor: Rautman Plumbing & Heating Co.

J. C. Penney Store, Spokane, Wash. Architects: J. C. Penney Engineering Dept. Contractor: Brandt Bros.

Office of Chesapeake Corp., West Point, Va.
Contractor: Thermal Engineering Co., Richmond.

Vicks Chemical Co., Greensboro, N. C.
Contractor: Air Conditioning Co., Greensboro.

First National Bank, Shreveport, La.
Contractor: Interstate Electric Co.

Al Levy's Grill, Hollywood, Calif.
Engineer: Holmes & Narver. Contractor: A. J. Garcia Co.

F. W. Woolworth Co. at Los Angeles, Calif., Phoenix, Ariz., and Sacramento. Contractor: York Ice Machinery Co.

Mellon National Bank Bldg., Pittsburgh, Pa. Consulting Engineer: M. G. Harbula. Sheet Metal Contractors: Morgan Bros. Co.

Gimbel's Pittsburgh, Pa. Consulting Engineer: Charles Z. Leopold. Contractor: York Ice Machinery Co.

The Citadel Chapel, Charleston, S. C. Architect: J. E. Sirrine & Co. Contractor: Fisk-Carter Construction Co.

Carson Pirie Scott & Co., Chicago, Ill. Engineer: Leonard Construction Co. Contractor (Air Conditioning): Mehring & Hanson Co.

Medical Arts Building, Duluth, Minn. (Second & fourth floors.) Architect: Erickson Co. Air Conditioning Contractor: Walker Jamar Co.

Electric Building, Omaha, Nebr.
Owners, Nebraska Power Co.

First National Bank Bldg., Lincoln, Nebr. Air Conditioning Contractor: Natkin Engineering Co. Sheet Metal: Rudge & Guenzel Co.

St. Mary's Church Recreation Building, Erie, Pa.
Architect: G. W. Stickle, Contractor: Warren Co.

Indiana National Bank, Indianapolis, Ind.
Architect: D. A. Bohlen & Son. Contractor: Strong Bros.

Boston Store, Milwaukee, Wis.
Contractor: Downey Heating Co.

WTMJ, The Milwaukee Journal, Milwaukee, Wis. Contractors: G. E. Pflugradt Co. and Midwest Ventilating Works.

Westinghouse Electric & Mfg. Co., Mansfield Ohio. Architects & Engineers: Owner, Contractor: Hoffman & Harpst Co.

Grand Rapids Gas Light Co., Grand Rapids, Mich. Engineer: Bryant Heater Co., Chicago. Contractor: John Van der Zee & Son.

Horace Mann High School, Salt Lake City, Utah.
Architect: Board of Education, Engineering Dept.

Maytag Office Building, Newton, Ia. Architect: Thielbar & Fugard. Air Conditioning Contractor: Carstens Bros.

Iowa City Press Citizen Bldg., Iowa City, Ia.
Architect: Kruse & Klein. Contractor: Carstens Bros.

The John Shillito Co., Cincinnati, Ohio.
Architect: E. E. Ashley. Contractor: York Ice Machinery Co.

Cincinnati Art Museum, Cincinnati, Ohio.
Engineer: Fosdick & Hilmer. Contractor: Young & Bertke.

Trust Company of Georgia Building, Atlanta, Ga. Consulting Engineer: Newcomb & Boyd. Contractor: Barge-Thompson Co.

Wyandotte High School, Kansas City, Kan. Architect: Hamilton, Fellows & Nedved, Chicago. Associate Architect: J. W. Radotinsky. Contractor: Kornbrodt Kornice Kompany.

Katz Drug Stores. Six stores in Kansas City, Mo., Oklahoma City, Okla., Des Moines, Ia., and Kansas City, Kan.

Archives Building, Washington, D. C.
Architect: John Russell Pope. Engineer: Clyde R. Place.

Lowenstein's Store, Memphis, Tenn. Consulting Engineer: Charles S. Leopold. Contractor: York Ice Machinery Co.



Jewel Tea Co., Inc., Barrington, Ill. Air Conditioning Engineer and Contractor: Kroeschell Engineering Co.



Tribune Tower, Chicago (Grilles in Offic CHICAGO TRIBUNE). Architects: Jo Mead Howells and Raymond M. Hoo Contractor: Hegeman-Harris Company. A Conditioning Contractor: Kroeschell Eng neering Co. (Photograph by Chicago Arch tectural Photographing Company.)



Upjohn Company, Kalamazoo, Mich. Arch tects & Engineers: Albert Kahn, In Detroit, Mich. Sheet Metal Contract The J. A. Temple Co., Kalamazoo, Mic



Sears, Roebuck and Co., Englewood Stor Chicago. Architects: Nimmons Carr Wright. Consulting Engineer: M. Schwab. Air Conditioning Engineer: M. Harbula. Contractor: Haines Compan (Photograph by Chicago Architectural Ph tographing Company.)



Filene's Store (Wm. Filene's Sons Com pany) Boston, Mass. Engineer: Carrier En gineering Corp.

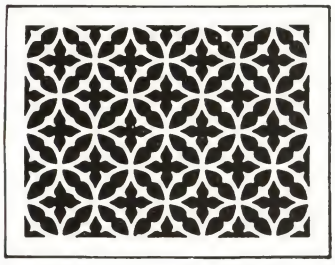
DIAMOND MANUFACTURING COMPANY

"Diamond" Perforated Metal Grilles, Registers, Cast Grilles, Wire Grilles, Decorative and Industrial Perforated Metal

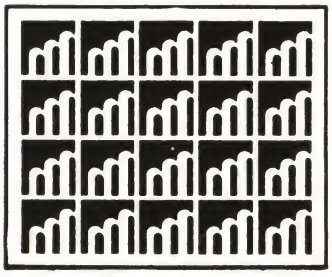
GENERAL OFFICE AND PLANT
WYOMING, PA.

BRANCH OFFICES

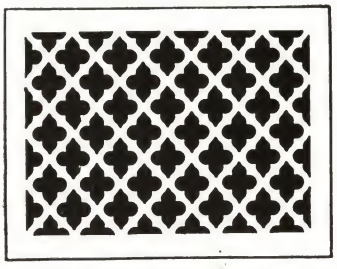
ALBANY, N. Y., 452 Broadway
BIRMINGHAM, ALA., 2717 Sixth Avenue, So.
BUFFALO, N. Y., 250 Delaware Avenue
CHICAGO, ILL., 4216 No. Hermitage Avenue
CINCINNATI, OHIO, 104 W. Pearl Street
CLEVELAND, OHIO, 1836 Euclid Avenue
DALLAS, TEX., 208 Construction Building
DETROIT, MICH., 13035 Hillview Avenue
ELIZABETH, N. J., 131 Hallstead Road
HAZLETON, PA., 227 E. Broad Street
HOUSTON, TEX., 8241 Brockton Street
LOS ANGELES, CAL., 619 E. 3rd Street
MINNEAPOLIS, MINN., 121 W. Rustic Lodge Avenue
NASHVILLE, TENN., 1207 Warner Building
NEW ORLEANS, LA., 2204 Jefferson Avenue
NEW YORK, N. Y., 7 E. 42nd Street
PHILADELPHIA, PA., 5824 No. 5th Street
PITTSBURGH, PA., 318 Penn Avenue
ROCHESTER, N. Y., 22 Spring Street
ST. LOUIS, MO., 1004 Mart Building
SAN FRANCISCO, CAL., 7 Front Street
SOUTH PORTLAND, ME., 743 Congress Street
SYRACUSE, N. Y., 816 Livingston Avenue
WASHINGTON, D. C., Chandler Building
WESTBURY, N. Y., P. O. Box 775
WORCESTER, MASS., 9 May Street



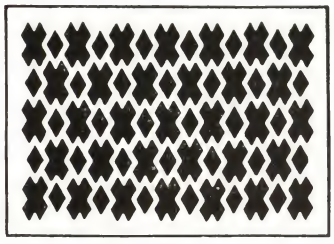
Design J-2—63% Open Area



Design 101—55% Open Area

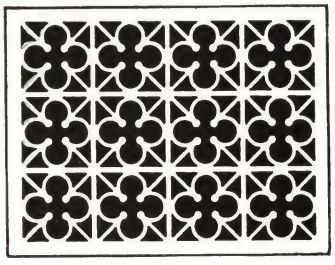


Design J-1—72% Open Area

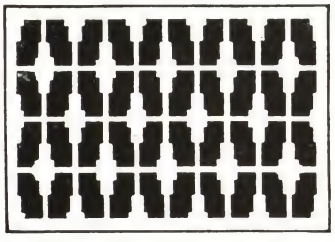


Design 104—70% Open Area

All Metals — DIAMOND GRILLES — *70 Designs*



Design J-3—66% Open Area



Design 103—52% Open Area

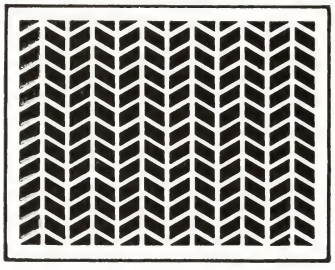
DETAILS AND SPECIFICATIONS

DIAMOND ARCHITECTURAL GRILLES in a completely diversified line of Period, Colonial, Modernistic and Conventional Designs, for every architectural purpose, and particularly suited for ventilation and recessed radiation.

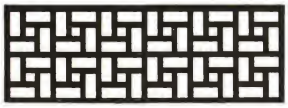
Grilles may be obtained in any metal; thicknesses up to $\frac{3}{16}$ and $\frac{1}{4}$ in., and in sizes up to 50x120 in. in one piece; larger in sections; paneled with stiffeners.

OTHER PRODUCTS

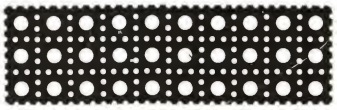
DIAMOND MANUFACTURING COMPANY produces also a complete line of Perforated Metal Sizing Screens, Perforated Metals for Machinery Guards, Elevator Buckets, Conveyor Troughs, Flights and Light Structural Work.



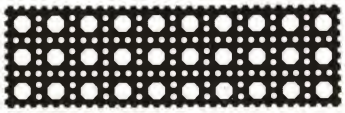
Design 105—55% Open Area



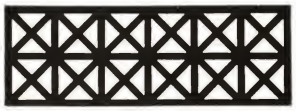
Tile Cane Design R-17
52% Open Area



Round Hole Cane Design R-1
33% Open Area



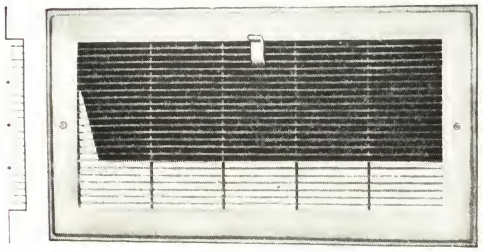
Octagon Hole Cane Design R-3
40% Open Area



Grecian Cane Design R-18
42% Open Area

Four cane designs shown above are perforated in 20 to 24-U.S.S. gauge sheets. Sizes 30, 36, 42 in. wide, 96, 120 in. long.

AIR CONDITIONING REGISTERS—FIN-TYPE

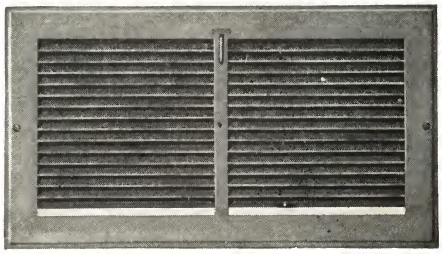


Style 119—Horizontal Close Space Design Register, One-piece Sidewall

Left:
Close Space

Right:
Adjustable Bar

All style Vent Faces to match



Style 145—One-piece Sidewall Register

THE HARRINGTON & KING PERFORATING CO.

Grilles and Registers of Perforated Metal

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DALLAS, TEX., 102 Thomas Bldg.—Telephone, 2-3075
DETROIT, MICH., 226 Murphy Bldg.—Telephone, Cadillac 2047
JOHNSON CITY, TENN., 121-123 Market St.—Telephone, 5195
KANSAS CITY, MO., 2119 Washington St.—Telephone, Grand 1535
NASHVILLE, TENN., 174 Third Ave., No.—Telephone, 6-4101
OMAHA, NEB., 5722 No. 25th Ave.—Telephone, Kenwood 3447
PHILADELPHIA, PA., 24th and Market Sts.—Telephone, Rittenhouse 3697
PITTSBURGH, PA., 225 So. Birmingham Ave., Bellevue—Telephone, Linden 2993-J
PORTLAND, ORE., 1900 S. E. Grand Ave.—Telephone, East 0136
SALT LAKE CITY, UTAH, 70 E. North Temple—Telephone, Wasatch 516
ST. LOUIS, MO., 2615 DeKalb St.—Telephone, Laclede 3375
SAN FRANCISCO, CALIF., 636 Potrero Ave.—Telephone, Valencia 2801
WASHINGTON, D. C., 932 E St., N. W.—Telephone, National 0890

Products

ARCHITECTURAL GRILLES of PERFORATED METALS: these grilles can be furnished in Steel, Bronze (either yellow or commercial), Brass, Aluminum, Monel, Nickel Silver or Stainless Steel.

Grilles of Cast Iron or Cast Bronze, also Registers of multiple louver, air controlling or directional flow type can be furnished.

Our Facilities

Fifty-five years of experience. An enlarged factory and improved equipment. Skilled workmen.

A reputation for fine quality which we insist upon maintaining.

Publications

We will be glad to send gratis upon request our catalog *No. 32—Grilles of Perforated Metal,* which is a combined handbook and catalog showing actual size pictures and tables of opening sizes for each design. A valuable booklet for architects and engineers.

Our new booklet *No. 30—Ornamental Designs,* is in convenient pocket size and presents pictures and size information of all patterns.

Special Features

Many designs can be furnished in Aluminum, Bronze and Nickel Silver as heavy as $\frac{3}{16}$ in. and even $\frac{1}{4}$ in. thick. Handhole doors, frames, hinges, locks, catches, mouldings and other attachments can be furnished as specified.

Designs

Many of our designs are shown on these pages but all of our patterns are shown in our catalog—standard, classic and modern designs to meet your needs or special designs which can be made to your specifications.

Specifications

When writing grille specifications please provide the following information:

Design and grille dimensions—indicate whether dimensions are opening or over-all sizes.

Metal—kind and gauge—($\frac{1}{8}$ in. thick for Bronze and Aluminum—No. 12 U.S.S. Gauge for Steel are most commonly used.)

Finish—

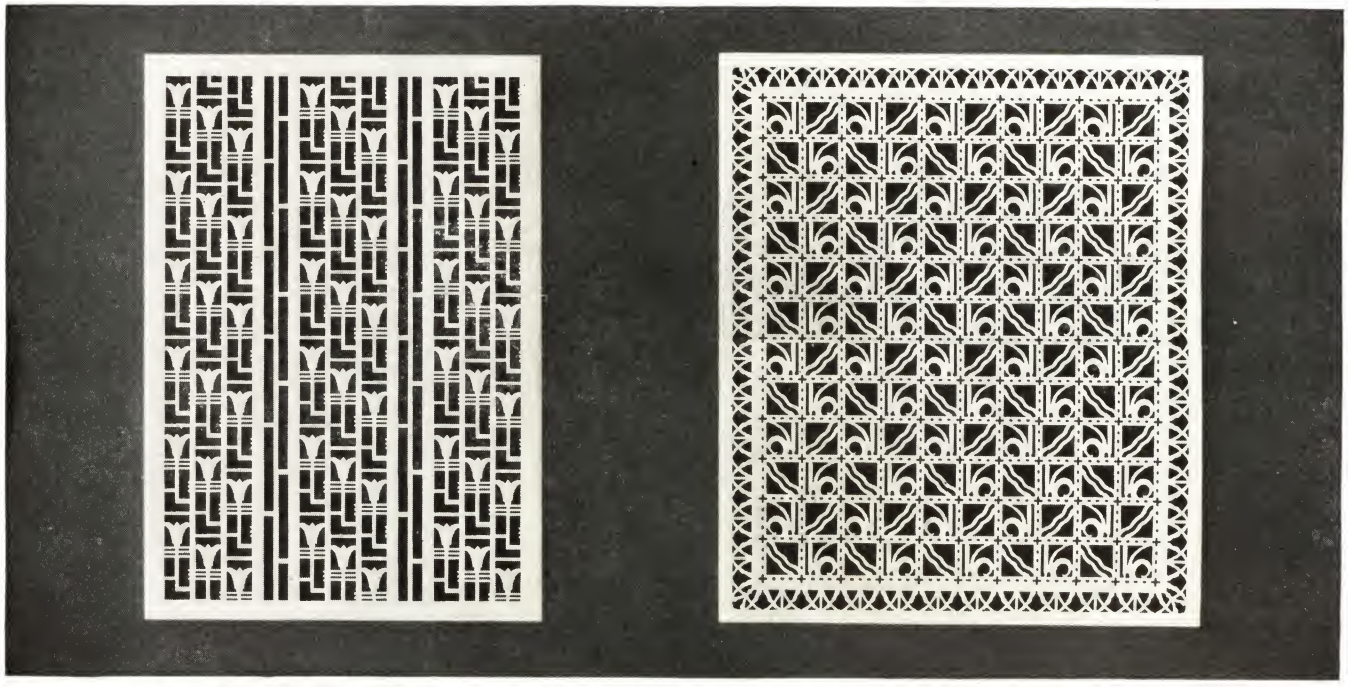
For Steel—shop finish, prime coat, enamel or electroplated.

For Bronze or Brass—natural polish (satin or bright) or electroplated to match standard or special finishes.

For Aluminum—natural satin or bright polish, or Alumilited satin, or bright. (Alumilite is a permanent finish obtained by patented anodic process.

For Monel, Nickel Silver or Stainless—finished in natural color either satin or bright.

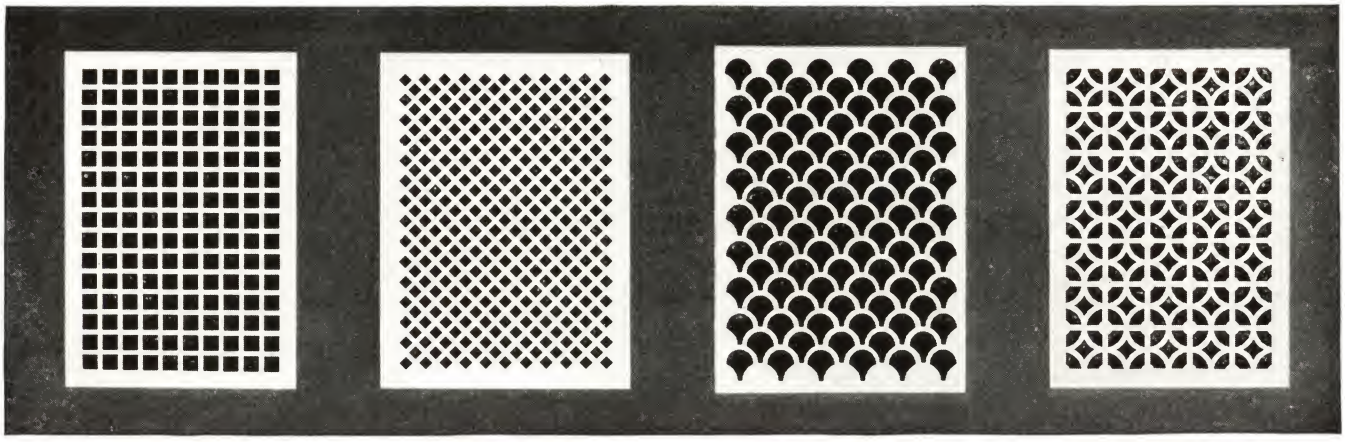
Screwholes, frames, handholes—give complete detail with sketches of all special features required.



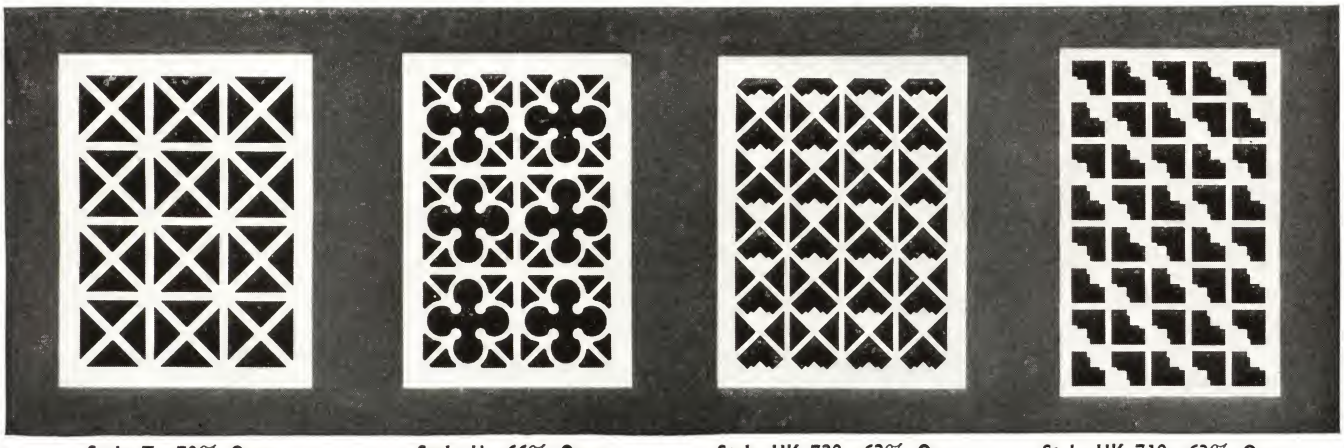
Style HK 790—56% Open

Style HK 745—50% Open

GRILLES OF PERFORATED METAL



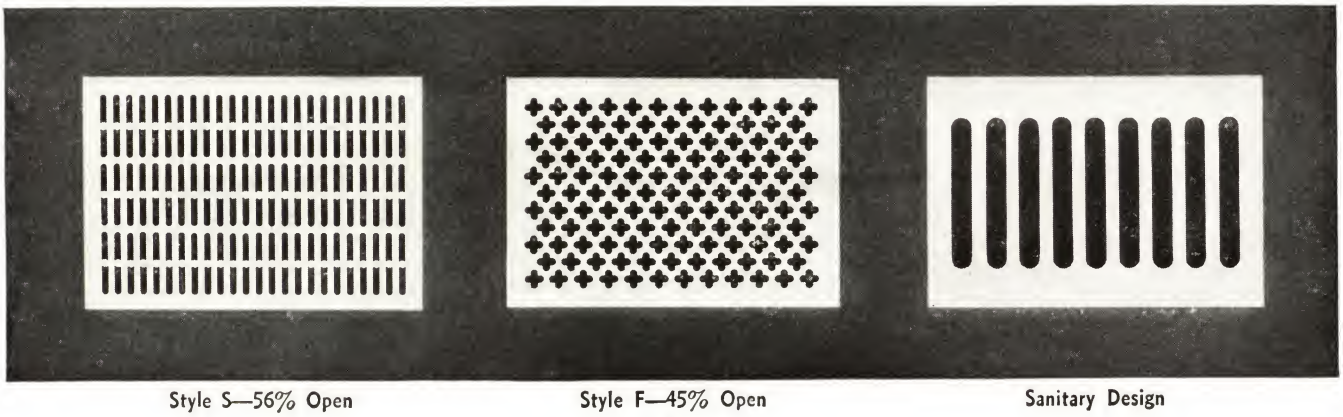
Plain Lattice | Diagonal Lattice | Style J—65% Open | Style M—50% Open



Style Z—70% Open | Style U—66% Open | Style HK 720—62% Open | Style HK 710—63% Open

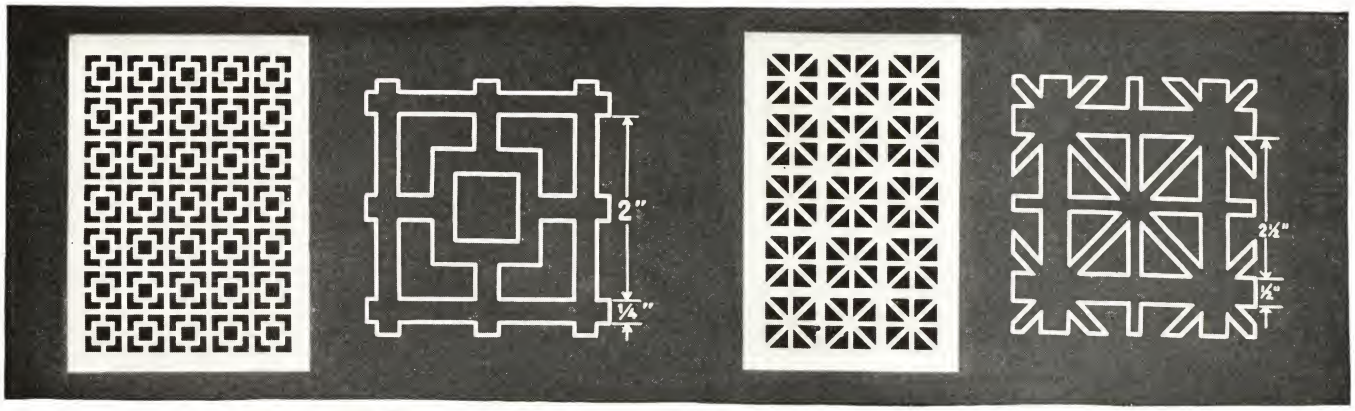


Style HK 715—63% Open | Style HK 750—60% Open | Style E—52% Open



Style S—56% Open | Style F—45% Open | Sanitary Design

GRILLES OF PERFORATED METAL



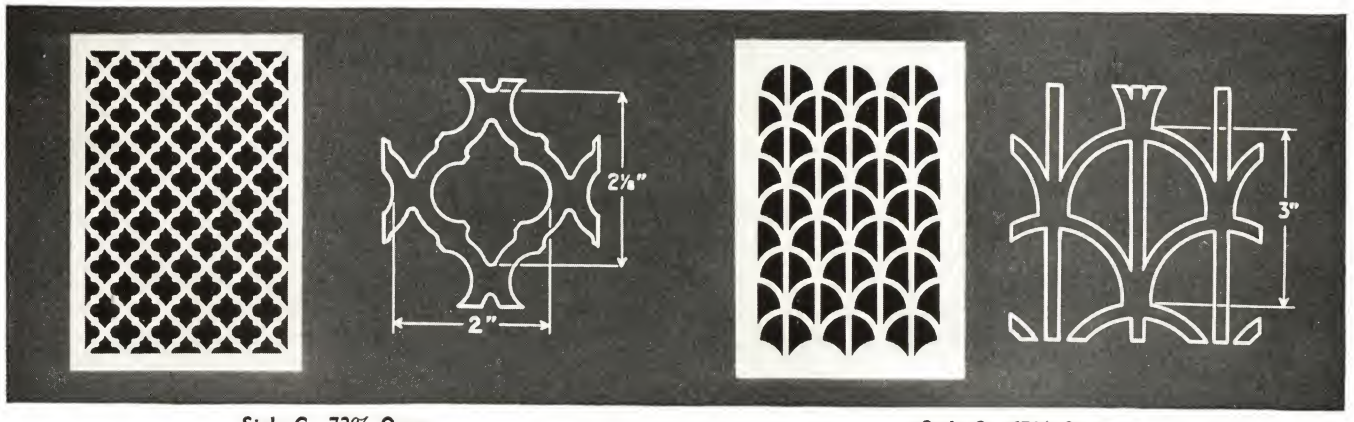
Style A—52% Open
OPENING SIZES

Holes	Opening sizes, in.	Holes	Opening sizes, in.	Holes	Opening sizes, in.	Holes	Opening sizes, in.
1	2	14	31¼	27	60½	40	89¾
2	4¼	15	33½	28	62¾	41	92
3	6½	16	35¾	29	65	42	94¼
4	8¾	17	38	30	67¼	43	96½
5	11	18	40¼	31	69½	44	98¾
6	13¼	19	42½	32	71¾	45	101
7	15½	20	44¾	33	74	46	103¼
8	17¾	21	47	34	76¼	47	105½
9	20	22	49¼	35	78½	48	107¾
10	22¼	23	51½	36	80¾	49	110
11	24½	24	53¾	37	83	50	112¼
12	26¾	25	56	38	85¼	51	114½
13	29	26	58¼	39	87½	52	116¾

Style L—39% Open
OPENING SIZES

Holes	Opening sizes, in.	Holes	Opening sizes, in.	Holes	Opening sizes, in.
1	2½	14	41½	27	80½
2	5½	15	44½	28	83½
3	8½	16	47½	29	86½
4	11½	17	50½	30	89½
5	14½	18	53½	31	92½
6	17½	19	56½	32	95½
7	20½	20	59½	33	98½
8	23½	21	62½	34	101½
9	26½	22	65½	35	104½
10	29½	23	68½	36	107½
11	32½	24	71½	37	110½
12	35½	25	74½	38	113½
13	38½	26	77½	39	116½

Write for information about larger sizes



Style C—72% Open
OPENING SIZES

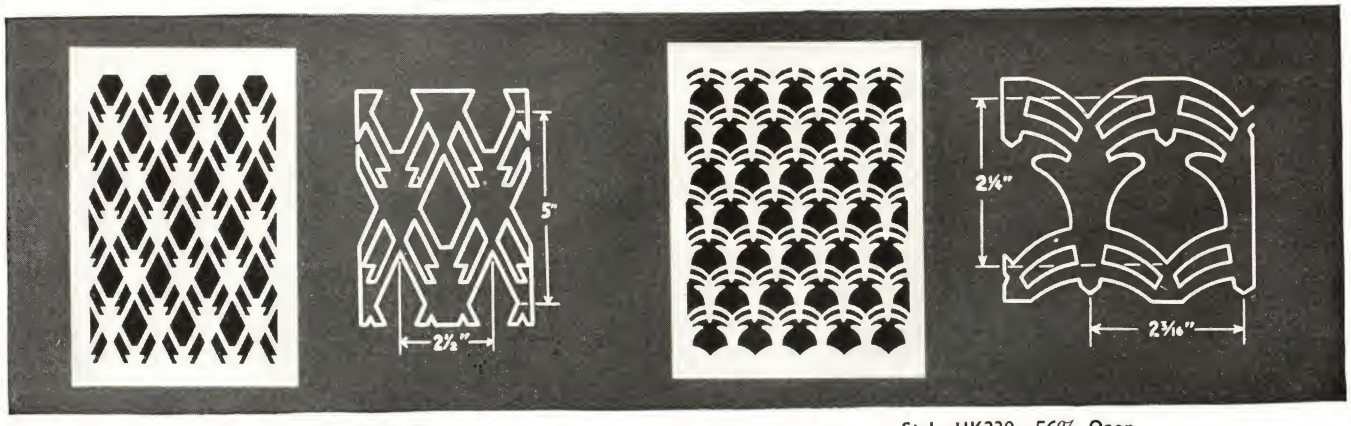
No. of Units	Opening		No. of Units	Opening		No. of Units	Opening	
	Width, in.	Height, in.		Width, in.	Height, in.		Width, in.	Height, in.
1	2	2⅛	41	42	44⅝	81	82	87⅛
3	4	4¼	43	44	46¾	83	84	89¼
5	6	6⅜	45	46	48⅞	85	86	91⅜
7	8	8½	47	48	51	87	88	93½
9	10	10⅝	49	50	53⅛	89	90	95⅝
11	12	12¾	51	52	55¼	91	92	97¾
13	14	14⅞	53	54	57⅜	93	94	99⅞
15	16	17	55	56	59½	95	96	102
17	18	19⅛	57	58	61⅝	97	98	104⅛
19	20	21¼	59	60	63¾	99	100	106¼
21	22	23⅜	61	62	65⅞	101	102	108⅜
23	24	25½	63	64	68	103	104	110½
25	26	27⅝	65	66	70⅛	105	106	112⅝
27	28	29¾	67	68	72¼	107	108	114¾
29	30	31⅞	69	70	74⅜	109	110	116⅞
31	32	34	71	72	76½	111	112	119
33	34	36⅛	73	74	78⅝	113	114	121⅛
35	36	38¼	75	76	80¾	115	116	123¼
37	38	40⅜	77	78	82⅞	117	118	125⅜
39	40	42½	79	80	85	119	120	127½

Style Q—65% Open
OPENING SIZES

No. of Holes	Opening		No. of Holes	Opening		No. of Holes	Opening	
	Width, in.	Height, in.		Width, in.	Height, in.		Width, in.	Height, in.
1	2¾	2	21	32¾	32	41	62¾	62
2	4¼	3½	22	34¼	33½	42	64¼	63½
3	5¾	5	23	35¾	35	43	65¾	65
4	7¼	6½	24	37¼	36½	44	67¼	66½
5	8¾	8	25	38¾	38	45	68¾	68
6	10¼	9½	26	40¼	39½	46	70¼	69½
7	11¾	11	27	41¾	41	47	71¾	71
8	13¼	12½	28	43¼	42½	48	73¼	72½
9	14¾	14	29	44¾	44	49	74¾	74
10	16¼	15½	30	46¼	45½	50	76¼	75½
11	17¾	17	31	47¾	47	51	77¾	77
12	19¼	18½	32	49¼	48½	52	79¼	78½
13	20¾	20	33	50¾	50	53	80¾	80
14	22¼	21½	34	52¼	51½	54	82¼	81½
15	23¾	23	35	53¾	53	55	83¾	83
16	25¼	24½	36	55¼	54½	56	85¼	84½
17	26¾	26	37	56¾	56	57	86¾	86
18	28¼	27½	38	58¼	57½	58	88¼	87½
19	29¾	29	39	59¾	59	59	89¾	89
20	31¼	30½	40	61¼	60½	60	91¼	90½

Write for information about larger sizes

GRILLES OF PERFORATED METAL



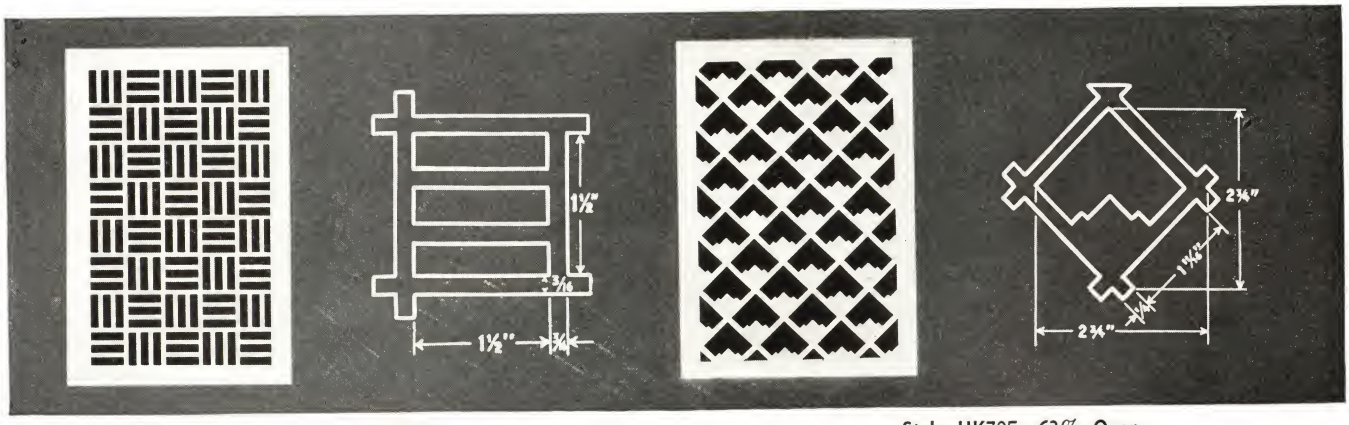
Style HK725—50% Open
OPENING SIZES

No. of Units	Opening Width, in.	Opening Height, in.	No. of Units	Opening Width, in.	Opening Height, in.	No. of Units	Opening Width, in.	Opening Height, in.
1	2 3/16	5	13	32 3/16	35	25	62 3/16	65
2	4 11/16	7½	14	34 11/16	37½	26	64 11/16	67½
3	7 3/16	10	15	37 3/16	40	27	67 3/16	70
4	9 11/16	12½	16	39 11/16	42½	28	69 11/16	72½
5	12 3/16	15	17	42 3/16	45	29	72 3/16	75
6	14 11/16	17½	18	44 11/16	47½	30	74 11/16	77½
7	17 3/16	20	19	47 3/16	50	31	77 3/16	80
8	19 11/16	22½	20	49 11/16	52½	32	79 11/16	82½
9	22 3/16	25	21	52 3/16	55	33	82 3/16	85
10	24 11/16	27½	22	54 11/16	57½	34	84 11/16	87½
11	27 3/16	30	23	57 3/16	60	35	87 3/16	90
12	29 11/16	32½	24	59 11/16	62½	36	89 11/16	92½

Style HK230—56% Open
OPENING SIZES

No. of Units	Opening Width, in.	Opening Height, in.	No. of Units	Opening Width, in.	Opening Height, in.	No. of Units	Opening Width, in.	Opening Height, in.
1	2 3/16	2 1/4	13	28 7/16	26 1/4	25	54 11/16	50 1/4
2	4 3/8	4 1/4	14	30 5/8	28 1/4	26	56 7/8	52 1/4
3	6 9/16	6 1/4	15	32 13/16	30 1/4	27	59 1/16	54 1/4
4	8 3/4	8 1/4	16	35	32 1/4	28	61 1/4	56 1/4
5	10 15/16	10 1/4	17	37 3/16	34 1/4	29	63 7/16	58 1/4
6	13 1/8	12 1/4	18	39 3/8	36 1/4	30	65 5/8	60 1/4
7	15 5/16	14 1/4	19	41 9/16	38 1/4	31	67 13/16	62 1/4
8	17½	16 1/4	20	43 3/4	40 1/4	32	70	64 1/4
9	19 11/16	18 1/4	21	45 15/16	42 1/4	33	72 3/16	66 1/4
10	21 7/8	20 1/4	22	48 1/8	44 1/4	34	74 3/8	68 1/4
11	24 1/16	22 1/4	23	50 5/16	46 1/4	35	76 9/16	70 1/4
12	26 1/4	24 1/4	24	52½	48 1/4	36	78 3/4	72 1/4

Write for information about larger sizes



Style HK111—60% Open
OPENING SIZES

No. of Units	Opening sizes, in.	No. of Units	Opening sizes, in.	No. of Units	Opening sizes, in.
1	1½	21	35 1/4	41	69
2	3 3/16	22	36 15/16	42	70 11/16
3	4 7/8	23	38 5/8	43	72 3/8
4	6 9/16	24	40 5/16	44	74 1/16
5	8 1/4	25	42	45	75 3/4
6	9 15/16	26	43 11/16	46	77 7/16
7	11 5/8	27	45 3/8	47	79 1/8
8	13 5/16	28	47 1/16	48	80 13/16
9	15	29	48 3/4	49	77 1/16
10	16 11/16	30	50 7/16	50	79 1/8
11	18 3/8	31	52 1/8	51	80 13/16
12	20 1/16	32	53 13/16	52	82½
13	21 3/4	33	55½	53	84 3/16
14	23 7/16	34	57 3/16	54	85 7/8
15	25 1/8	35	58 7/8	55	87 9/16
16	26 13/16	36	60 9/16	56	89 1/4
17	28 1/2	37	62 1/4	57	90 15/16
18	30 3/16	38	63 15/16	58	92 5/8
19	31 7/8	39	65 5/8	59	94 5/16
20	33 9/16	40	67 5/16	60	96

Style HK705—63% Open
OPENING SIZES

No. of Units	Opening Width, in.	Opening Height, in.	No. of Units	Opening Width, in.	Opening Height, in.	No. of Units	Opening Width, in.	Opening Height, in.
1	2 3/4	3 3/4	21	30 1/4	31 1/4	41	57 3/4	58 3/4
2	4 1/8	5 1/8	22	31 5/8	32 5/8	42	59 1/8	60 1/8
3	5 1/2	6 1/2	23	33	34	43	60 1/2	61 1/2
4	6 7/8	7 7/8	24	34 3/8	35 3/8	44	61 7/8	62 7/8
5	8 1/4	9 1/4	25	35 3/4	36 3/4	45	63 1/4	64 1/4
6	9 5/8	10 5/8	26	37 1/8	38 1/8	46	64 5/8	65 5/8
7	11	12	27	38 1/2	39 1/2	47	66	67
8	12 3/8	13 3/8	28	39 7/8	40 7/8	48	67 3/8	68 3/8
9	13 3/4	14 3/4	29	41 1/4	42 1/4	49	68 3/4	69 3/4
10	15 1/8	16 1/8	30	42 5/8	43 5/8	50	70 1/8	71 1/8
11	16 1/2	17 1/2	31	44	45	51	71 1/2	72 1/2
12	17 7/8	18 7/8	32	45 3/8	46 3/8	52	72 7/8	73 7/8
13	19 1/4	20 1/4	33	46 3/4	47 3/4	53	74 1/4	75 1/4
14	20 5/8	21 5/8	34	48 1/8	49 1/8	54	75 5/8	76 5/8
15	22	23	35	49 1/2	50 1/2	55	77	78
16	23 3/8	24 3/8	36	50 7/8	51 7/8	56	78 3/8	79 3/8
17	24 3/4	25 3/4	37	52 1/4	53 1/4	57	79 3/4	80 3/4
18	26 1/8	27 1/8	38	53 5/8	54 5/8	58	81 1/8	82 1/8
19	27 1/2	28 1/2	39	55	56	59	82 1/2	83 1/2
20	28 7/8	29 7/8	40	56 3/8	57 3/8	60	83 7/8	84 7/8

Write for information about larger sizes

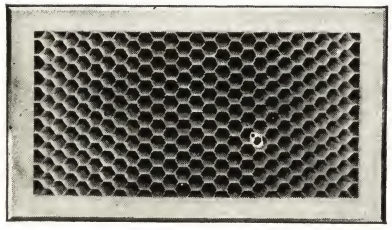
HART & COOLEY MANUFACTURING CO.

ESTABLISHED 1901

Air Conditioning Registers and Grilles—Warm Air Registers
Damper Regulators—Furnace Regulators—Pulleys—Chain

ENGINEERING OFFICE AND FACTORY
HOLLAND, MICH.
CHICAGO OFFICE: 61 W. Kinzie Street

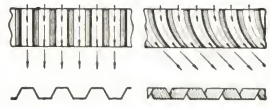
SEVEN COMPLETE LINES OF AIR CONDITIONING REGISTERS AND GRILLES IN FIVE DISTINCT PRICE GROUPS



No. 90 Design—Dual Control Directional Flow

The Ace of Air Conditioning Grilles

No. 90 Design—Made up of a number of thin strips which are shaped into a series of grooves—straight or curved—as shown. The assembled strips form an exceptionally attractive grille with openings of ½ in. and a depth of 1 in. A wide range of deflections is available, some of the standard deflections being shown below. The tubular shape of the openings insures *positive control* of air flow with all deflections. Price Group E.



Straight Curved

Characteristics of No. 90 Design

1. Dual Control of Air Flow—The air is controlled in two planes; horizontally as well as sideways. Thus, on high sidewall installations, the air is prevented from striking the ceiling, thus avoiding discoloration and loss of directional flow.

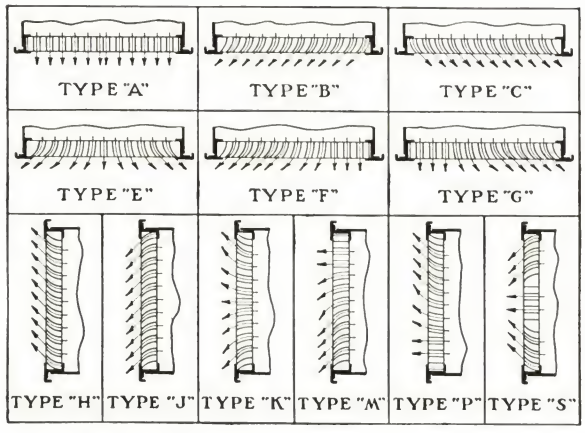
2. Resistance—Curved shape of tubes eliminates turbulence; hence, resistance is remarkably low.

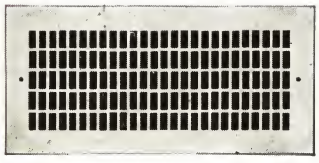
3. Noise—The absence of turbulence likewise eliminates the greatest cause of noise in the grille. See H&C Catalog No. 37AC for Acoustical Ratings.

4. Concealment of Duct—The 1 in. depth of the grille, plus the tubular shape of the openings, results in exceptional concealment of the duct.

5. Free Area—The free area of No. 90 Grille is exceptionally large. See Page 39 of H&C Catalog No. 37AC, or Page 74 of Catalog No. 37 for Actual Free Areas.

Right: **Types of Directional Flow**—Practically any deflection or combination of deflections is available. The chart at right shows some of the standard types of deflections.





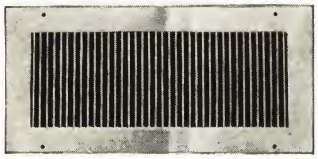
No. 68 Design—Perforated Plain Lattice

No. 68 Design—A very inexpensive grille combining ample free area, attractive appearance and effective concealment of the duct. Openings are ⅜ inches by ⅞ inches with ⅛ inch frets. Price Group AA.

No. 72 Design—Combines rigid bar type construction, neat appearance, maximum free area with low cost. Depth of bars is ⅜ in. Price Group A.

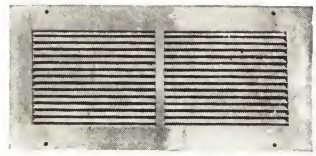


No. 72 Design—Non-Adjustable Vertical Bar Open Mesh

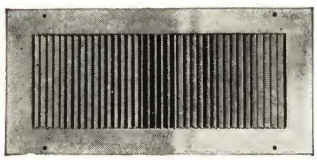


No. 77 Design—Non-Adjustable Vertical Bar Close Mesh

Nos. 77 and 78 Designs—Made up of fixed bars ⅜-in. in depth and spaced ⅜ in. apart. These grilles and registers fulfill the demand for an inexpensive, yet attractive, register with fixed air flow and effective duct concealment. The similarity in appearance to the Nos. 84 and 85 Designs also makes them adaptable for use as return air intakes with these designs. Price Group B.

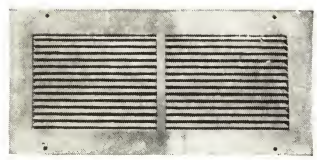


No. 78 Design—Non-Adjustable Horizontal Bar Close Mesh



No. 84 Design—Adjustable Vertical Bar Close Mesh

Nos. 84 and 85 Designs—Adjustable deflection grilles with bars ⅜ in. in depth and spaced ⅜ in. apart—bars are connected in 2-in. sections, allowing sectional adjustment. This unique construction assures positive directional control of air flow with quick adjustability to any combination of deflections desired. Depth of bars and close spacing combine attractive appearance and concealment of the duct. Price Group D.

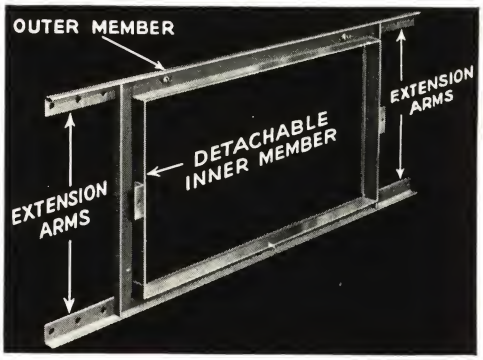


No. 85 Design—Adjustable Horizontal Bar Close Mesh

The designs shown above are available with installation frames to suit all conditions. On the opposite page are illustrated and described No. 3 Sidewall Stud Frame and No. 8 Baseboard Stud Frame. Various other types likewise listed.

REGISTER AND GRILLE FRAMES

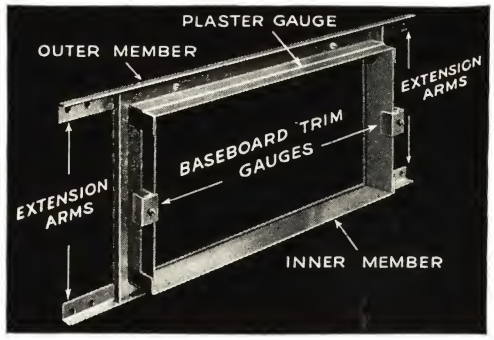
All of the grille designs shown on the opposite page are available with any of the installation frames listed below. Thus a type of grille or register may be selected for any type of installation.



No. 3 Sidewall Stud Frame (Left)

Installations when made as recommended, with this frame are permanently streakproof. The frame provides a positive plaster lock, preventing the plaster from pulling away from the frame. The register face overlaps the frame ¼ in. on all sides. The *Sponge Rubber Gasket*, which is furnished attached to the register face, forms a seal between the wall and the register face, preventing air leakage at this point.

The frame has rigid supporting arms of sufficient length on all sizes to fasten directly to the studs. The stackhead is bent over the outer member of the frame and held in place by means of the inner member.



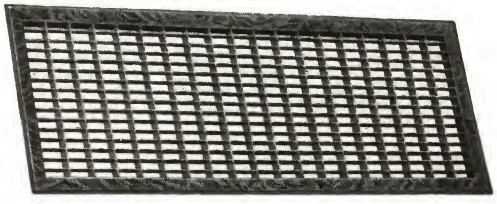
No. 8 Baseboard Stud Frame (Right)

Extension arms fasten directly to studs. Stackhead is attached to frame either by forming over inner member or by clamping it between the outer and inner members. May be used with any H&C one-piece Baseboard Register, all of which are furnished with Sponge Rubber Gasket as standard to prevent streaking. Frame insures a solid foundation for register and protects stackhead. Inexpensive, easy to install.

SCHEDULE OF CLASS NUMBERS FOR USE IN SPECIFYING H&C REGISTERS, GRILLES, AND INTAKES

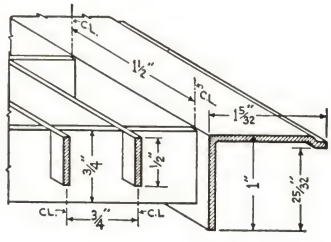
Type of Frame	Design No.						
	68	72	77	78	84	85	90
Grille only, or Return Air Intake, Flat	680	720	770	780	840	850	900
Register without installation frame	681	721	771	781	841	851	901
Sidewall Register with No. 2 Band Iron Frame	682	722	772	782	842	852	902
Sidewall Register with No. 3 Stud Frame	683	723	773	783	843	853	903
Baseboard Register with Integral Frame	684	724	774	784	844	854	904
Baseboard Register with No. 5 Stack Frame	685	725	775	785	845	855	905
Intake with ⅞-in. projection	687	727	777	787	847	857	907
Baseboard Register with No. 8 Stud Frame	688	728	778	788	848	858	908

Grid-Type Return Air Faces and Floor Registers

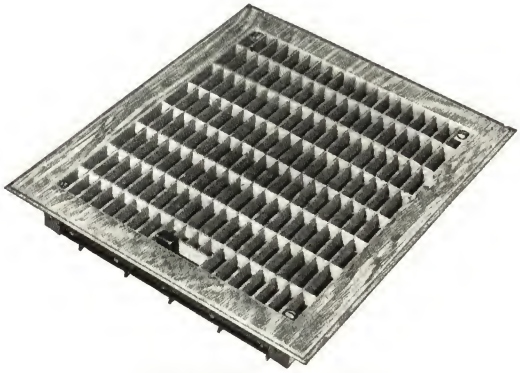


No. 265 "No-Flex" Return Air Face
Standard mesh ($\frac{11}{16}$ x $1\frac{7}{16}$ in.)

Available with flat margin (beading trimmed off) at standard price, if so ordered.



No. 265 Return Air Face has a Free Area averaging 84%. Shallow depth ($\frac{25}{32}$ in.) permits installation without cutting joists. Cross members are welded to the frame and to each other at frequent intervals, resulting in exceptional strength and rigidity.



No. 210 Floor Register
Standard mesh ($\frac{7}{16}$ x $1\frac{7}{16}$ in.)

No. 210 is ideal for installations on which floor registers are required. The size of the mesh is such that excellent protection and concealment of the opening is provided. Free Area averages 70%. The face is removable from the body. Available with flat margin (beading trimmed off) at standard price, if so ordered.

Complete separate catalogs on air conditioning registers and grilles or warm air registers available on request.

HENDRICK MANUFACTURING COMPANY

Hendrick Perforated Metal Grilles

21 Dundaff Street, CARBONDALE, PA.

SALES OFFICES IN PRINCIPAL CITIES—CONSULT TELEPHONE DIRECTORY

PRODUCTS

HENDRICK PERFORATED METAL GRILLES.
For Mitco Open Steel Flooring, Mitco Armorgrids, and Mitco Shur-Site Treads, see File Index.

HENDRICK PERFORATED METAL GRILLES

To architects, contractors, building owners and others interested in decorative grilles, Hendrick offers a large variety of grille designs. In addition to those patterns which have become standard, the Hendrick line includes many exclusive designs, a few of which are illustrated on these pages. All HENDRICK GRILLES are characterized by clean-cut perforations and fine finish. They are given a special flattening operation which makes for easy and pleasing installation.

VARIETY OF METALS

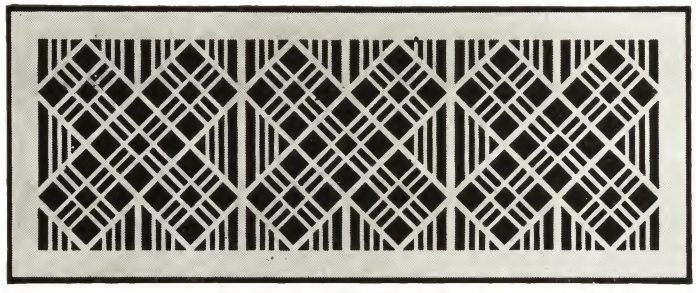
HENDRICK PERFORATED GRILLES are available in aluminum, brass, bronze, copper, Everdur, Monel, nickel silver, stainless steel, steel, zinc, and other commercially rolled metals. They are supplied unpainted or with prime coat, with lacquer or duco finish in any color, with natural polish or with any standard electroplate finish.

SPECIAL AND STANDARD DESIGNS

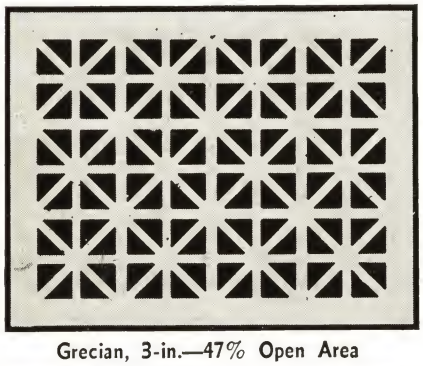
With a wide range of dies and tools, a large stock of metals, and every facility for the prompt production of special designs, Hendrick is well equipped to cooperate with architects, builders, contractors, etc., in the design and production of special grilles to harmonize with specific architectural designs.

THE NEW HANDBOOK, "HENDRICK GRILLES"

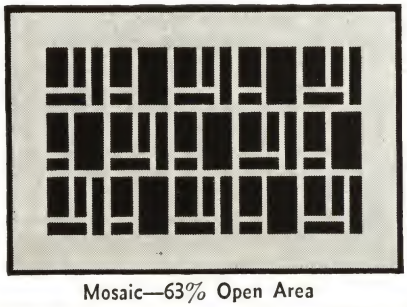
To architects, contractors, building owners and others who buy or specify decorative grilles, Hendrick will gladly send a copy of a new, 194-page handbook. Illustrated are more than one hundred different designs, many of them exclusive with Hendrick. Data on perforations, dimensions, open areas, actual size photographs of grille sections and other information complete a reference book genuinely helpful to anybody interested in grilles. Write for a copy, on your letterhead, please.



M No. 8—55% Open Area



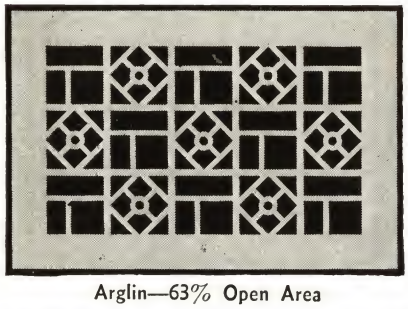
Grecian, 3-in.—47% Open Area



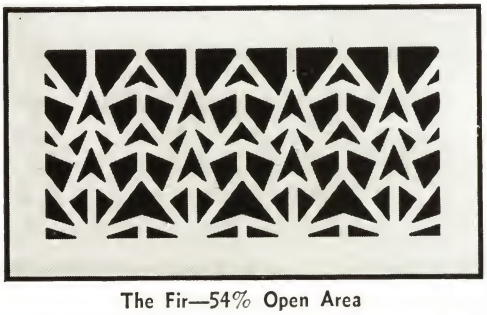
Mosaic—63% Open Area



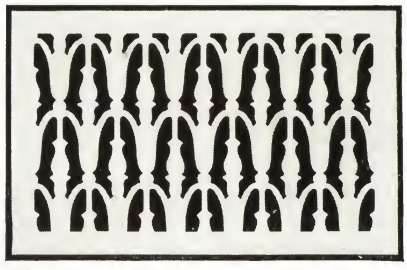
Half Shell, 1¾-in.—60% Open Area



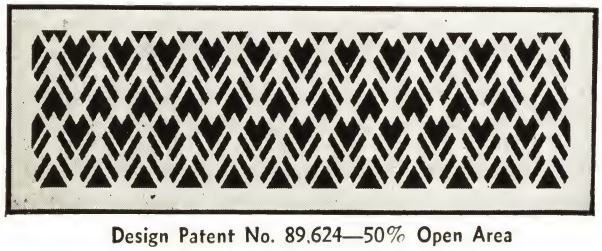
Arglin—63% Open Area



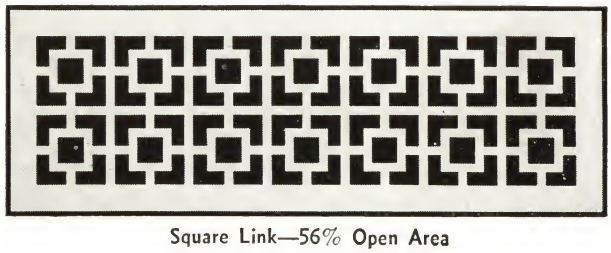
The Fir—54% Open Area



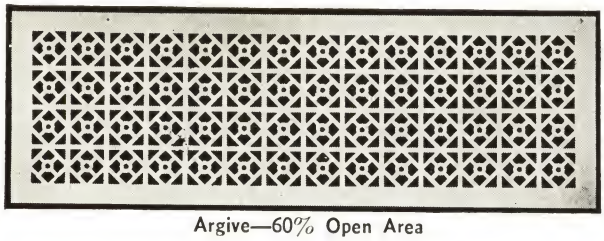
The Urn—A Distinctive Hendrick Design
47% Open Area



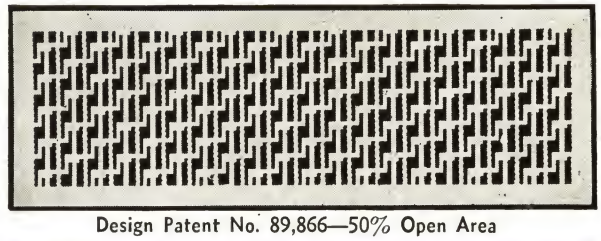
Design Patent No. 89,624—50% Open Area



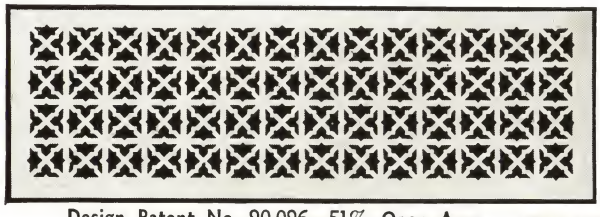
Square Link—56% Open Area



Argive—60% Open Area



Design Patent No. 89,866—50% Open Area



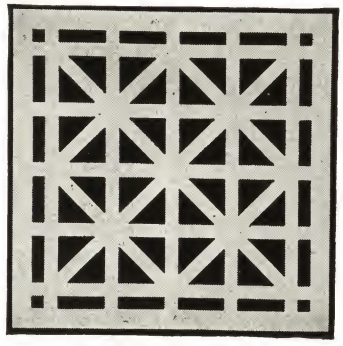
Design Patent No. 90,096—51% Open Area



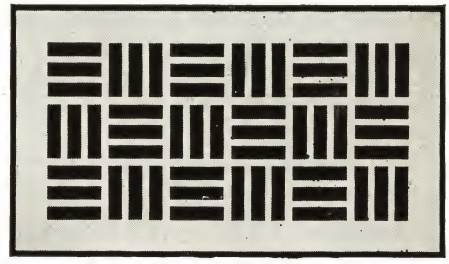
Design Patent No. 89,623—57% Open Area



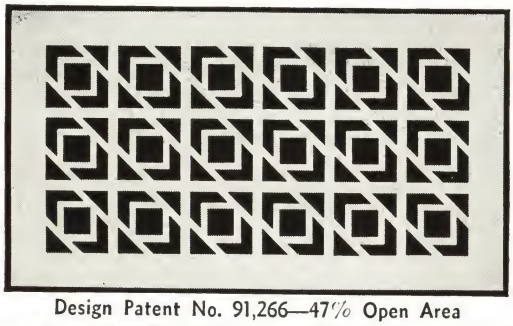
Chevrons—56% Open Area



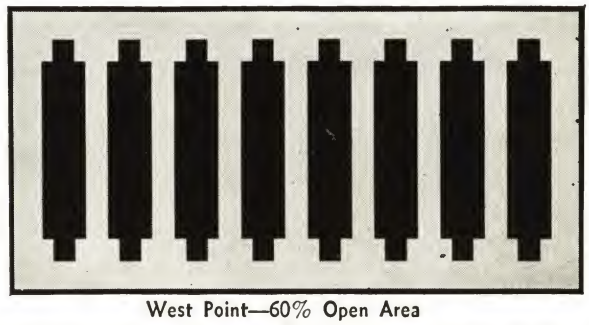
Loud Speaker Grille



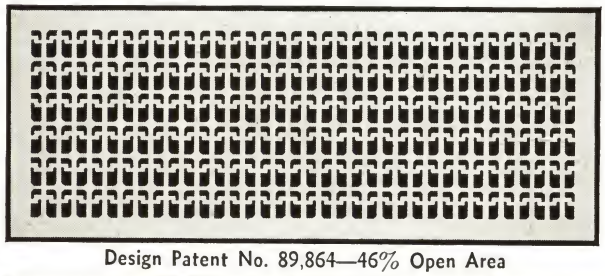
Basket Weave—58% Open Area



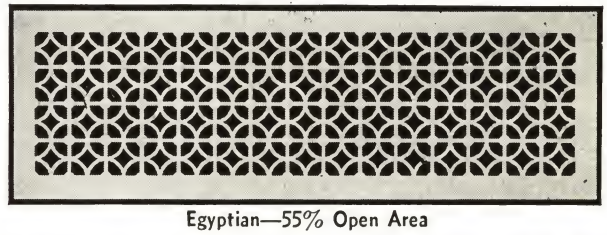
Design Patent No. 91,266—47% Open Area



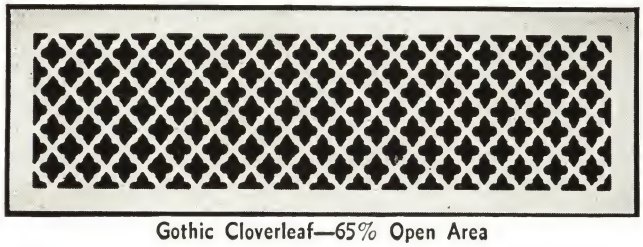
West Point—60% Open Area



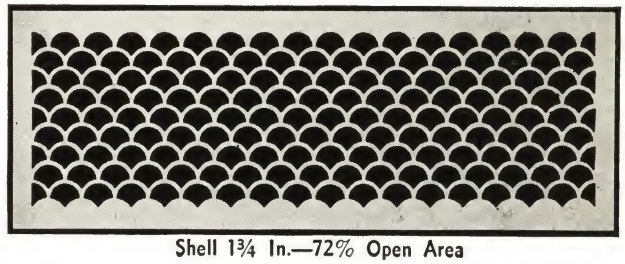
Design Patent No. 89,864—46% Open Area



Egyptian—55% Open Area



Gothic Cloverleaf—65% Open Area



Shell 1¾ In.—72% Open Area

ORDERING INFORMATION

When inquiring about or ordering Hendrick Perforated Grilles, for prompt service please state quantity; kind of material; thickness or gauge; over-all dimensions; width of blank order; design of perforation; doors or handholes, if any; location, size and style of attachment holes; desired finish. You will find the book, "Hendrick Grilles," helpful in specifying designs.

Write for a copy, on your letterhead, please.

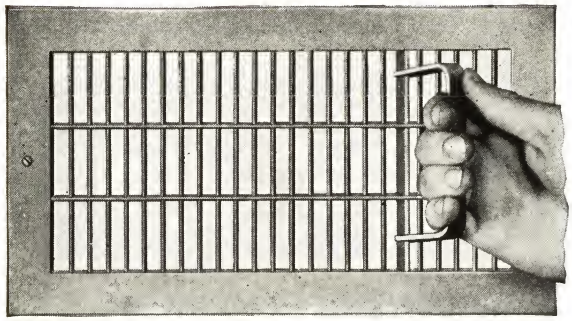
ESTABLISHED 1898

INDEPENDENT REGISTER CO.

3747 East 93d Street, CLEVELAND, OHIO

INDEPENDENT "FABRIKATED" ADJUSTABLE, DIRECTED AIR FLOW REGISTERS AND GRILLES

Reg. U. S. Pat. Off.



Each Grille Bar Is Adjusted Individually

Air flows can be deflected in any direction, distributed or concentrated, as shown in diagram, by adjusting the grille bars with the special two-prong tool which accompanies every shipment. Adjusting can be done after the register or grille is in place without taking it down as the grille bars are held securely without locking. They remain tamper-proof, rattle-proof and vibration-proof.

Furnished either with vertical (No. 321A) or horizontal (No. 311A) grille bars. They excel in strength, rigidity, appearance and wide range of deflections and combinations of deflections of air flows.

The grille rim is made of cold rolled steel. Grille bars are 14-gauge, ½-in. cold rolled steel. Openings in grille are ⅜-in. wide.

Sizes and Finishes

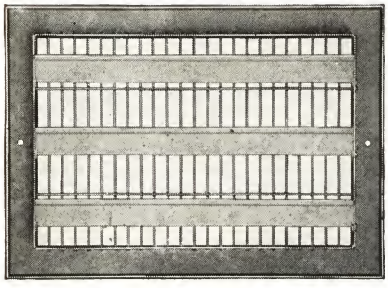
Furnished with or without either single dampers or multiple valves with either lever, knob, key, chain or pull rod control. Standard sizes are made to fit wall openings 8x6 to 36x10 in. Practically any other size can be made on special order.

Standard finishes are gray prime coat, ready for painting after installation, to match the finish in the room, black or white japanned, imitation oak or lacquered finishes, electro-plated, oxidized copper, nickel, brass or bronze.

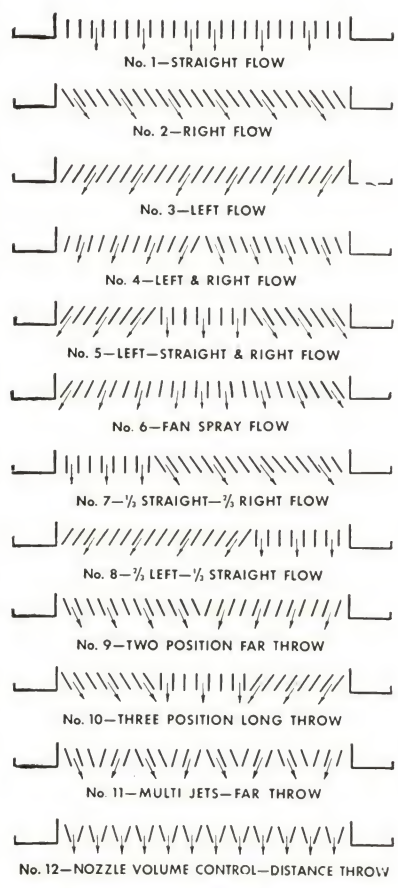
Deflecting Vanes in Back Give Four-Way Directional Air Flows

The most intricate and difficult problems in directing air flows can be solved by the use of "Fabrikated" Adjustable, Directed Air Flow Grilles with Rear Deflecting Vanes. To the horizontal deflection of air flows, right, left or fanwise, imparted by the grille bars, the deflecting vanes in the back add an upward or downward deflection as desired. Each grille bar and each deflecting vane is adjusted individually, making possible the greatest variety of effects.

Made also with adjustable horizontal grille bars with vertical deflecting vanes in back (No. 311A).



No. 321A with Rear Deflecting Vanes

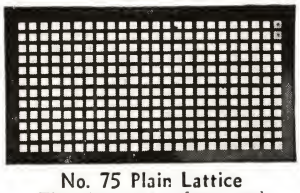


A Few Typical Grille Bar Settings Indicating the Wide Range Obtainable

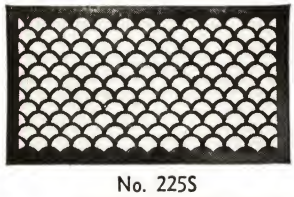
INDEPENDENT WROUGHT STEEL GRILLES

Also of brass, bronze, aluminum and other metals made to order to sizes as specified by our customers. Perforated from sheet metal, the thickness recommended for steel grilles being 12-gauge (approximately ⅛ in.) but 10-gauge (.140 in.) or 14-gauge (.078 in.) may also be used.

Enquiries and orders should include following information: Daylight opening size and over-all size, quantity and finish, material and gauge, design preferred. If screwholes are desired, their location and number and whether to be countersunk.



No. 75 Plain Lattice
The size most often used



No. 225S

No. 50—45% free area, ¾-in. multiples, ½-in. square opening, ¼-in. cross bars.

No. 75—57% free area, 1-in. multiples, ¾-in. square openings, ¼-in. cross bars.

No. 82—67% free area, 1-in. multiples, .82-in. square openings, .18-in. cross bars.

No. 875—61% free area, 1⅛-in. multiples, ⅞-in. square openings, ¼-in. cross bars.

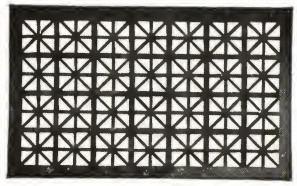
No. 100—64% free area, 1¼-in. multiples, 1-in. square openings, ¼-in. cross bars.

No. 225 S—67% free area openings; width, 2 in. center to center. Height, 2¼ in. center to center. Interior bars, ¼ in. wide. Orders should specify which dimension is height.

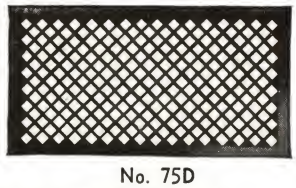
No. 3⅜G—3x3 in. openings. Bars between squares, ⅜ in. Each square 5 sq. in. free area.

No. 3½G—Same, except bars between squares, ½ in.

No. 75 D—57% free area (variable). ¾-in. diagonal square openings, ¼-in. cross bars, $\frac{33}{32}$-in. multiples. Each opening, .5625 sq. in.



No. 3⅜G



No. 75D

The Independent line is so extensive that it can be shown only in small part. We issue two catalogues which will be sent on request

THE METALACE CORPORATION

60 K Street, SOUTH BOSTON, MASS.

METALACE WOVEN WIRE GRILLE

Woven by the Diagonal Strand Process

Uses—All kinds of grille work for heat transmission and decorative open paneling. Adaptability ranges from light-weight panels in radiator enclosures and cabinets, up to heavy ornamental grilles in large wall openings, bank caging, and guards.

Characteristics—The outstanding features of this remarkable grille are beauty, strength and convenience. Metalace is distinctive and blends in good taste with its surroundings. Its strands are rigidly interlocked. It can be supplied in heavy or light-weight meshes of ½, ¾, 1, 2, 2½ in. Free air area 40% to 80%. Weight ¾ to 2 lb. per sq. ft. There is a Metalace grille for every requirement.

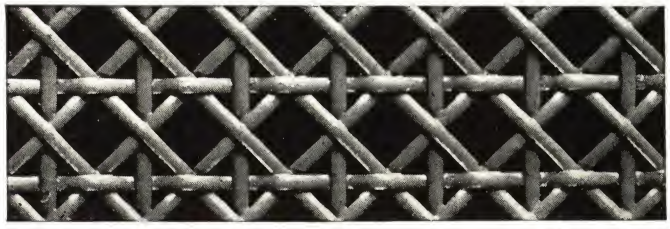
Installation—Usual methods suitable to metal framing. For wood construction staple and use moulding. Saves time and money, because it can be cut to size on the premises.

Material—Cold rolled steel, bronze, aluminum and copper (only in No. 53—the screen door guard). You can get startling effects by painting or plating.

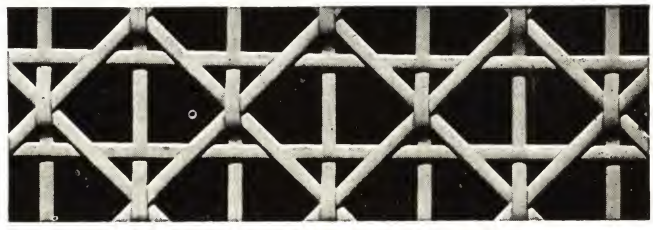
Distribution—Wire and grille dealers in principal cities stock Metalace. Furnished in rolls 3 and 6 ft. wide and 25 to 50 ft. long, or it can be cut to exact size.

Samples and Literature—May be secured on request. There are many other patterns than those shown here, particularly the heavy grilles and our famous No. 53 copper screen door guard made of .080 round wire in a pattern like No. 50.

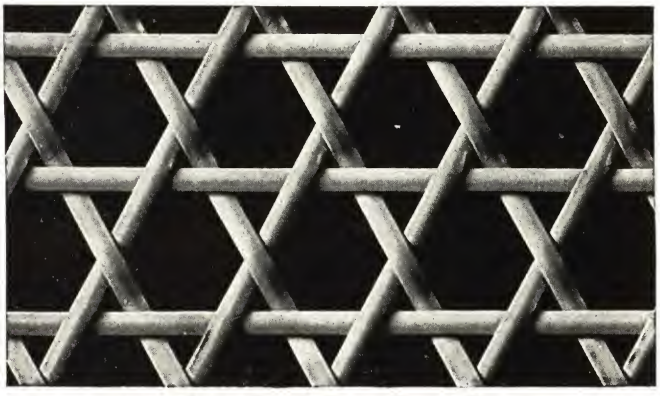
METALACE—LIGHT AND MEDIUM WEIGHT GRILLES



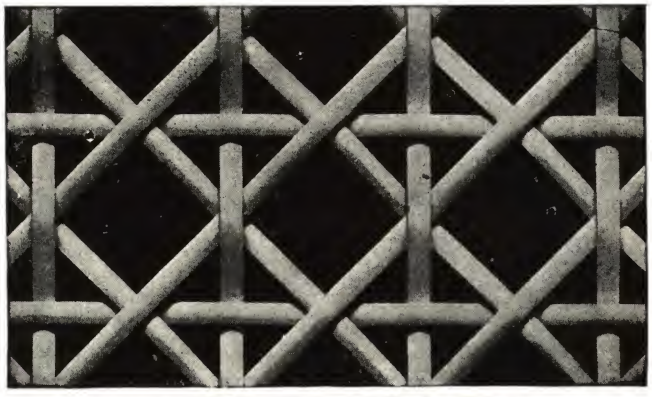
Metalace Grille No. 10 (Actual Size)—40% Open



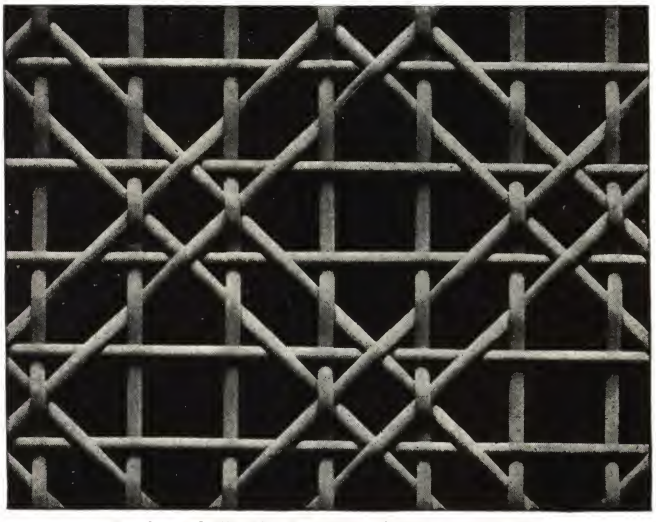
Metalace Grille No. 12 (Actual Size)—66% Open



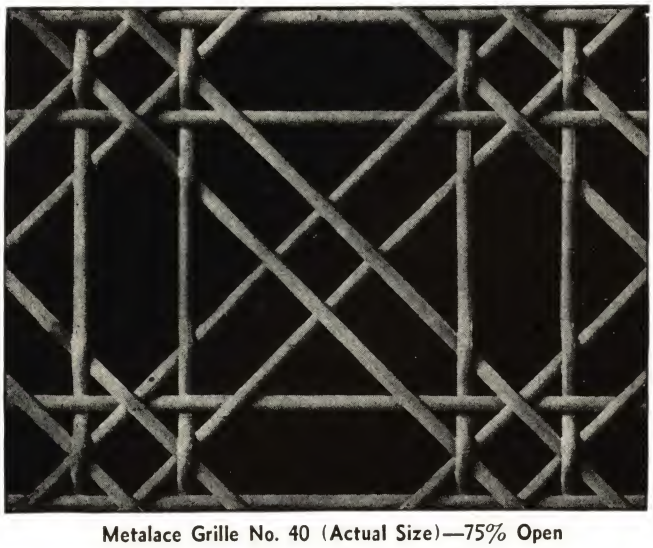
Metalace Grille No. 50 (Actual Size)—64% Open



Metalace Grille No. 70 (Actual Size)—60% Open



Metalace Grille No. 30 (Actual Size)—66% Open



Metalace Grille No. 40 (Actual Size)—75% Open

REGISTER & GRILLE MFG. CO., INC.

TELEPHONE
EVERGREEN 8-0443

70 Berry Street, BROOKLYN, N. Y.

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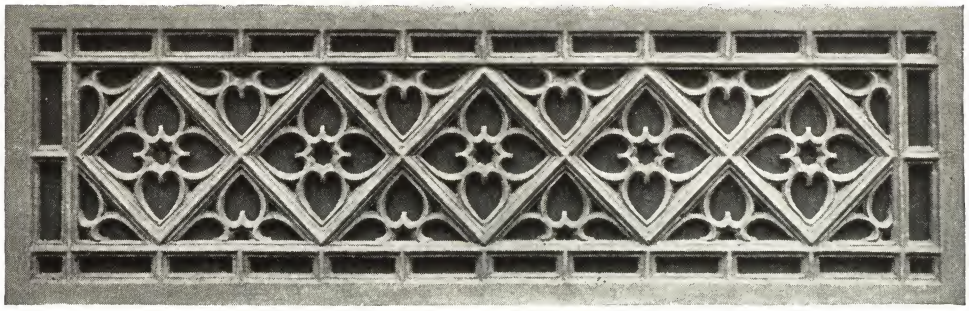
SALES REPRESENTATIVES IN PRINCIPAL CITIES

Products

REGISTERS and GRILLES of improved types in many attractive modern designs, in any finish and any size. Also special designs to meet any architectural and engineering requirements. We illustrate below a few of the many available patterns.

The Company

We announce the *sixth anniversary* of a comparatively new register and grille manufacturing company which, though new in name, is old in experience. Its officers are so well known to the architectural profession as to need no introduction.



Cast Design No. 3371

R. & G. STAMPED REGISTERS and GRILLES

R. & G. Stamped Grilles offer to Architects, Engineers and Contractors, a wide choice in designs, both plain and architectural. Our steel grilles are made of cold rolled steel in any gauge up to and including ¼ in. thick. We also make grilles of sheet bronze, brass, aluminum, monel metal and stainless steel.

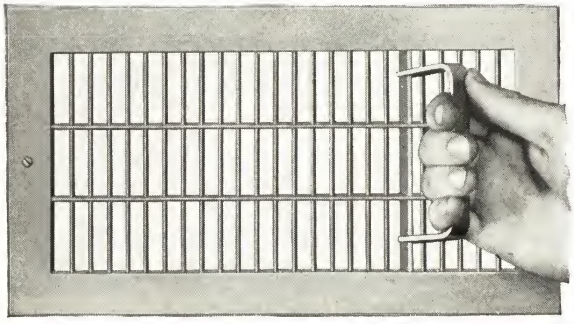
In addition we have 29 units in plain lattice design ranging from ¼ in. opening and $\frac{3}{16}$ in. bar, up to 2½ in. opening and ¼ in. bar; 7 diagonal designs; 8 Grecian designs and 36 different special designs, making a total of 80 various choices in stamped metal.



Design No. 3624A

Adjustable Directed Air Flow Grilles

Each bar may be individually adjusted for various deflections without removing grille from its setting. The No. 3320 (shown below) permits right-straight-left deflection. For up-straight-down deflection specify No. 3310. Other air conditioning grilles are available.

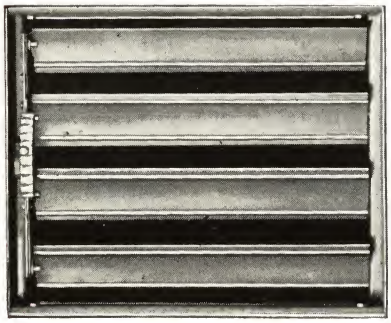


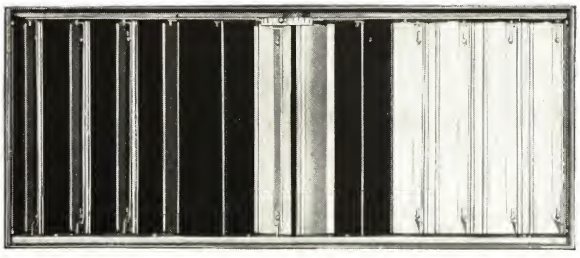
No. 3320 Grille with Adjustable Bars Running Vertically
Size of mesh 1$\frac{13}{16}$ x ⅜ in. Interior bars ½ in. deep. No. 14 gauge cold rolled steel

Below:

"Air-Con" Shutter

Deflects from back and may be closed, or set for left-straight-right throw, or of course for up-straight-down. Bearing surfaces of blades are equipped with brass sleeves to prevent rusting

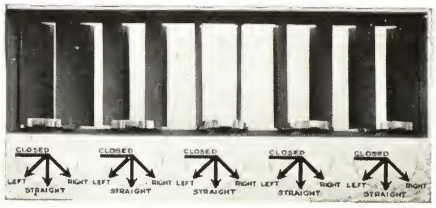




Below:

"Battery" Register

Divides the blades into groups, and permits individual directional adjustment of each group from the face



The "Arc-Eng"

Permits the operation of all blades in unison as in the "Air-Con" type and, in addition, any blade or any number of blades may be set for closed or any angle of deflection. With the Adjustable Face (3310 or 3320) nine-way deflection as well as absolute volume control is obtained, so complete that the architect or engineer need not lay out direction or control on paper, but may have same set after the erection of the register without even removing the face

New Types of Shutters—*Each type will accommodate any style of face, of any design or any metal.*

Complete Catalog and Engineering Data furnished on request.

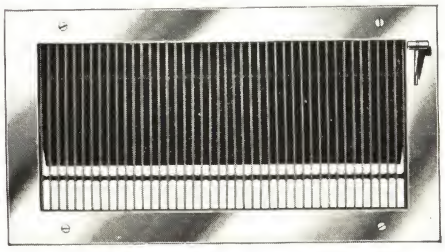
TUTTLE & BAILEY, INCORPORATED

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NEW BRITAIN, CONNECTICUT

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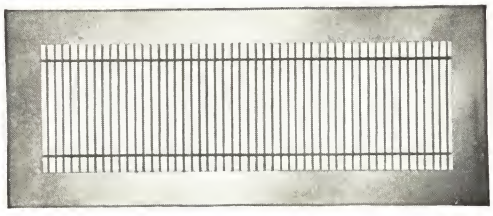
Products

CAST AND PERFORATED METAL GRILLES—AIR CONDITIONING REGISTERS, GRILLES AND CONTROLS—COPPER FIN TYPE CONVECTION HEATERS—STEEL LOCKERS



Airline Register

The standard air conditioning register. Close bar construction. Fixed air deflection. Sturdy and strong. Modern and attractive. Easily painted and cleaned. Very economical.



Airline Grille

An air conditioning grille of unobtrusive, modern appearance. Fixed deflection of the air stream either horizontally or vertically. Scientifically engineered.

Tuttle & Bailey, presents for the architect:

(1) An exceedingly extensive line of cast grilles in over 300 stock designs. Also cast grilles manufactured from architect's details.

(2) Fabricated or stamped grilles in many designs.

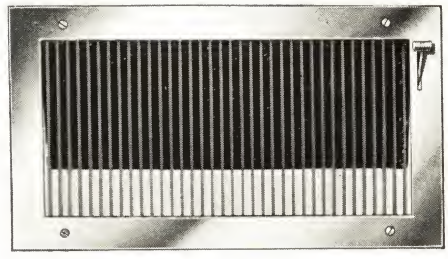
(3) Air conditioning registers, grilles and intakes scientifically engineered for proper air distribution.

(4) Ventilating and gravity registers and intakes in all designs.

(5) Air controls for air conditioning installation.

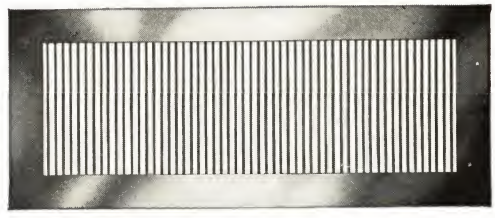
(6) The Copper Fin Type of Convection Heater.

(7) Steel lockers for industrial, school, club or institutional installation.



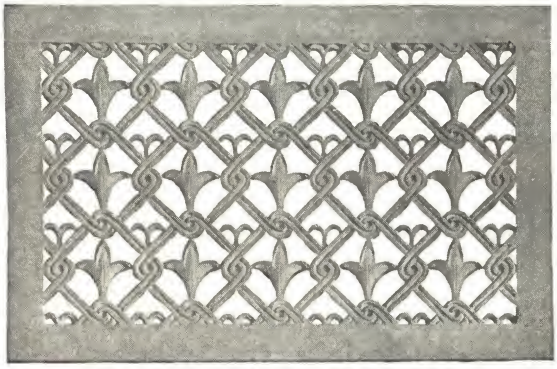
Flexair Register

Air deflection adjustable on the job. Modern and attractive. Very rigid. Easily painted and cleaned. Bars arranged either vertically or horizontally.



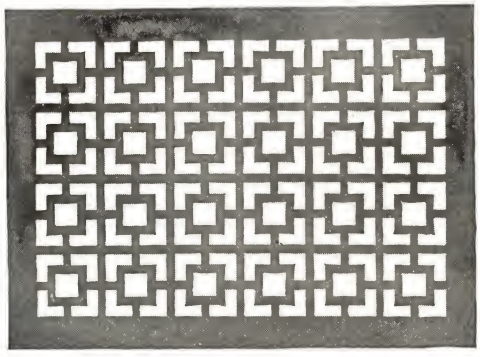
Flexair Grille

The most flexible of air conditioning grilles. The deflection of the air stream may be accomplished after installation. Neat but unobtrusive in appearance.



Cast Metal Grille

Design No. 500 illustrated above is typical of over 300 stock designs in Tuttle & Bailey Cast Metal Grilles. In addition, Tuttle & Bailey is equipped to furnish grilles made up to architect's special details.



Stamped Metal Grille

Design No. 588 is one of over 40 stamped grille designs available from Tuttle & Bailey. Grilles can be perforated in metals varying from No. 16 gauge to ¼ in. thick.

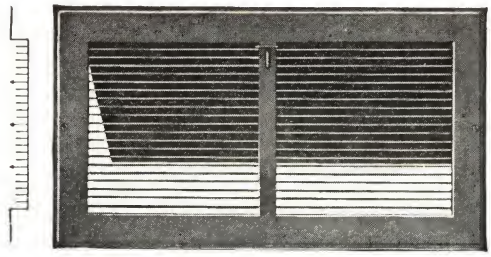
UNITED STATES REGISTER CO.

BATTLE CREEK, MICH.

MINNEAPOLIS, MINN. KANSAS CITY, MO. ALBANY, N. Y. SAN FRANCISCO, CAL. NEW YORK, N. Y.

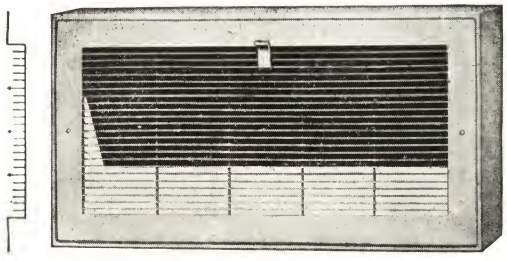
U. S. AIR CONDITIONING REGISTERS

U. S. Air Conditioning Registers are made with any style of setting frames in louver type styles and adjustable bar styles—



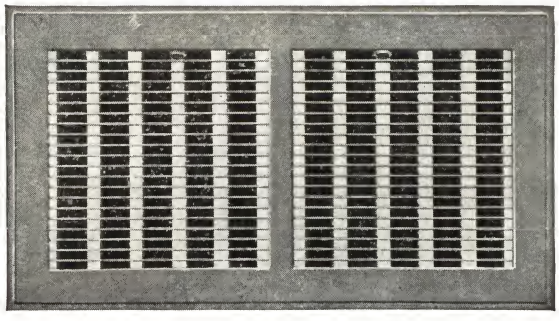
Style 153—Straight Flow

Horizontal bars spaces four to one inch. Made in down flow 22° or 45°—vertical bar straight, right or left and multi-flow styles. Grilles furnished to match all register styles.



Style 131—Horizontal Close-Bar Design

Baseboard—⅞ inch base extension. Also made in two piece style 170 with removable face.



Style 153—V.V.L. Louver Type Register
Style 145—V.V.L. Adjustable Bar Register

Style 153—V.V.L. face has fixed horizontal bars but with vertical lever operated shutters.

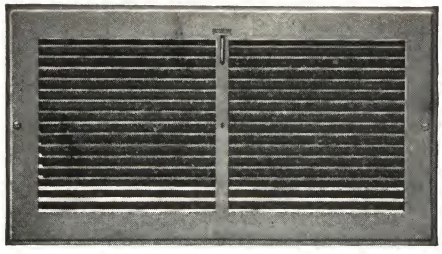
Style 145—V.V.L. adjustable bar face with vertical lever operated shutters.

Style 177 V.V.I.

Horizontal louver type fixed bar grill with vertical back blades that can set to any desired angle.

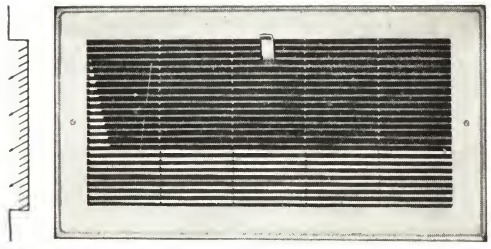
Style 145 V.V.I. horizontal adjustable bar grille with vertical back blades.

U. S. Inset Panels may be used with Styles 153 and 154 Down Flow.



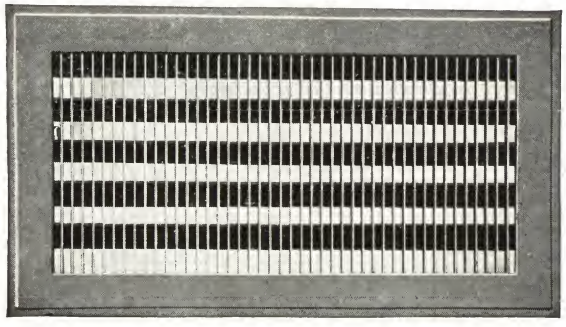
Style 145—Adjustable Bar

Adjusts from 60° up-flow to 60° down-flow without marring finish. Also made in vertical bar styles for right, left and multi-flow adjustment.



Style 120—Horizontal Close-Bar Design

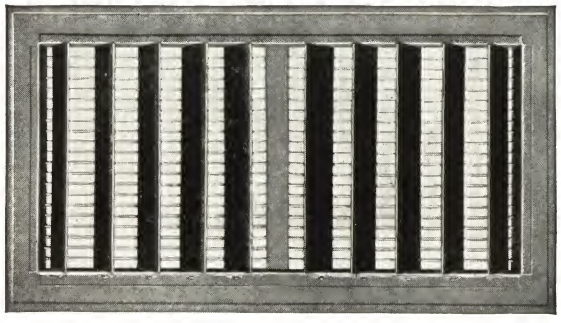
Bars are ¾ inch deep and spaced 4½ spaces to one inch. Made in All-Fixed Directional Flows.



Style 155 H.V.L. Louver Type Register
Style 149 H.V.L. Adjustable Bar Register

Style 155 H.V.L.—Face has fixed vertical bars with horizontal lever operated shutters.

Style 149 H.V.L.—Vertical adjustable bar face with horizontal lever operated shutters.



Rear View of A-C Register with Individually Set Back Blades

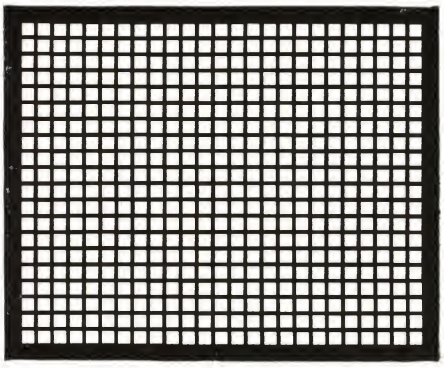
Style 178 H.V.I.

Vertical louver type fixed bar grille with horizontal back blades that can be set to any angle for up and down flow.

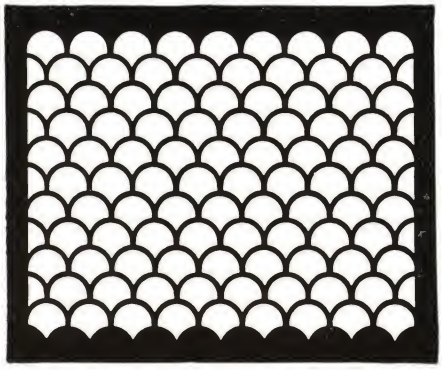
Style 149 H.V.I. vertical adjustable bar grilles with horizontal back blades for individual setting.

A FEW STANDARD DESIGNS OF U. S. PERFORATED METAL GRILLES

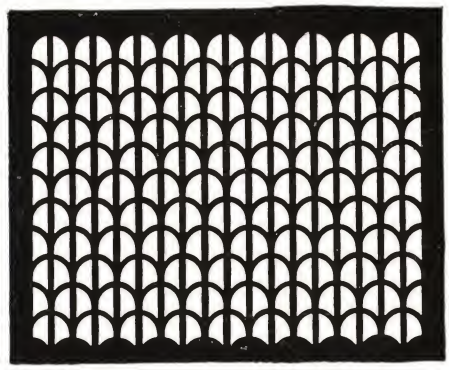
Made of sheet steel, brass, bronze, aluminum, stainless steel and other non-ferrous metals.
Finished in all baked enamel, lacquered and plated finishes to match any required finish.



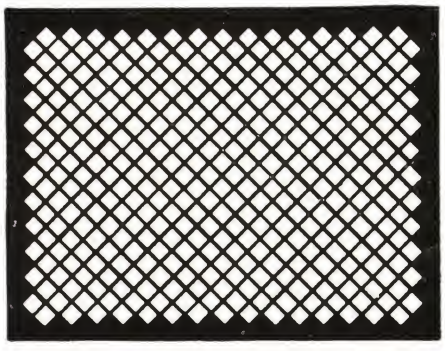
A: 7/8" Sq. Mesh 1/4" Bars 61% Area
AA: 13/16" Sq. Mesh 3/16" Bars 69% Area
B: 3/4" Sq. Mesh 1/4" Bars 57% Area
C: 1/2" Sq. Mesh 3/16" Bars 53% Area



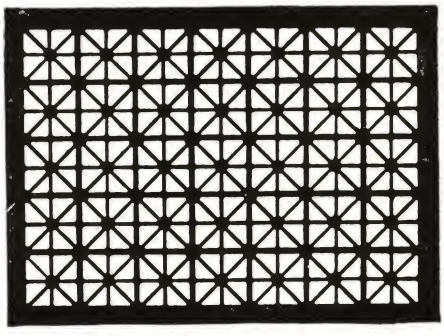
Style J: 2 1/2" Wide, 2 5/16" High
Free Area 69%, 3/8" Bars



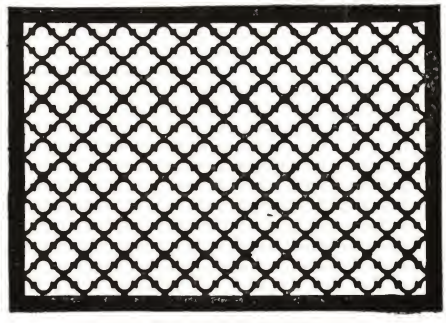
Style K: 2 1/2" Wide, 2" High
Free Area 54%, 3/8" Bars



F: 7/8" Diagonal Mesh 1/4" Bars 61% Area
FF: 13/16" Diagonal Mesh 3/16" Bars 69% Area
G: 3/4" Diagonal Mesh 1/4" Bars 57% Area
H: 1/2" Diagonal Mesh 3/16" Bars 53% Area

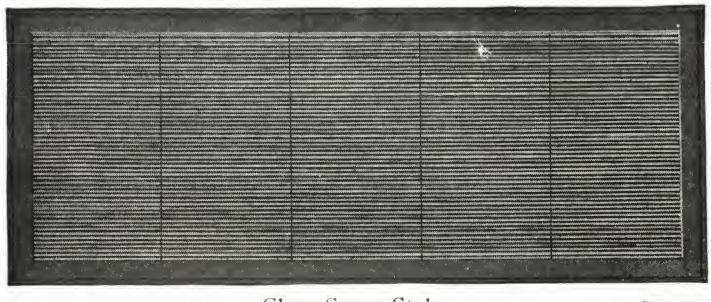


Style D: 3" Basic Square
47% Free Area
Style E: 3 1/2" Basic Square
53% Free Area



Style Q: 1 1/2"x1 3/4" Mesh
Free Area 72%
Unit Size 2" Wide, 2 1/8" High

U. S. DIRECTIONAL-FLOW FIN-TYPE GRILLES: OPEN AND CLOSE SPACE



Close Space Style

Horizontal—22° or 45° Down Flow

Style 220-0—Open space, 3/8-in. spacing.
Style 220 —Close space, 3/16-in. spacing.

Vertical

Style 222-0—Open space, 2-way flow, 22° or 45°.
Style 223-0—Open space, 3-way flow.
Style 224-0—Open space, 5-way flow.
Style 222 —Close space, 2-way flow, 22° or 45°.
Style 223 —Close space, 3-way flow.
Style 224 —Close space, 5-way flow.

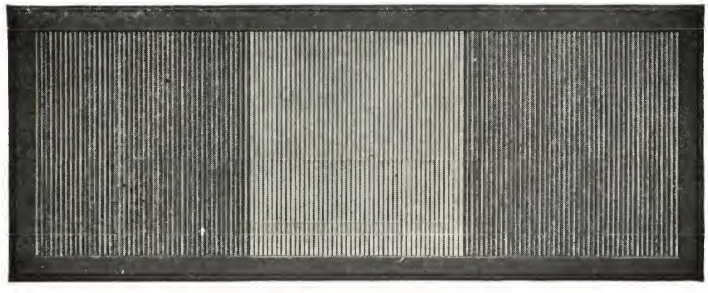
Vertical—Straight Flow

Style 219-0—Open space, 3/8-in. spacing.
Style 219 —Close space, 3/16-in. spacing.

If One-way Flow right or left is required specify direction and number, i.e. Style 221 Left Flow or Right Flow.

Horizontal—Straight Flow

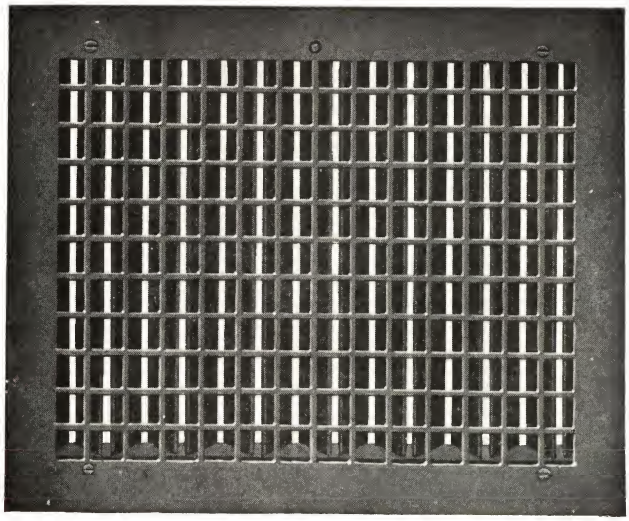
Style 221-0—Open space, 3/8-in. spacing.
Style 221 —Close space, 3/16-in. spacing.



Close Space Style

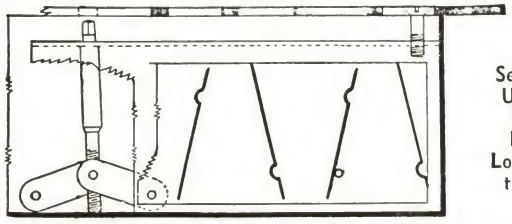
Any style on this page can be furnished on U. S. GOVERNAIR REGISTER, also on Hand and Key Operated Registers.

For complete information see latest General Register and Grille Catalog



U. S. GOVERNAIR REGISTER

A direct flow and air controlling key-operating register that is perfect and positive for air-conditioned heating and cooling systems requiring a measured air volume and straight flow. Tested by Mechanical Laboratories of the University of Michigan Engineering Department. Louvers operate in opposed position giving clear stream flow. Can be supplied with Trussteel Open or Close Mesh Faces. Faces are made in $\frac{13}{16}$-in. square mesh—$\frac{3}{16}$-in. bars unless other perforated metal designs are required as shown on page 2. Can also be supplied without faces or with directional grille faces as shown at bottom of page 2.

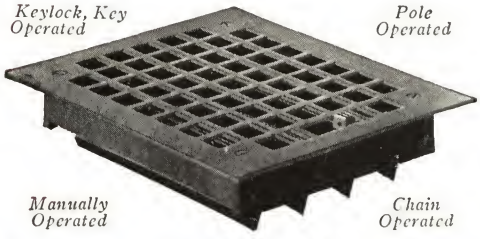


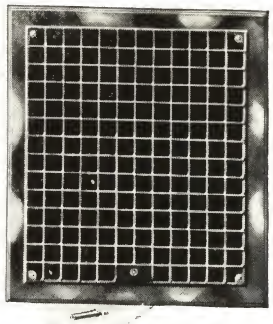
Section Showing U. S. Governair Register with Key Operated Louvers Adjusted to About Half Capacity

(Patented)

U. S. Sani-Steel Ventilating Register

Has all the appearance of an all-cast register but is stronger, neater and preferable in every way





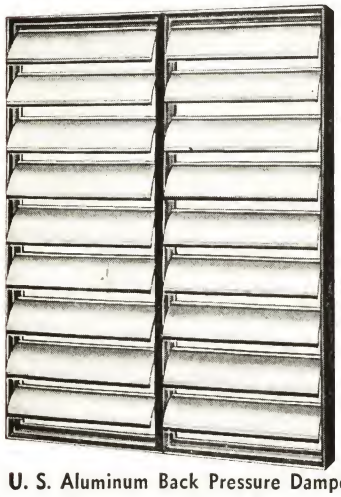
U. S. Steel Vent Register

Manually operated, keylock, key operated, pole operated and chain-pull operated



U. S. Trussteel Air-Conditioning Floor Register

(Close mesh, oblong design)

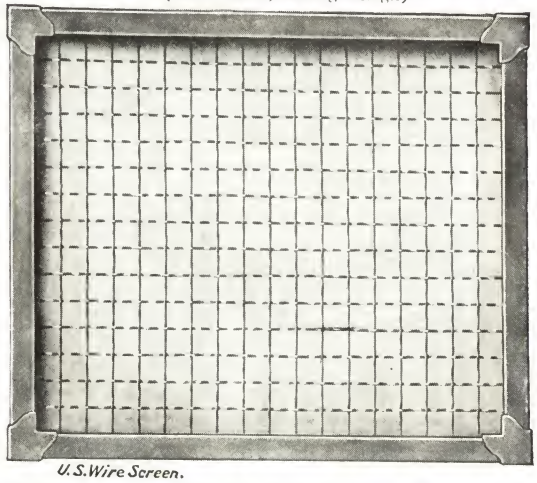


U. S. Aluminum Back Pressure Damper

Designate width and height



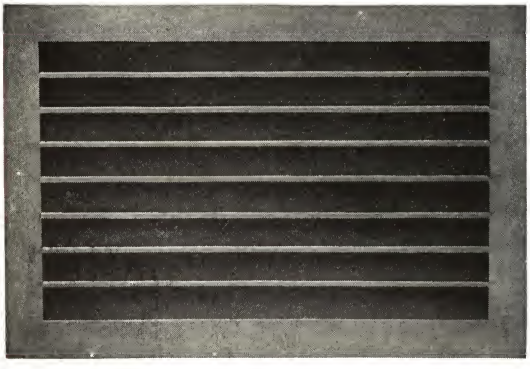
U. S. Aluminum Louver Exhaust Fan Damper



U.S.Wire Screen.

U. S. Wire Screen, Design No. 62 Angle Frame, Square Mesh

U. S. Wire Screen Design No. 61 Angle Frame Diagonal Mesh. Can also be furnished with channel frame



U. S. OUTSIDE INTAKE VENTILATORS (MADE OF HEAVY GAUGE STEEL)

U. S. Outside Intake Ventilators are made of heavy gauge steel to withstand many years of exposure to the elements. They are adaptable as outside fresh air intakes for air-conditioning and ventilating systems.

The shutters are stationary and set at a fixed angle that admits fresh air entrance, but prevents rain and snow from entering.

Louvers are set in angle frame which may be furnished drilled for attaching to wall when so specified—otherwise they are furnished with frames not drilled.

Always designate height and width when specifying.

For complete information see latest General Register and Grille Catalog

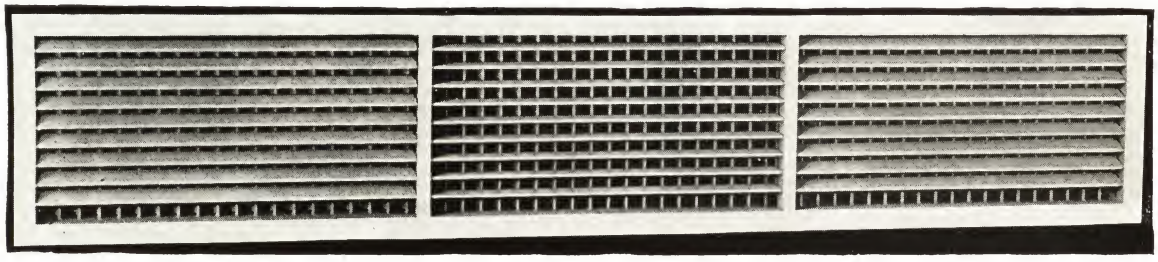
WATERLOO REGISTER COMPANY

WATERLOO, IOWA ESTABLISHED 1902 SEATTLE, WASH.
REPRESENTATIVES IN PRINCIPAL CITIES

GRILLES FOR AIR CONDITIONING SYSTEMS

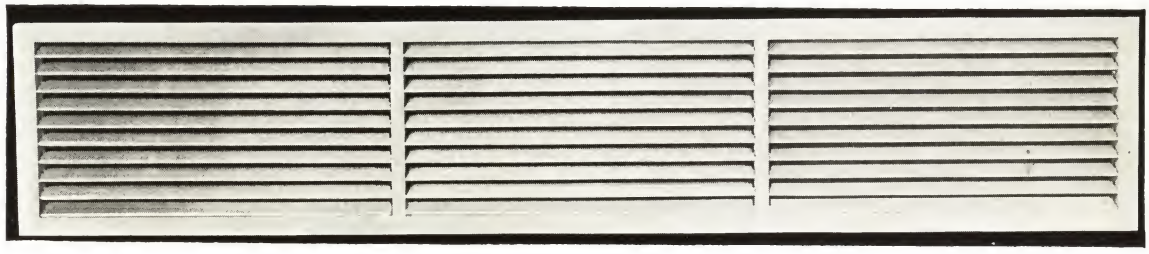
FGH-75

Consists of two sets of individually adjustable streamline blades spaced on ¾ in. centers. Operation is effected by means of removable wrench which provides adjustment after installation.



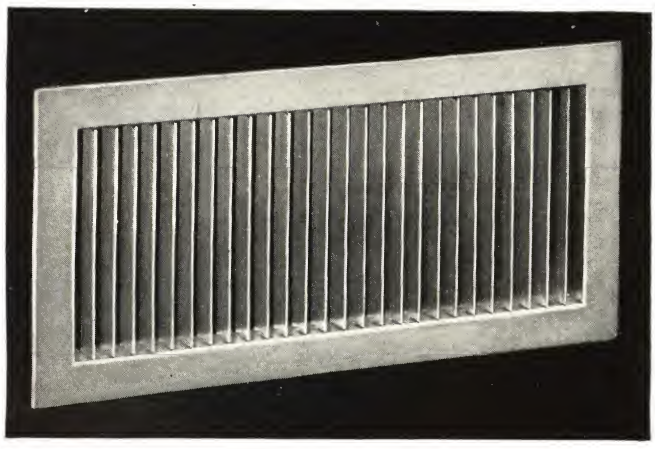
FHG-O-45

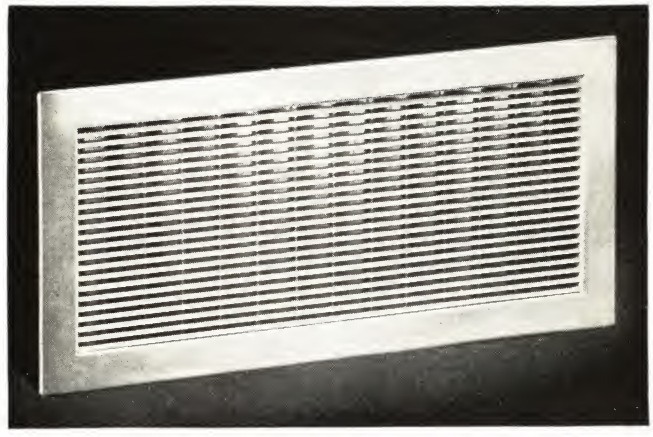
Fixed louvres slanting at 45° angle makes this return grille modern and attractive in appearance. 60% free area. 1 in. spacings. Depth ¾ in.



2A "Skyline" Grille

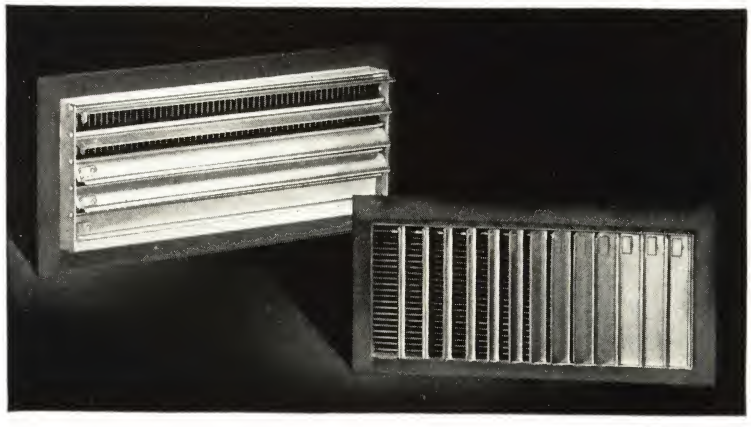
Streamline bars spaced on ½ in. centers are individually adjustable either way 60°. Bars can be furnished parallel to short dimension S-2A or parallel to long dimension L-2A. Highly efficient. Provides maximum deflection with minimum resistance





1A "Pilot" Grille

Front fins spaced on ¼ in. centers are supported by deep individually operated adjustable rear deflectors. Exterior fins may be parallel to long dimension L-1A or short dimension S-1A and may be obtained with a variety of fixed deflection arrangements



MLS Duo-Trol Damper

Louvres placed in rear of grille may be individually operated from front of grille by special tool. They may be closed separately reducing effective grille size 1 in. as each louvre is shut. Louvres may be parallel to long dimension H-MLS or parallel to short dimension V-MLS. Furnished as integral unit with different grille face designs



VU Plaster Frame

(Patented)

Illustration shows section of special frame designed for new plaster installations. Small formed angle holds edge of duct while plaster is protected from temperature changes by U-shaped channel. Assures solid, tight connection. Designed for ½ in. plaster thickness

WICKWIRE SPENCER STEEL COMPANY

GENERAL OFFICES
41 East Forty-second Street
NEW YORK, N. Y.

DISTRICT OFFICES AND WAREHOUSES
WORCESTER NEW YORK BUFFALO CHICAGO SAN FRANCISCO LOS ANGELES

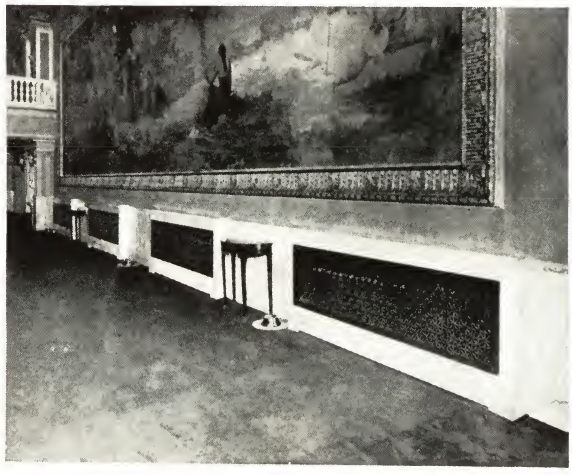
WICKWIRE SPENCER SALES CORPORATION

DISTRICT OFFICES AND WAREHOUSES
NEW YORK CHATTANOOGA TULSA PORTLAND SEATTLE

For Other Wickwire Products, including Radiator Enclosures, see File Index

CLINTON METAL GRILLES IN STANDARD OR SPECIAL DESIGNS

IN BRASS, BRONZES, ALUMINUM, MONEL OR STEEL



Clinton Perforated Grilles are correct in architectural design. When Clinton Grilles are specified, not only is mechanical perfection assured, but also workmanship of inherent pride through years of accomplishment.

We maintain dies enabling us to produce grilles of all standard and many unusual designs. Our heavy and modern equipment provides for fabricating metals into grilles as heavy as $\frac{5}{16}$ in. in thickness. Grilles of curved shapes and grilles made in accordance with your own designs and specifications can also be supplied.

We have our own finishing plant for electroplating and can match any special finish desired. Invisible doors, hinged grilles, angle frame mountings, and many other specialties are within the scope of our manufacture.

We carry in our warehouse at all times a large tonnage of various gauges of sheet bronzes, aluminum, steels and other metals. This large stock of material enables us to render most efficient and quick service.

Materials

We recommend for consideration "Wissco" Bronze, an alloy. It has high tensile strength and can be finished in any manner to harmonize with the surroundings.



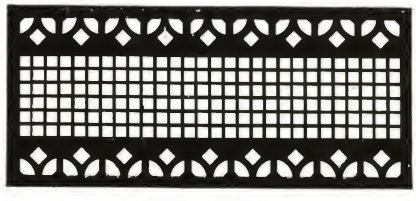
Design No. 113

"Wissco" Bronze compares favorably in price with electroplated steel, but for durability, it equals Commercial or Naval bronze.

Clinton Grilles are also furnished in other metals — stainless and regular steels, brass, copper, bronze, nickel, zinc, aluminum, monel, etc.

Finish

Grilles may be electroplated, japanned, painted, buffed or we can duplicate any finish upon receipt of sample. When grilles are to be finished with paint, we recommend that they be shipped with shop coat only and that the finishing coat be applied on the job.



Design No. 134

Dimensions and Shapes

Grilles can be made in any size or shape up to 60x156 in. in one piece. Larger sizes are made in two or more pieces carefully joined together with design matched and suitable butt straps provided, so that the joint is virtually invisible from the front.

Thickness

It is well to bear in mind that perforated metal grilles are stronger than cast grilles and a much thinner metal can be used. We perforate the various designs in steel in gauges ranging from $\frac{1}{4}$ in. to 16 U. S. gauge and in bronzes and aluminum $\frac{5}{16}$ in. to 16 B&S gauge.

Designs

Forty-five different designs are procurable from standard dies and any new designs required may be made to order. The Clinton Grille Handbook, the most complete of its kind, gives a detailed analysis of grille layouts and is invaluable to the architect.

Special Features

Angle frames, screwholes (plain or countersunk), invisible doors, handholes or any other special features can be supplied exactly according to your specifications.

Specifications

When specifying please give all the following information.

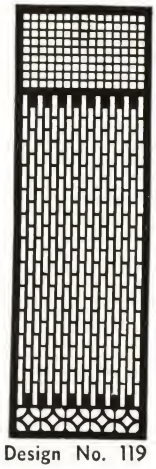
Quantity. Style of perforation.

Gauge of material. Kind of metal.

Width of blank margins, and whether included in dimension specified.

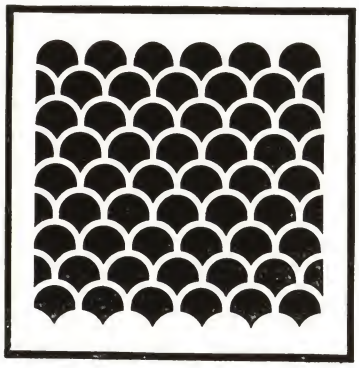
Screwholes or other special features. Finish.

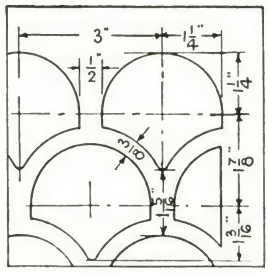
In other than lattice grilles and similar symmetrical designs, be careful to indicate which dimension is the vertical height of each grille when installed.



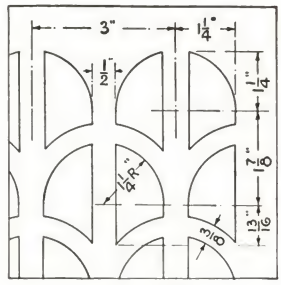
Design No. 119

The Grilles illustrated are Special Designs made from standard stampings

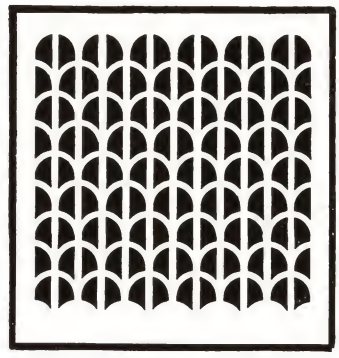


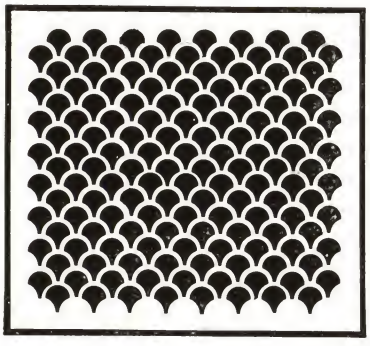


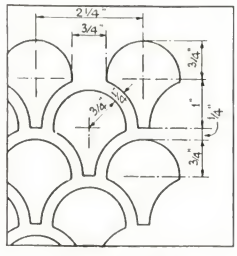
Design 117
Free air
opening 69%



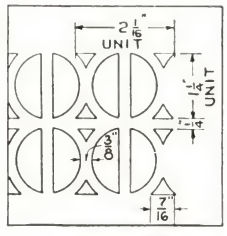
Design 121
Free air
opening 54%



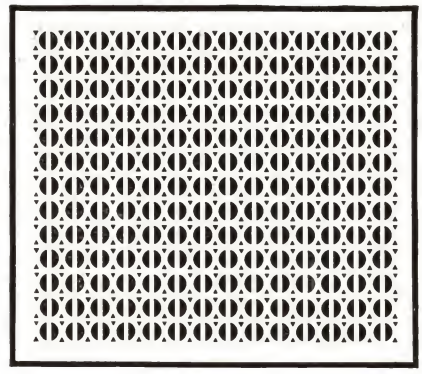


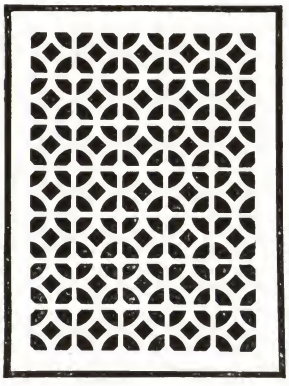


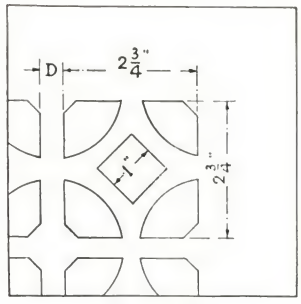
Design 1170
Free air
opening 65%



Design 705
Free air
opening 40.5%

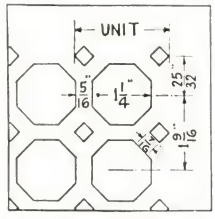




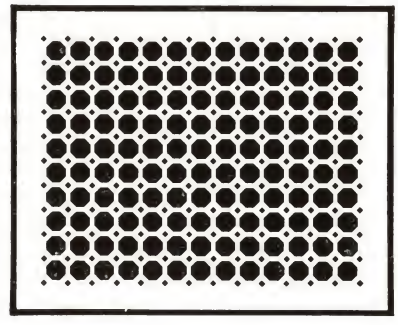


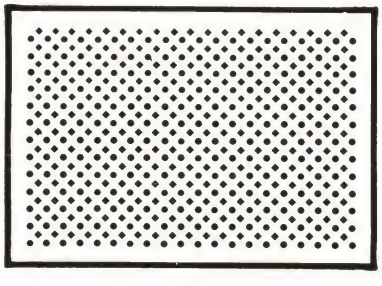
Design 122

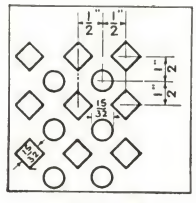
Bar "D"	Free air opening
⅜ in.	47 %
½ in.	43.4%
⅝ in.	40.3%



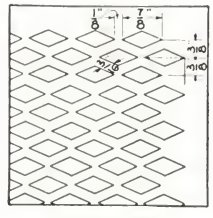
Design 505
Free air
opening 53%



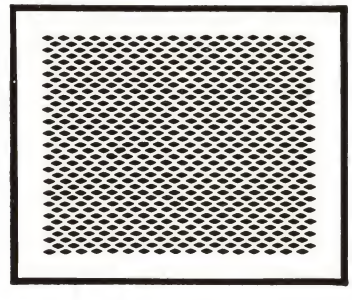


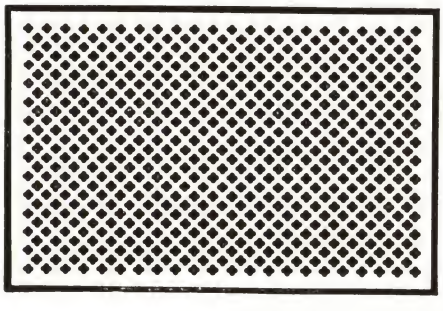


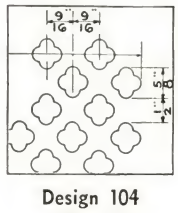
Design 103
Free air
opening 39.5%



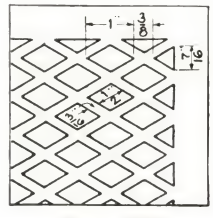
Design 109
Free air
opening 44%



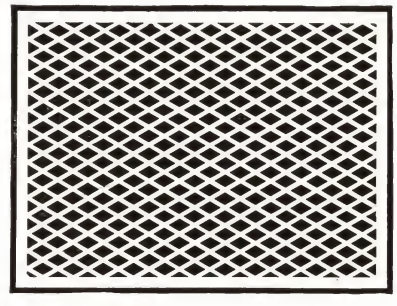




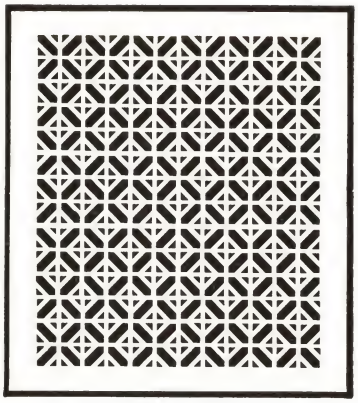
Design 104
Free air
opening 39%

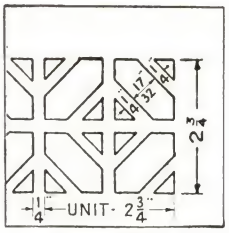


Design 140
Free air
opening 53%

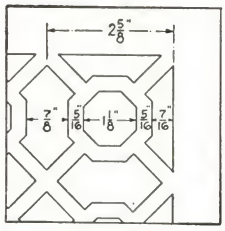


Note: Elevations shown at scale of 1 in. equals 1 ft. Details shown at scale of 3 in. equals 1 ft.

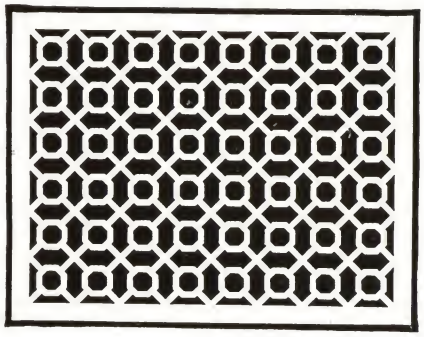


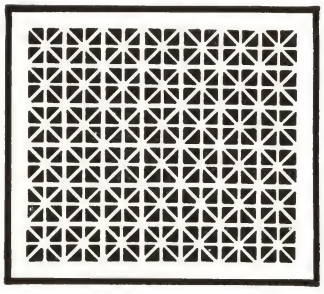


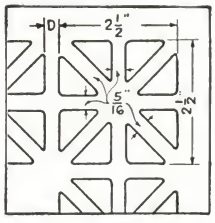
Design 605
Free air opening 47%



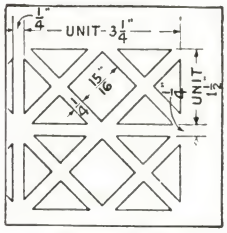
Design 805
Free air opening 60%



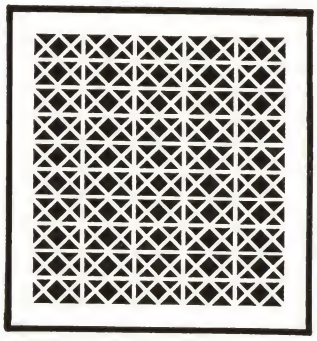




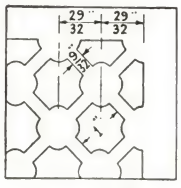
Designs 1051, 1052, 1053 and 1054



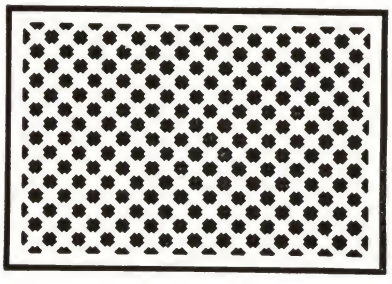
Design 405
Free air opening 48.5%

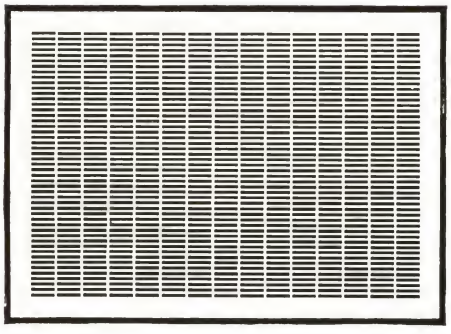


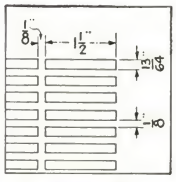
Design No.	Units	Bar "D"	Free air opening
1051	1¾ in.	3/16 in.	45 %
1052	2½ in.	5/16 in.	38.4%
1053	3 in.	5/16 in.	46.1%
1054	3½ in.	5/16 in.	52 %



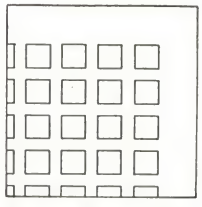
Design 137
Free air opening 48.5%

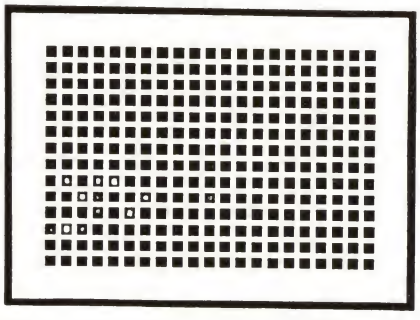




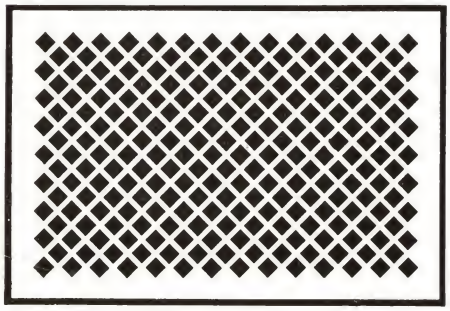


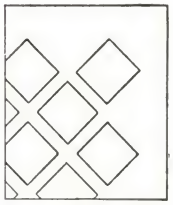
Design 92
Free air opening 56.6%





Designs 133, 133½, 134, 135, 135½ and 136





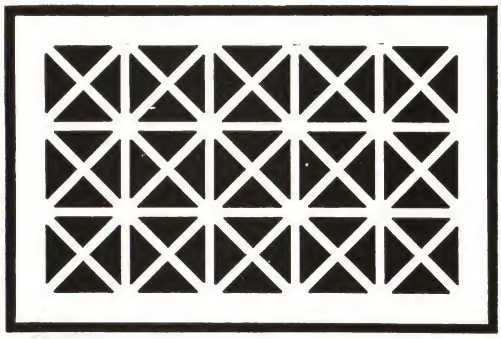
Designs 101, 101A and 123

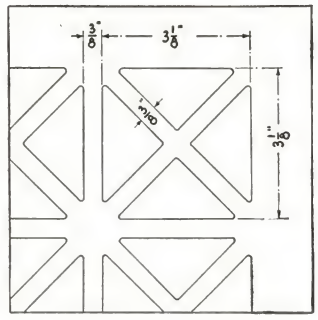
Design No.	Unit	Bar	Free air opening
101	½ in.	¼ in.	44.4%
101A	*½ in.	3/16 in.	54 %
123	1 in.	¼ in.	64 %

*½ unit in margin.

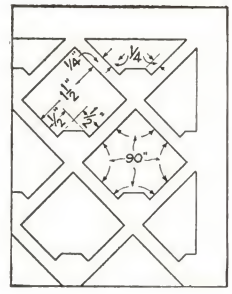
Design No.	Square perforations	Bar	Free air opening
141	¼ in.	⅛ in.	40%
142	⅜ in.	1/16 in.	35%
143	1/16 in.	⅛ or 3/16 in.	Variable
133	½ in.	3/16 or ¼ in.	53% or 45%
133½	⅝ in.	¼ in.	51%
134	¾ in.	¼ in.	56.3%
135	⅞ in.	3/16 or ¼ in.	68% or 60.5%
135½	1 in.	5/16 or ¼ in.	58% or 64%
144	1⅛ in.	⅜ in.	56%
145	1¼ in.	Any	Variable
136	1⅜ in.	⅜ in.	61.7%
146	1½ in.	Any	Variable
147	1¾ in.	Any	Variable
148	2 in.	Any	Variable
149	2½ in.	Any	Variable

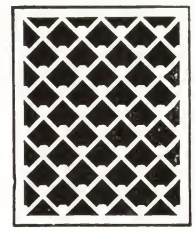
Note: Elevations shown at scale of 1 in. equals 1 ft. Details shown at scale of 3 in. equals 1 ft.



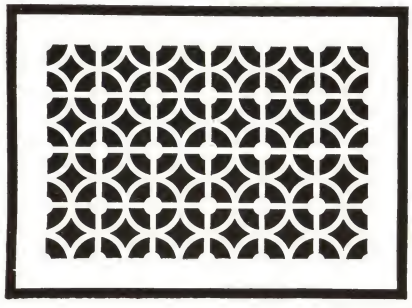


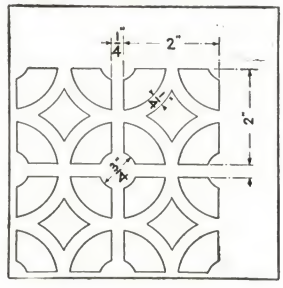
Design 825
Free air opening 70%



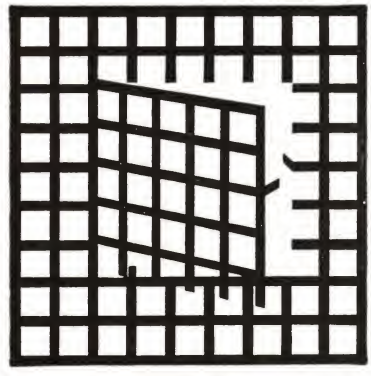


Design 850
Free air opening 66%

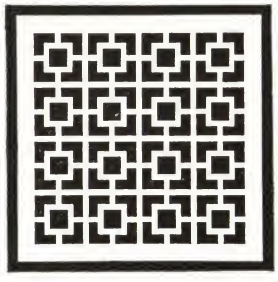


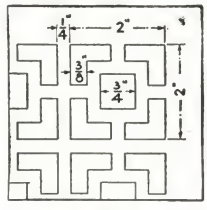


Design 815
Free air opening 50%



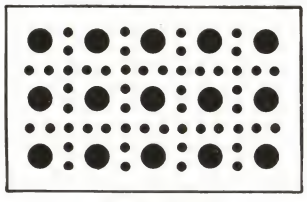
Invisible Door
(In Open Position)
This door can be had in any design of grille. Regularly furnished 5 in. x 5 in. When open, ready access to valves is provided



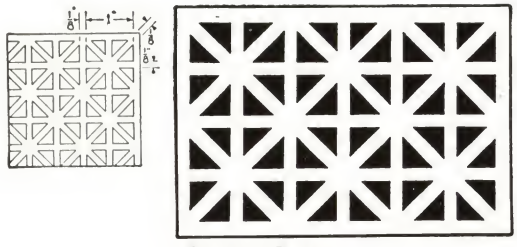


Design 820
Free air opening 50%

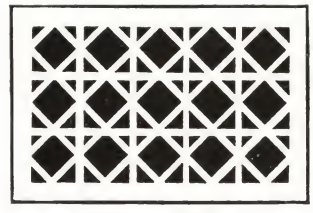
CANE DESIGNS IN PERFORATED METAL



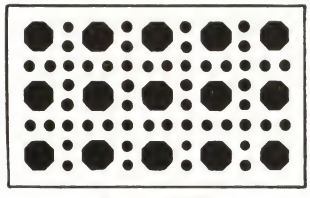
Design 500
Free air opening 29.4%
1/4-in. round center hole spaced 9/16 in. on centers



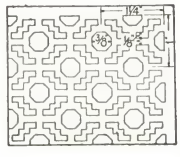
Croscane Design
Free air opening 37.4%

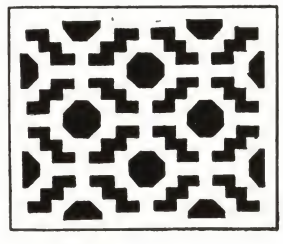


Wiscane Design
Free air opening 43.8%
5/16-in. square holes spaced 9/16 in. on centers



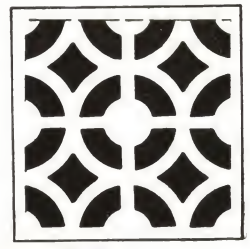
Design 1000
Free air opening 32.7%
5/16-in. octagonal center hole spaced 5/8 in. on centers





Lacecane Design
Free air opening 50%





Circane Design
Free air opening 47%

FERRO-CO CORPORATION

ESTABLISHED 1916

TELEPHONE
EVergreen 9-3880

26 Wythe Avenue, BROOKLYN, N. Y.

CABLE ADDRESS
"Ferro" New York

MANUFACTURERS OF
GRILLES—RECESSED RADIATOR ENCLOSURES—RADIATOR HANGERS
Recessed, Semi-Recessed, Free-Standing, Wall Hung, Window Sill, Fronts Only

Steel—Alloys—Aluminum—Brass—Monel Metal

Recessed Radiator Enclosures—For either copper or cast iron radiators. Made in any gauge metal. Any finish.

Perforated Grilles—In 10-gauge (U. S.) metal and lighter.

Designed and Built to Order

Your Assurance of Satisfaction—

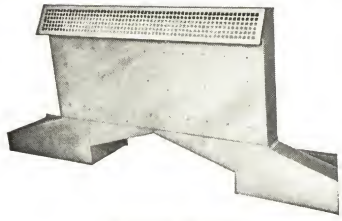
A Shop Drawing for Every Job carefully detailed and checked by expert designers of long experience with FERRO-CO.

Accurate Work Beautifully executed by sheet metal artisans of long experience with FERRO-CO working on the most modern of machines in our modern daylight factory.



Dependable Delivery Promises: Multiple equipment in each shop department to assure continuous production in spite of the occasional inevitable breakdown. Highly skilled direction of work under a modern cost-keeping system that maintains high efficiency.

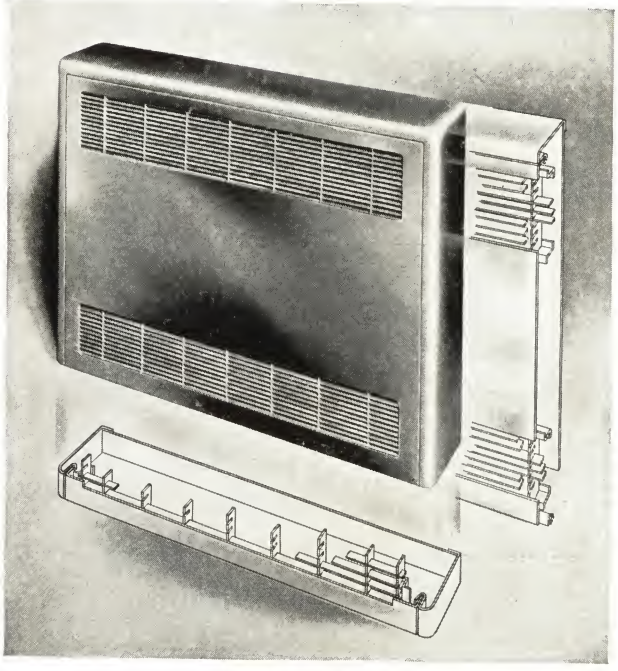
Consultation Service—Our experts are available for layout information.



Special Design for Plaster Fronts

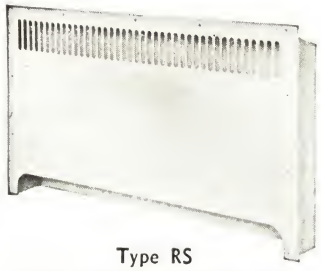


Type PFG
Plaster front—top and bottom grille

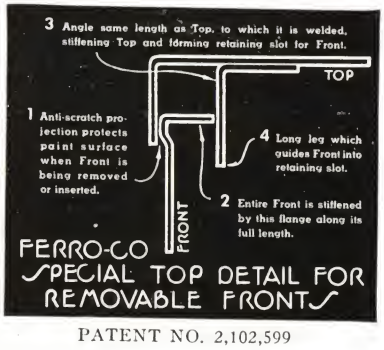




Type BSM with Damper Moulding
Semi-Recessed—top grille, sanitary base

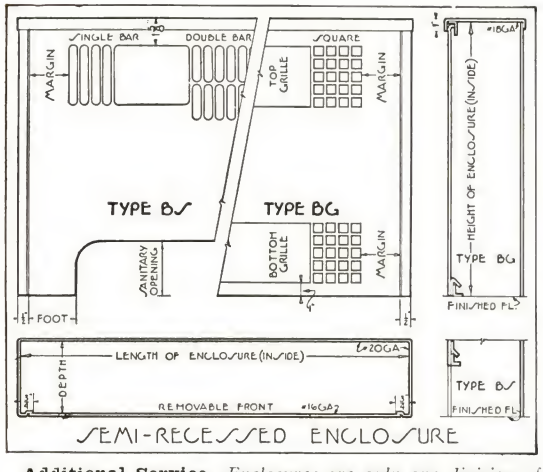


Type RS
Fully recessed—removable front

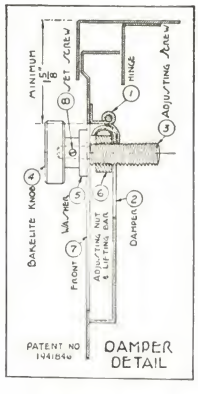


PATENT NO. 2,102,599

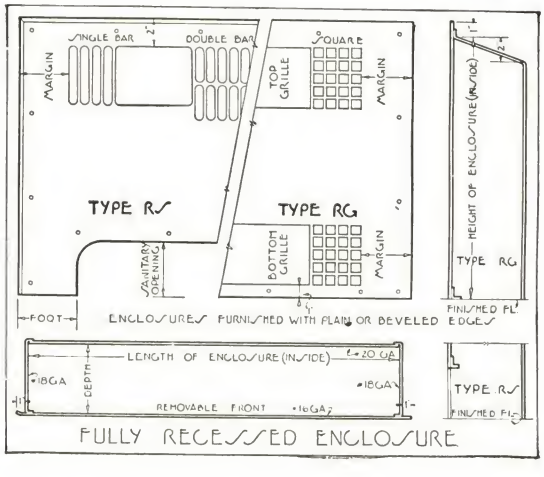
Type NBG Semi-Recessed or Free-Standing
Rounded Corners *Ful-flo* **Grille**
TRADE MARK REG.
Can be furnished with any of our other grilles. Patent Pending



Additional Service—*Enclosures are only one division of our business. We also design and manufacture anything from any sheet metal of any gauge in any quantity with any finish. See Bulletins 5, 10, 20 and 30.*



Write for Catalog No. 38



ESTABLISHED 1919

QUAKER CITY METAL PRODUCTS CORP.

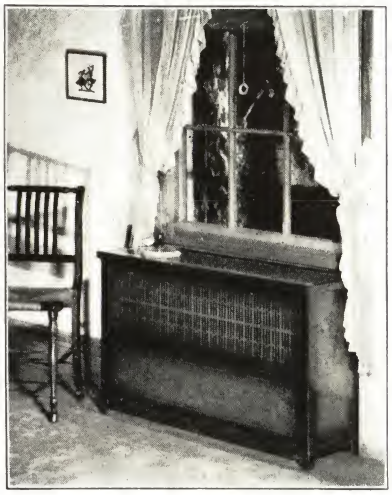
Radiator Enclosure Products for Cast Iron and Convection Type Radiators

EXECUTIVE OFFICES AND FACTORY
200 North 14th Street, BROOKLYN, N. Y.
REPRESENTATIVES OR SALES OFFICES IN PRINCIPAL CITIES

DESIGNERS, ORIGINATORS AND PIONEERS IN THE RADIATOR ENCLOSURE FIELD SINCE 1925

Exclusive Construction Specifications

(1) **No. 16 Gauge Furniture Steel Tops**—Hinged for access to valve and pan.
(2) **Solid Steel Back and Ends**—Prevent radiator dust smudge.
(3) **Steel Tubular Framework** — Encases all grilles (except Navarre).
(4) **Galvanized Water Pan**—For aid in proper humidification.
(5) **Swivel Catch Beneath Top** — Increases radiator heat circulation.
(6) **Adjustable Leg Device**—To level cabinets on uneven floors.
(7) **Heavy Baked-on Enamel**—Undercoat and lacquer finish.
(8) **No Loss of Radiator Heat**—Front construction (approved by engineers).



The Navarre



The Lorraine

13 YEARS OF RADIATOR CABINET SUPREMACY

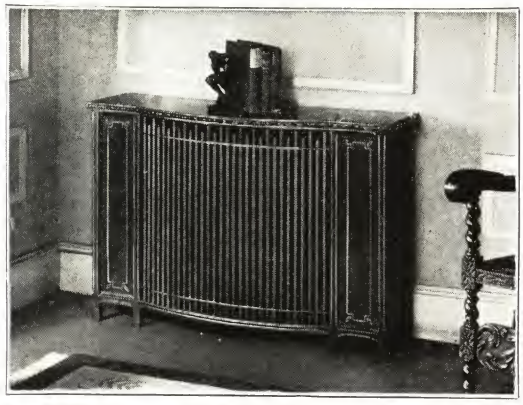
General Description

Quaker City Radiator Cabinets are obtainable in a wide selection of designs, grilles and finishes. Wood-grained finishes are a specialty and striping effects can be had at no additional cost.

Convection Type Fronts and Enclosures

Enclosures of standard types and to special specifications produced in all shapes and sizes.

Furnished in prime-coat, plain colors or wood-grained finishes.



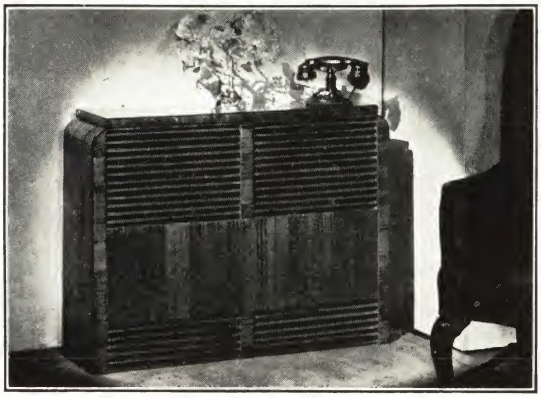
The Marquise*
(*Patent No. 83124—Design Reg. U. S. Pat. Off.)

Approved by Architects and Home Owners

Since 1925 radiator cabinets and shields, manufactured by the craftsmen of the Quaker City organization, have been installed in hundreds of apartment houses, public buildings, churches, clubs, hospitals, etc., and were chosen by thousands of home owners everywhere — because Quaker City Cabinets are beautiful, substantial, and will *not* retard radiator heat.

Illustrated Folder

Send for new illustrated folder —"Modern Modes in Radiator Concealment," in which additional designs are shown.



The Moderne*
(*Patent No. 94598—Design Reg. U. S. Pat. Off.)

Efficient Service— Prompt Deliveries

Quaker City representatives are technically trained in measuring to take care of all special conditions, so that radiators are properly enclosed.

Efficient Service
Prompt Deliveries



Type "S" Radiator Shield
Custom-built to fit any radiator and in any finish

WICKWIRE SPENCER STEEL COMPANY

RADIATOR ENCLOSURE DIVISION

Masters of Steelcraft for Over a Century

TELEPHONE
VAnderbilt 3-0900

GENERAL OFFICES
41 East 42nd Street, NEW YORK, N. Y.
DISTRICT OFFICES: WORCESTER, NEW YORK, BUFFALO, CHICAGO, SAN FRANCISCO

For Other Wickwire Spencer Products, Including Grilles, see File Index

WISSCO BETTER QUALITY ENCLOSURES, FRONT PANELS AND PERFORATED GRILLES

For Convector or Tube Radiators of All Makes

Enclosure Types: Free Standing, Recessed, Plaster Front, Wall Hung, Window Stools and Front Panels Only.
Perforated Grilles in Bronze, Brass, Aluminum, Monel or Steel

Wissco Enclosures and Front Panels are properly designed and constructed under the supervision of expert *heating* and *ventilating engineers.*

Standard Types as shown. Special types can be designed, or enclosures may be constructed to your specifications and blueprints.

Material—First quality cold rolled steel, in gauges to No. 12.

Grille Designs—Bar type or square lattice standard. For special designs see File Index for our catalog on Grilles.

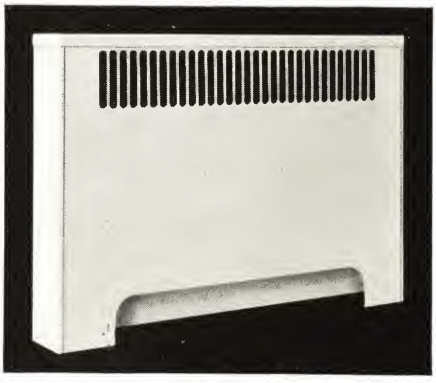
Standard Finish—Oven-baked gray prime coat outside, gray or black inside.

Special Finish—Choice of 36 solid colors, or natural wood grains (at slight additional cost). All color finishes six-coat oven-baked, for permanence and durability.

Extras — Access doors; hinged grilles; countersunk screwholes; beveled edges; mouldings; dampers; baffles and insulation—supplied at nominal additional charge.

If quick reply is desired on rush jobs, please send schedule of sizes and types, blueprints or specifications, direct to J. G. Baker, Manager, Radiator Enclosure Division, New York, N. Y.

Note: *Use inside dimensions in ordering convector enclosures.*



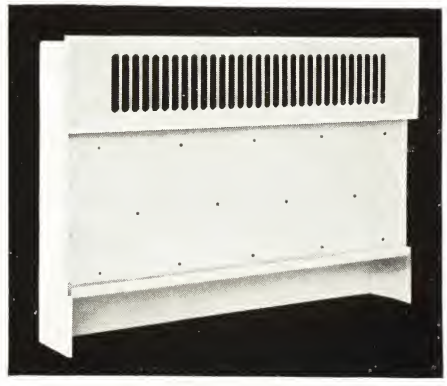
Type F.A. Enclosure

Snap-on, removable front enclosure, used for free standing, partial recess, or complete recessed. Face or top outlet grille, arched inlet.



Type O.F.A. Enclosure

Overlap removable front panel for complete recess. Overlap tile or plaster top ½ in., ends ¾ in. Face or top outlet grille, arched inlet.



Type P.F.A. Enclosure

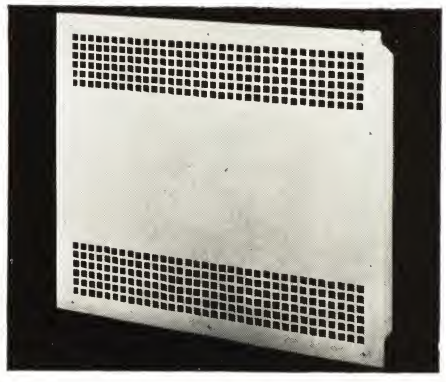
Plaster front, removable grille for complete recess in wall, allowance plaster ¾ in., tile 1½ in. Face or top outlet grille and opening inlet.

Types F.A. and F.A.A. are also available with Wissco's Exclusive Improvement: Adjustable Heights to compensate for uneven floors, sills, etc. Inquire about this feature.



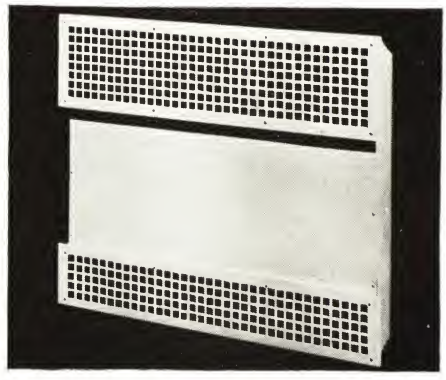
Type F.A.A.

Snap-on, removable front panel for free standing, partial recess, or complete recessed. Top outlet and lower inlet grilles.



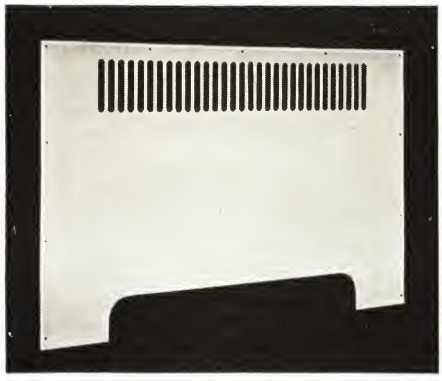
Type O.F.A.A.

Overlap removable front panel for complete recess. Overlaps tile or plaster top ½ in., ends ¾ in. Face or top outlet and lower inlet grilles.

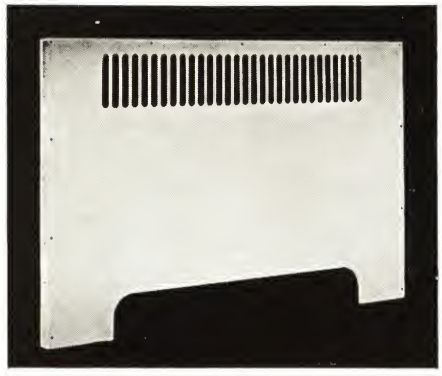


Type P.F.A.A.

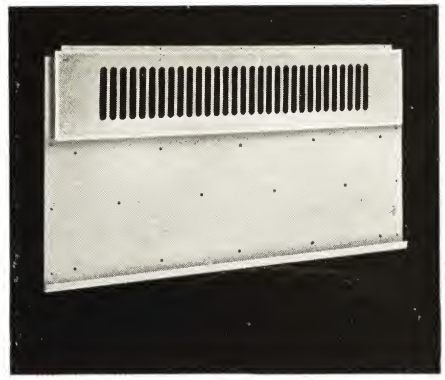
Plaster front, removable grille for complete recess in wall, allowance plaster ¾ in., tile 1½ in. Face or top outlet and lower inlet grilles.



No. 1—F.A. Front Panel
Removable front panel. F.A. Type—Face outlet grille, arch inlet. F.A.A. Type—Face outlet grille, lower inlet grille.



No. 2—E.F.A. Front Panel
Extended front, removable panel. E.F.A. Type—Face outlet grille, arch inlet. E.F.A.A. Type—Face outlet grille, lower inlet grille.



No. 3—P.F.A. Front Panel
P'aster front, removable grille. P.F.A. Type—Face outlet grille, inlet opening. P.F.A.A. Type—Face outlet grille, lower inlet grille.

WISSCO ALL-STEEL AIR HUMIDIFYING RADIATOR CABINETS OF DISTINCTIVE BEAUTY AND UTILITY

For Cast Iron Tube Radiators Only

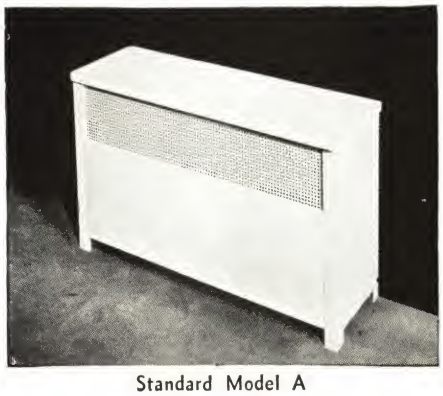
Standard Models

A variety of these moderately priced radiator cabinets are offered in stock sizes (and any intermediate size) in the styles illustrated below.

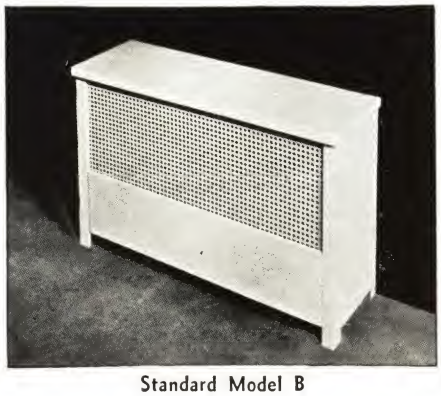
Construction—Prime furniture steel, up to 16-gauge, according to specifications. Welded construction or assembled type, latter quickly assembled or taken apart for cleaning, moving or storing. Individual parts easily replaceable instead of entire cabinet. Shipped in cartons, assembled type knocked-down.

Extra Features—Galvanized air humidifying pans; valve accesss doors; tip doors; insulation; special fittings for setbacks or window sills, baseboards, mouldings, pipes, radiator supports, etc.

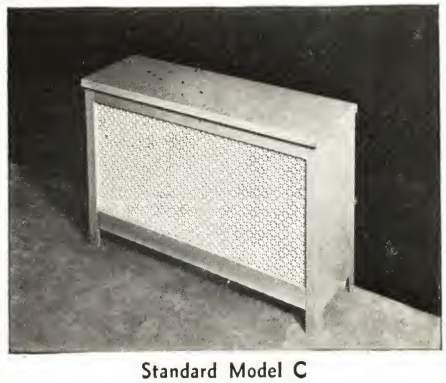
Finishes—Same as Custom-Built Models below.



Standard Model A



Standard Model B



Standard Model C

Custom-Built Models

These beautiful pieces of real furniture are slightly higher in price. They can be had to harmonize with any period treatment or special decorative motif. Available in a wide variety of styles and finishes and in any size.

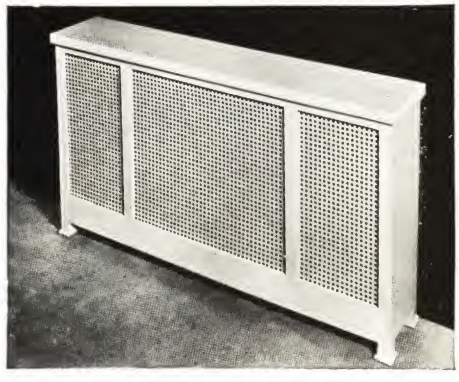


Custom Model B
One panel

Construction — Selected heavy gauge prime furniture steel, electrically welded throughout. Special adjustable feet.

Extra Features—Practically all the extra features of the Standard Models, such as copper air humidifying pan, valve access door, tip door, special fittings, etc., are included.

Standard Finishes — Baked-on prime coat, or choice of 36 solid colors in six-coat, oven-baked, durable, non-chipping enamel. Natural wood grains or matching special sample colors at slight extra charge.



Custom Model A
Three panels

CONSULTATION SERVICE—DELIVERIES

Architects, heating engineers, builders, contractors and others are cordially invited to consult us for specification writing and other requirements.

Prompt consultation service available for planning or layout. Wickwire Spencer extensive manufacturing and distributing facilities assure prompt dependable delivery.

MEMORANDA

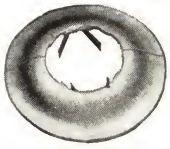
ESTABLISHED 1894

THE BEATON & CADWELL MFG. CO.

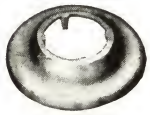
Heating and Plumbing Specialties

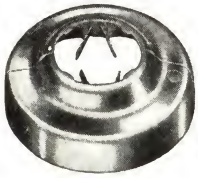
NEW BRITAIN, CONN.

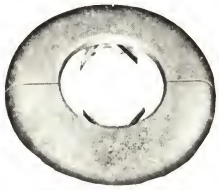
"Perfection" Floor and Ceiling Plates


No. 1


No. 3


No. 3S


No. 36


No. 10 Hinged


No. 6A


No. 12


No. 16


No. 40

Types, Sizes and Description

Furnished in plain, nickel plated or chromium plated finishes.

No. 1—Sectional Floor and Ceiling Plate. Cast Iron or Brass. 1-in. flange. Sizes ⅛ to 12 ins.

No. 2—Same as No. 1, with set screw instead of springs.

No. 3—Hinged Floor and Ceiling Plate. Cast Iron or Brass. 1-in. flange. Sizes ⅜ to 4 ins.

No. 3A—Same as No. 3 but with set screw. Sizes ¼ to 4 ins.

No. 3S—Solid Floor and Ceiling Plate. Cast Iron or Brass. With or without set screw. Sizes ⅛ to 7 ins.

No. 36—Hinged Floor and Ceiling Plate. Cast Iron or Brass. 1-in. flange, sizes from ½ to 2 ins., inc. Furnished with set screw instead of springs if required. Used where sleeves extend ½ in. above floor.

No. 6—Sectional Floor and Ceiling Plate. Cast Iron or Brass. 1-in. flange. With set screw. 1¾ ins. high. Sizes ½ to 4 ins. Used where sleeves extend ¾ in. above floor.

No. 6A—Solid Floor Plate. Cast Iron or Brass. Can be furnished with set screw for ceiling use. Sizes ¼ to 5 ins. Used where sleeves extend 1½ ins. above floor.

No. 7—Same as No. 1, but with 1½-in. flange. Sizes ½ to 4 ins.

No. 9—Same as No. 1, but with 2-in. flange. Sizes ½ to 4 ins.

No. 10—The Original No. 10 Perfection Floor and Ceiling Plates of Sheet Steel or Brass. 1-in. flange. Sizes ¼ to 6 ins.

No. 10—Plate can be furnished in grained oak finish.

No. 10—Copper Service Tube Plates are available in sizes from ⅜ to 1½ ins. inclusive.

No. 11—Same as No. 10, but with set screw.

No. 12—Solid Floor Plate. Sheet Steel or Brass. 1-in. flange. Sizes ¼ to 4 ins.

No. 13—Same as No. 12, but with set screw for ceiling use.

No. 16—Special Ceiling Plate for Angle or Circle Cove. Made of Sheet Brass. Sizes ½ to 2½ ins.

No. 40—Hinged Floor and Ceiling Plate. Sheet Steel or Brass. 1-in. flange. Sizes ⅜ to 4 ins.

The Cadwell No. 45 System



A complete unit—nothing else to buy.

A departure from the conventional type of equipment as used with tank in basement systems.

To keep the expansion pressure in the system within practical working limits even under most sudden firing methods, as in oil burners.

Providing a means for elastic pressure distribution within the system.

Keeping the system filled to any desired pressure, and above all—to positively protect the boiler.

All of this is achieved in the most novel manner.

The Pressure governing and relief feature which has never been applied before—

(1) Has no springs
(2) Is governed entirely by physical laws
(3) It cannot increase the setting at any time
(4) It tests itself automatically as long as there is any water in system
(5) It is responsive to the slightest difference of pressure within the system
(6) Absolutely guaranteed to protect the boiler against increase of pressure above relief setting.

Cadwell Thermostatic Valves


Bottom Outlet
⅛ and ¼-in. and
¾ x ⅜-in. sizes


Angle Type

No. 10 Non-adjustable Thermostatic Valves



No. 50 Diaphragm Operated Thermostatic Vacuum Valves

"To Equalize" one-pipe steam systems. Bottom outlets available in customary sizes

Cadwell Relief Valves



No. 25

Cadwell No. 25—Pressure temperature relief valve for range boilers; *self-closing.* Valve closed by internal pressure—not by heavy springs. Diaphragm operated.

Cadwell No. 35 — Diaphragm type pressure and vacuum relief valve.

A typically dependable Cadwell valve, ideal for use with range boilers or storage tanks where a temperature relief valve is not required.

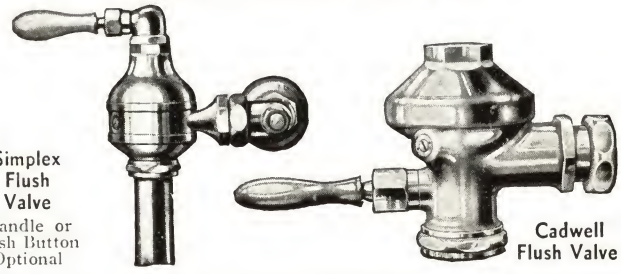
Both valves open and close by internal pressure. Point relief insures a high degree of accuracy. Slight drop in pressure is all that is required to close valve leakproof.



No. 35

Note—Nos. 25 and 35 Relief Valves are AGA approved.

Simplex and Cadwell Flush Valves


Simplex Flush Valve
Handle or Push Button Optional

Cadwell Flush Valve

Siphon Proof—Both valves constructed to prevent contents of bowls siphoning to supply pipe and contaminating water.

Simplex valves have integral "vacuum break" which allows air to enter valve with water, no moving parts required.

Cadwell valves have movable ball (placed above by-pass so that foreign matter cannot prevent proper action).

Outside By-pass Control—Both valves have time plug arrangement that allows valve to be adjusted from outside of valve. All valves regulated at the factory for the usual conditions.

By-pass has four different channels. If foreign matter accumulates in one of these it is possible to turn plug to one of the other three in which case the accumulation should be washed out without taking valve apart.

Information relative to Pipe Hangers, Floor Sleeves, Rolls, Wood Wheel and Key Radiator Air Valves—furnished on request

THE BEATON & CORBIN MFG. CO.

Manufacturers of Floor and Ceiling Plates

SOUTHINGTON, CONN.

B & C FLOOR AND CEILING PLATES

All Floor and Ceiling Plates are made to fit standard iron pipe sizes, and the size indicated for each plate is the size which fits the corresponding iron pipe size. The standard width of flange of these Floor and Ceiling Plates approximates one-inch unless otherwise specified—the larger sizes being somewhat wider. Copper Service Tube Plates are made to fit style KLM Tube. Plate sizes fit corresponding tube sizes.

Typical Specification

Where exposed pipes pass through Finished Floors, Walls and Ceilings they shall be fitted with (insert finish) (insert material desired) Floor and Ceiling Plates, No. (insert Plate No.) as manufactured by The Beaton & Corbin Mfg. Co. of Southington, Conn.

I. STAMPED PLATES



No. 10



No. 1



No. 9



No. 20

Style No.	Material	Sizes, inches	Available finish	Floor or ceiling	Held by	Recommended application
1	Steel or Brass	¼–3	Plain, Copper, Nickel, Chrome	Combination	Springs	For use on all Copper Tube Installations
9	Steel	⅜–3	Beacor, Nickel, Chrome	Combination	Prongs	Substantial and economical
10	Steel or Brass	¼–6	Plain, Lacquer, Nickel, Chrome	Combination	Springs	For use on Residential and Hotel Work
13	Steel or Brass	¼–6	Plain, Lacquer, Nickel, Chrome	Ceiling	Setscrew	No. 10 Plate with setscrew
16	Steel or Brass	½–2	Plain, Nickel, Chrome	Ceiling	Setscrew	Solid plate—narrow flange with setscrew
17	Steel or Brass	½–2	Plain, Nickel, Chrome	Floor	.....	Solid plate with narrow flange
20	Steel or Brass	⅜–4	Plain, Nickel, Chrome	Combination	Springs	Rivet hinge reasonably priced

Regular List Price

Size.....inches	¼	⅜	½	¾	1	1¼	1½	2	2½	3	3½	4	4½	5	6	7	8	9	10	12
Plain Steel—Iron	.15	.16	.17	.18	.20	.22	.25	.30	.50	.65	.80	1.00	1.25	1.50	1.75	2.00	2.25	2.50	2.75	3.25
N. P. Iron—Steel.....	.27	.28	.29	.30	.32	.35	.38	.45	.65	.80	1.00	1.25	1.50	1.75	2.00	2.25	2.50	2.75	3.00	3.50
Pol. or N. P. Stamped Brass	.60	.60	.62	.65	.72	.80	.85	1.00	1.50	1.80	2.25	2.75	3.25	3.75	4.25	.....	.....	.....	.....	.....
Pol. or N. P. Cast Brass...	1.00	1.00	1.00	1.20	1.30	1.60	1.80	2.00	2.50	3.00	4.00	5.00	6.00	7.00	9.00	10.00	12.00	14.00	16.00	18.00

II. CAST PLATES



No. 3



No. 4-5



No. 6



No. 6W



No. 7



No. 8



No. 24

Style No.	Material	Sizes, inches	Available finish	Floor or ceiling	Held by	Recommended application
3	Iron or Brass	¼–12	Plain, Polished, Nickel, Chrome	Combination	Setscrew	For use on Public Buildings
4	Iron or Brass	½–4	Plain, Polished, Nickel, Chrome	Floor	.....	Solid plate
5	Iron or Brass	½–4	Plain, Polished, Nickel, Chrome	Ceiling	Setscrew	Solid plate with setscrew
6	Iron or Brass	¼–2	Plain, Polished, Nickel, Chrome	Floor	.....	Similar to No. 3
6W	Iron or Brass	½–2	Plain, Polished, Nickel, Chrome	Floor	.....	1½ inch extra wide flange
7	Iron or Brass	⅜–3	Plain, Polished, Nickel, Chrome	Combination	Springs or Setscrew	Heavy springs, bell design
8	Brass only	⅜–2	Plain, Polished, Nickel, Chrome	Floor	Setscrew	Deep bell shape to fit over 1½-inch projections.
24	Iron or Brass	½–2	Plain, Polished, Nickel, Chrome	Combination	Setscrew or Springs	Deep bell shape to fit over ½-inch projections

HEALY-RUFF COMPANY

776 Hampden Avenue
ST. PAUL, MINN.

E-Z RADIATOR AND LAVATORY HANGERS AND CONCRETE INSERTS

E-Z Radiator Hangers

Advantages—Anchor bolts can be placed in walls during construction. No accurate measurements are required since hangers have both horizontal and vertical adjustments.

Only one bolt is required in wall for each hanger. Expansion cannot affect anchor bolts in wall.

Entire hanger invisible when installed.

Adjustable for any height of baseboard.

Saves time and labor installing.

Applicable to walls of wood, brick, tile, or walls of any other material.

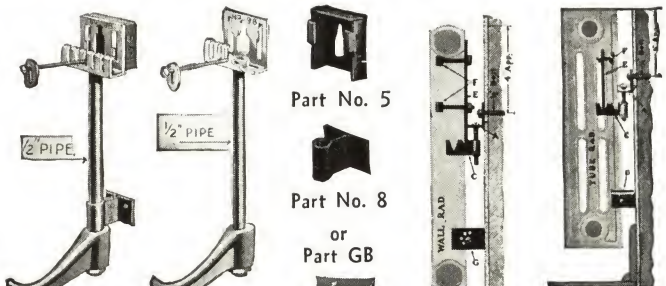
Easy to clean under radiators.

Style "H"—Places radiator 2½ in. from wall and provides for baseboard adjustment.

Style "R"—Places radiator 1½ in. from wall, but is not adjustable for baseboard. All Style "R" hangers are convertible (with parts No. 5 and No. 8) into Style "H."

Note: Both styles "H" and "R" can be used for wall, column or tube radiators. All column and tube radiators are held in at the top with an invisible washer. All parts made of pressed steel, except bottom hook supports. Vertical adjustments on Styles "H" and "R" made with ½-in. pipe.

Style "C"—Will hang wall, tube and the new "Fantom and Mural" type of radiation. Fully adjustable horizontally and vertically and has adjustment for irregular walls. Can be furnished for hanging either 1½ or 2½ in. from wall. Hanger is complete, no nipples required.

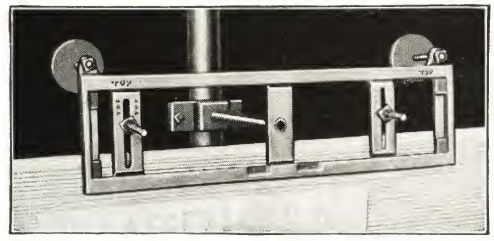


Style "H" with Baseboard Adjustment | Style "R" without Baseboard Adjustment | *(Part GB Allows for In-and-Out Adjustment)* | Style "C" with Wall Radiator | Style "C" with Tube Radiator

Typical Specifications—*General*—All radiation, unless otherwise noted, shall be supported from the wall on Style "..." E-Z Radiator Hangers, placing the radiator .. inches from the wall, as manufactured by the HEALY-RUFF COMPANY, St. Paul, Minn., or equal, and approved in writing by the architect or engineer. The heating contractor shall furnish and install for each hanger the proper type of suspension bolt. The number of hangers to be used for each radiator shall be as recommended by the manufacturer.

E-Z Lavatory Hanger

Offers a practical means for hanging all lavatories and kitchen sinks. Hanger is made of iron and furnished complete as shown below, except ⅜-in. pipe.



E-Z Lavatory Hanger

Advantages—Easy, quick and economical to install. Can be fastened securely to form rigid hanger either with or without clamping to vent pipe.

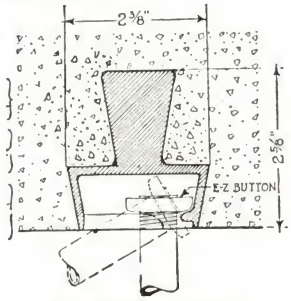
Gives firm, substantial support permanently—cannot slip or come loose from wall. No lavatory pedestal legs or other support necessary.

Installed in wall without extra frame of wood or other material. Can be built into wall during or after construction. It is not absolutely necessary to attach to vent pipe, but preferable when possible.

E-Z Lavatory Hanger fits all size lavatories and meets all conditions. It is fully adjustable both horizontally and vertically. Exact position need not be figured when setting.

E-Z Concrete Insert

An insert with special features making it adaptable to all sizes of pipe hangers, whether supported by pipe, bolt, rod or band iron.



E-Z Concrete Insert

Advantages—Made in just one size, and this one size accommodates ⅛, ¼, ⅜ and ½-in. pipe and ⅜, ½, ⅝, ¾ and ⅞-in. rod or bolt.

Has ball and socket connection between insert and hanger.

Fully adjustable—allows play to compensate for expansion and accurate alignment of inserts.

E-Z Button turns in the insert —no couplings or turnbuckles needed.

"Makes Pipe Hanging Easy."

TYPE "PW" CONTROL FOR PRESSURE (HYDRO-PNEUMATIC) TANKS

Operation

Automatically controls both water levels and air pressure in any size tank from 2 ft. to 10 ft. in diameter.

Installation

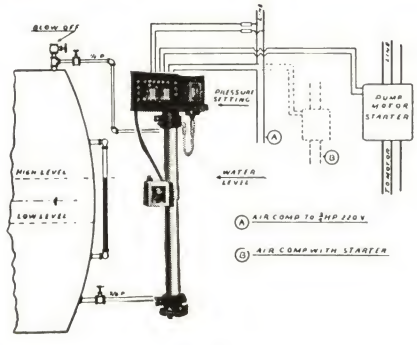
Easy and inexpensive to install and operate.

Safety

Protects the tank from excessive pressure and the system from water hammer.

Efficiency

Checks and corrects both water level and air volume at each cycle of operation.



Economy

Type "PW" Control eliminates attention and reduces the pumping cost.

"The Water Level Controls Co., 776 Hampden Ave., St. Paul, Minn., manufactures the Type "PW" Control, as well as controls for operating one or more pumps, electric valves, compressors, alarms, signals, etc., in connection with all types of tanks and water systems. Their line includes elevated tank controls, float switches, pressure switches, hydro-pneumatic tank controls, sump controls, sewage ejector controls and special controls. This company is affiliated with the HEALY-RUFF COMPANY."

THE ANTHONY COMPANY

Liquid Fuel Engineers

47-33 Fifth Street, LONG ISLAND CITY, N. Y.

Products

ANTHONY NEBULYTE OIL BURNING and GAS BURNING SYSTEMS for steam boilers, hot water heaters, hot air furnaces, cooking ranges, etc.

ANTHONY NEBULYTE SYSTEM for Heavy Gravity Oil.

ANTHONY SINGLE and DUPLEX STRAINERS.

ANTHONY STEAM and ELECTRIC FUEL OIL HEATERS.

TANK SUCTION UNITS.

Engineering Service

Anthony engineers are prepared to discuss all heating problems and design special oil, tar or gas fired apparatus for specific needs.

Having designed a great variety of successful industrial heat treating systems, they have wide experience in this field to place at a client's disposal.

THE ANTHONY COMPANY since its organization has dealt with every application as an individual combustion problem, appreciating, as few others have, its many sensitive and variable conditions and accurately meeting these by correctly utilizing essential principles.

They are pioneers in the development of mechanical nebulization as applied to the combustion of liquid fuel, as well as in the application of those combustion principles which effect the accurate control of heat quality.

Employment of their services leads to conservation of fuel, speeding up of heat cycles and better quality of results as 5000 clients will testify.

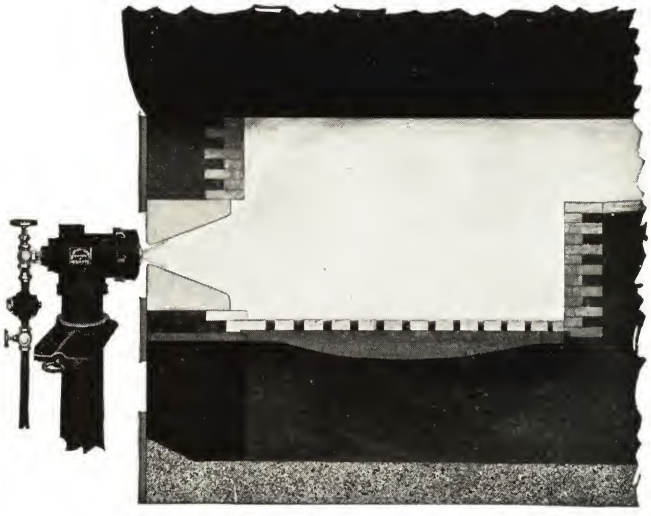
More than 32 years of record-smashing success.

Anthony Nebulyte System for Boilers

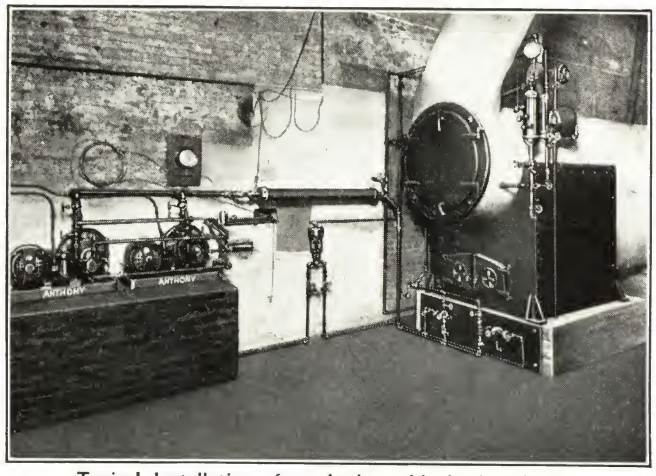
The Anthony is a mechanical nebulizing system for liquid fuel, which actually attains the perfection of radiant gas firing and normally produces 80% to 86% evaporating efficiency.

In this highly developed system of gas firing with oil fuel, an instantaneous conversion of liquid to gas is effected by correct combination of essential elements.

Performance—Every item of Anthony equipment has been selected and developed to meet exacting requirements, and is fully guaranteed to be free from defects in materials and workmanship. In spite of the severest operating conditions, the annual maintenance costs have averaged no more than 2% over a period of 10 years. A completely installed Anthony Nebulyte system is 100% assurance of successful operation.



Gas Firing with Oil Fuel



Typical Installation of an Anthony Mechanical System
(Units in duplicate)

Equipment—This includes storage tanks and fittings, suction and discharge strainers, heaters, pumps, blowers, burner sets, valves, piping, gauges and thermometers, together with firing chambers and attachments.

Anthony oil heaters, for use with heavy gravity oils, are supplied to give the required temperature to the particular grade of oil specified. Complete with safety relief valve, thermometer and, where desired, with automatic temperature control. Either steam or electric.

Anthony strainers are made in both single and duplex patterns. In the duplex strainers, either side can be cut out of service by a single lever movement. They need never be taken apart for cleaning. They are easily applied to any pipe line. The cleaning operation is made so simple that there is no excuse for strainers ever becoming foul.

Control—Usually by hand, but automatic controls of proven reliability can be furnished, where specified, to maintain definite boiler pressure, water temperature, or both.

Application—The Anthony Nebulyte system is adapted for burning oil or gas under heating and power boilers in apartment houses, hotels, clubs, public buildings, etc. The combination oil and gas system offers special advantages in many instances.

Anthony Nebulyte System for Heavy Gravity Oil

Heavy gravity asphaltum base oils cause many troubles and often condemn an oil burning system that is not installed to provide for all the necessary conditions. Yet the use of such oils at their lower prices is often necessary in order to show satisfactory operation figures in comparison with coal. The Anthony system can be installed to handle such oils equally as well as those of lighter gravity.

Changing Present Systems for Heavier Oils—The overcoming of existing troubles and improvement in the present operating conditions of other systems already installed, comprise a major portion of the work of THE ANTHONY COMPANY. Send us full details.

ESTABLISHED 1855

THE BROWNELL COMPANY

DAYTON, OHIO

Sales and Service Agencies in All Principal Cities Throughout the U. S. A.

Products

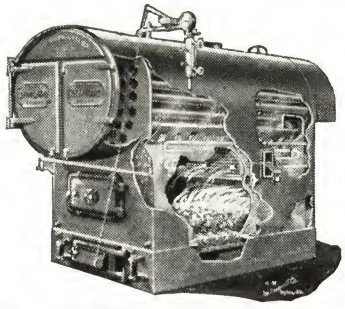
BOILERS — Large Capacity Steel Heating Boilers; Residence Steel Heating Boilers; H.R.T. Boilers for Power and Process; Double Pass Riveted Firebox Boilers; Scotch Boilers; Vertical Tubular Boilers; Feed Water Heaters; Stacks, Breechings, Steel Plate Work, etc.

TRADE-MARK

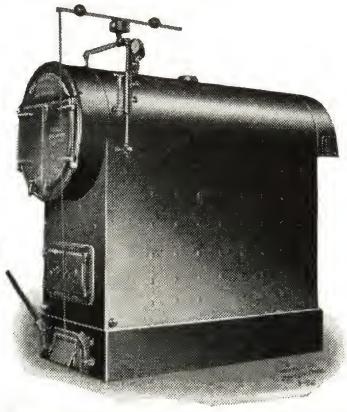
STOKERS—Heavy Duty, Single Retort, Ram Type Underfeed Stokers; Industrial, Worm Feed Type Side Dump Stokers; Commercial, Worm Feed Type Stokers; Residence and Small Buildings Underfeed Stokers.

BROWNELL "STANDARD" WELDED STEEL HEATING BOILER SMOKELESS TYPE

Boiler No.	Capacity, sq. ft.	
	Steam	Water
S-4	1800	2880
S-5	2200	3520
S-6	2600	4160
S-7	3000	4800
S-8	3500	5600
S-9	4000	6400
S-10	4500	7200
S-11	5000	8000
S-12	5550	8880
S-13	5990	9580
S-14	6560	10490
S-15	7540	12060
S-16	8280	13240
S-17	9040	14460
S-18	10440	16700
S-19	11830	18920
S-20	13000	20800
S-21	13880	22200
S-22	14750	23600
S-23	15980	25560
S-24	17000	27200
S-25	18320	29310
S-26	20440	32700
S-27	22560	36090
S-28	25000	40000
S-29	28290	45260
S-30	31150	49840
S-31	34030	54440



Brownell "Standard" Welded Steel Heating Boiler—Smokeless Type



Brownell "Standard" Welded Steel Heating Boiler—Direct Draft Type
For hand or mechanical firing

BROWNELL "STANDARD" WELDED STEEL HEATING BOILER DIRECT DRAFT HIGH LEG TYPE FOR MECHANICAL FIRING

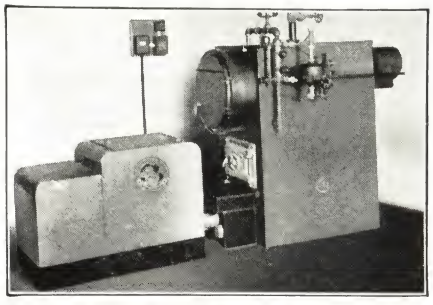
Boiler No.	Capacity, sq. ft.	
	Steam	Water
S-250R	980	1560
S-251R	1200	1920
S-251	1410	2250
S-252	1710	2730
S-253	1950	3120
S-254	2310	3690
S-255	2820	4510
S-256	3310	5290
S-257	3820	6110
S-258	4470	7150
S-259	5100	8160
S-260	5740	9180
S-261	6440	10300
S-262	7120	11390
S-263	7670	12270
S-264	8400	13440
S-265	9640	15420
S-266	10560	16890
S-267	11510	18410
S-268	13310	21290
S-269	15040	24060
S-270	16560	26490
S-271	17660	28250
S-272	18730	29960
S-273	20310	32500
S-274	21550	34480
S-275	23220	37150
S-276	25870	41390
S-277	28610	45770
S-278	31740	50780
S-279	35790	57260
S-280	39460	63130
S-281	43130	69000

Brownell Boilers

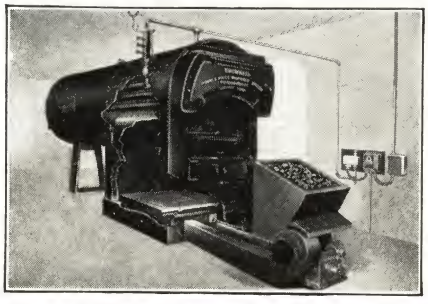
Above boilers in direct draft type, available in five smallest sizes with enamel steel jacket and insulation. Brownell Boilers equipped with self-contained refractory arch and air admitting dampers (when requested) for use in cities having ordinances requiring provision for operation of heating boilers smokelessly. Direct draft type also made especially for stoker, oil or gas firing in full range of sizes up to and including 43,130 sq. ft. of steam capacity.

Construction

THE BROWNELL COMPANY, with over 80 years' experience in the combustion field, is a pioneer manufacturer of both boilers and stokers. Brownell Steel Heating Boilers are of one-piece electrically welded construction. They are particularly designed for long gas travel, spacious combustion, large steam liberating area, rapid steaming, and low maintenance costs. Brownell Stokers are made in a wide range of both types and sizes, designed to meet individual boiler room needs and are of unusually rugged construction.



Brownell Type D Fully Enclosed Domestic and Small Commercial Stoker and Steel Residence Boiler



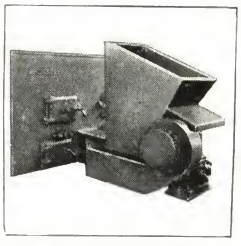
Brownell Riveted Double Pass Firebox, High Pressure Boiler and Type C Worm Feed Commercial Stoker

Information and Literature

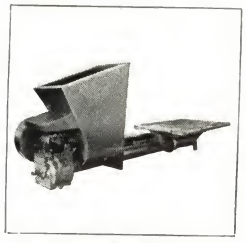
THE BROWNELL COMPANY will be pleased to furnish descriptive bulletins giving detailed information covering their products.

A Data Folio, giving complete engineering data and information on both boilers and stokers, is available for architects and consulting engineers.

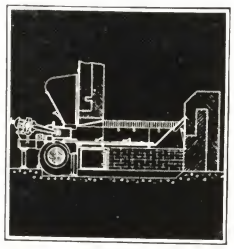
Write for complimentary copy.



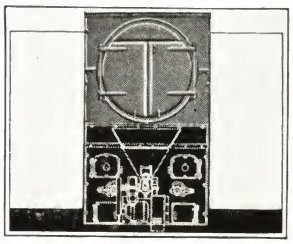
Brownell Industrial Worm Feed Side Dump Stoker



Brownell Commercial Worm Feed Type Stoker



Brownell Heavy Duty Ram Type Stoker



Brownell Ram Type Heavy Duty Stoker and Brownell H.R.T. High Pressure Boiler

COLUMBIA RADIATOR COMPANY

MAIN OFFICE AND FACTORY

McKEESPORT, PA.

WAREHOUSES AND BRANCH OFFICES

BOSTON, MASS., 450 Rutherford Ave., Charlestown—Charlestown 0578
NEW YORK, N. Y., 76th and 77th Sts., Glendale, L. I.—Hegeman 3-8000
PHILADELPHIA, PA., American and York Sts.—Nebraska 7543
WASHINGTON, D. C., 600 Newton Place N. W.—Columbia 2612
WILLIAMSPORT, PA., 200 Basin St.—Williamsport 2612

COLUMBIA OIL BURNING BOILER—BUILT AND DESIGNED FOR OIL OR GAS

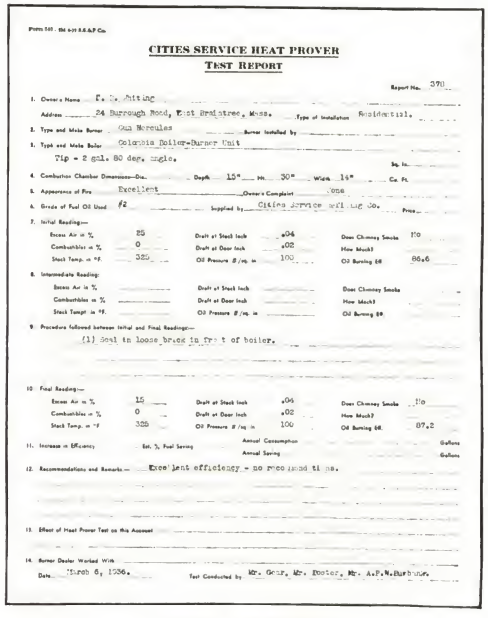
Beauty Plus Efficiency—Helps Sell New Residences

Airtight Construction—Rope Asbestos—No Cement—Water Base—Complete Circulation Each Section



Beauty
27 in. for oil burner. Water heater, oil burner and controls inside jacket

City Service Heat Prover Test Report

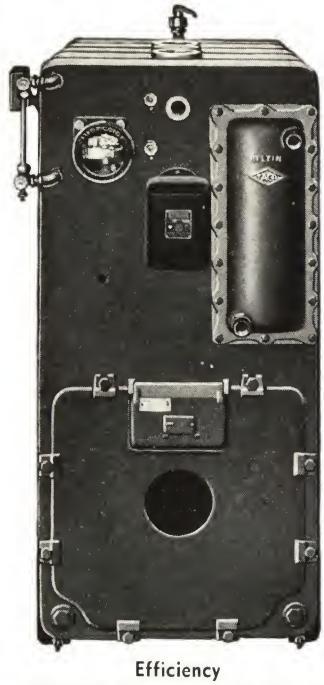


CITIES SERVICE HEAT PROVER
TEST REPORT

Report No. 370

1. Owner's Name E. N. Whiting
Address 24 Burrough Road, East Braintree, Mass. Type of Installation Residential
2. Type and Make Burner Oil Hercules Burner Installed by
3. Type and Make Boiler Columbia Boiler-Burner Unit
71p - 2 gal. 80 deg. angle.
4. Combustion Chamber Dimensions—Dia. Depth 15" Ht. 30" Width 14" Cu. Ft.
5. Appearance of Fire Excellent Owner's Complaint None
6. Grade of Fuel Oil Used #2 Supplied by Cities Service Oil Co. Price
7. Initial Reading—
Excess Air in % 25 Draft at Stack Inch .04 Does Chimney Smoke No
Combustibles in % 0 Draft at Door Inch .02 How Much?
Stack Temp. in °F 330 Oil Pressure #/sq. in 100 Oil Burning #8 86.6
8. Intermediate Reading:
Excess Air in %
Combustibles in %
Stack Temp. in °F
Draft at Stack Inch
Draft at Door Inch
Oil Pressure #/sq. in
Does Chimney Smoke
How Much?
Oil Burning #8
9. Procedure followed between Initial and Final Readings—
(1) Seal in loose brick in front of boiler.
10. Final Reading—
Excess Air in % 15 Draft at Stack Inch .04 Does Chimney Smoke No
Combustibles in % 0 Draft at Door Inch .02 How Much?
Stack Temp. in °F 330 Oil Pressure #/sq. in 100 Oil Burning #8 87.2
11. Increase in Efficiency Est. % Fuel Saving Annual Consumption Gallons
Annual Saving Gallons
12. Recommendations and Remarks— Excellent efficiency - no recommendations.
13. Sheet of Heat Prover Test on this Account
14. Burner Dealer Worked With
Date March 6, 1936. Test Conducted by Mr. Gear, Mr. Hooter, Mr. A.P.N.Barbour.

Actual Installation



Efficiency
Controls all accessible in burner compartment

SPECIFICATIONS

No. of Boiler	Steam D.C.I.R. Rating	Water D.C.I.R. Rating	Heating Surface, sq. ft.	Combustion Space, cu. ft.	Fire Box		Boiler Dimension			Jacket Dimensions			Space for Burner, in.
					Length, in.	Width, in.	Length, in.	Width, in.	Height, in.	Length, in.	Width, in.	Height, in.	
0319	375	600	35.8	3.2	14⅜	19	16⅛	23½	49¾	43¼	26⅝	51 5/16	27½
0419	555	880	52.3	4.5	20⅜	19	22⅛	23½	49¾	51¼	26⅝	51 5/16	27½
0519	735	1100	68.8	5.8	26⅜	19	28⅛	23½	49¾	57¼	26⅝	51 5/16	27½
0619	905	1470	85.3	7.1	32⅜	19	34⅛	23½	49¾	63¼	26⅝	51 5/16	27½
0719	1085	1750	101.8	8.4	38⅜	19	40⅛	23½	49¾	69¼	26⅝	51 5/16	27½

Water line 44¾ in.

Capacities are based on *net* installed radiation and nothing need be added for normal piping and pick-up. When domestic water heater is installed add 1 sq. ft. per gal. to steam radiation and 2 sq. ft. per gal. to water radiation for each tank gallon.

The Standard Jacket or "C" & "F" series is only furnished in three and four-section boilers. The width of this jacket is 25¾ in. and lengths are 18¾ and 24⅜ in., respectively. All other dimensions are same as extended jacket series.

COLUMBIA SQUARE RADIATORS

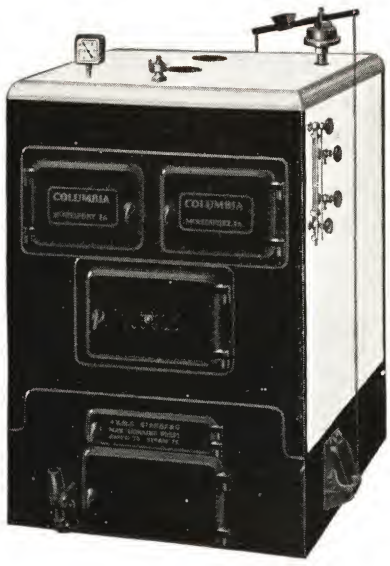
COLUMBIA SQUARE BOILERS

Boiler No. Steam or Water	Maximum capacity, sq. ft.		E. D. R. rating, sq. ft.		Grate area, sq. ft.	Base dimensions, in.	Number and size (in.) of supply tappings
	Steam	Water	Steam	Water			
417	400	675	250	400	1.50	24 7/8 x 17 5/8	2—2½
517	575	950	360	575	2.00	24 7/8 x 22	2—2½
617	750	1250	470	750	2.50	24 7/8 x 26 1/4	2—2½
717	925	1550	580	925	3.00	24 7/8 x 30 5/8	2—2½
817	1100	1850	690	1100	3.50	24 7/8 x 35	3—2½
917	1275	2150	800	1275	4.00	24 7/8 x 39 1/4	3—2½
521	1225	2050	700	1100	4.00	32 1/2 x 31	2—3
621	1525	2550	850	1425	4.85	32 1/2 x 37	2—3
721	1825	3050	1000	1750	5.70	32 1/2 x 43	3—3
525	1550	2575	900	1500	5.55	37 x 35	2—4
625	1850	3075	1150	1850	6.74	37 x 42	2—4
725	2150	3575	1400	2200	7.93	37 x 49	2—4
825	2450	4075	1650	2550	9.12	37 x 56	2—4
925	2750	4575	1900	2900	10.31	37 x 63	3—4

Coil openings are located in back section for direct water heater.

Return tappings (two return tappings rear of boiler).
17-in. boiler—2½-in. tappings.
21-in. boiler—4-in. tappings.
25-in. boiler—5-in. tappings.

Tappings furnished on each side for indirect water heater.



Columbia Square Boiler
21-in. and 25-in. Series



Columbia Square Boiler
17-in. Series

COLUMBIA SMOKELESS BOILERS

Boiler No. Steam or Water	Maximum capacity, sq. ft.		E. D. R. rating, sq. ft.		Grate area, sq. ft.	Base dimensions, in.	Number and size (in.) of supply tappings
	Steam	Water	Steam	Water			
725	2150	3575	1400	2200	7.93	37x49	2—4
825	2450	4075	1650	2550	9.12	37x56	2—4
925	2750	4575	1900	2900	10.31	37x63	3—4
1025	3050	5075	2150	3250	11.50	37x70	3—4
1125	3350	5575	2400	3600	12.69	37x77	3—4

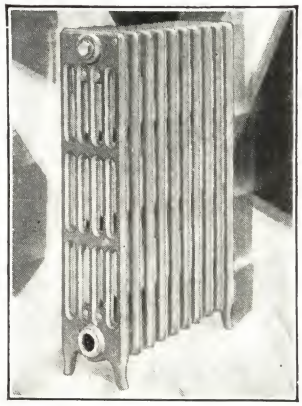
Two 5-in. return tappings on rear of boiler.

COLUMBIA RADIATOR

Slender—Graceful and Modern

Number of sections	Length 1½ in. per section	3-Tube 3¼ in. deep*			4-Tube 4 15/32 in. deep*			5-Tube 5 11/16 in. deep*		
		19 in. height	22 in. height	25 in. height	19 in. height	22 in. height	25 in. height	20 in. height	23 in. height	26 in. height
		1.1 sq. ft. per sect.	1.3 sq. ft. per sect.	1.5 sq. ft. per sect.	1.4 sq. ft. per sect.	1.6 sq. ft. per sect.	1.8 sq. ft. per sect.	1.8 sq. ft. per sect.	2.1 sq. ft. per sect.	2.4 sq. ft. per sect.
2	3	2.2	2.6	3.0	2.8	3.2	3.6	3.6	4.2	4.8
4	6	4.4	5.2	6.0	5.6	6.4	7.2	7.2	8.4	9.6
6	9	6.6	7.8	9.0	8.4	9.6	10.8	10.8	12.6	14.4
8	12	8.8	10.4	12.0	11.2	12.8	14.4	14.4	16.8	19.2
10	15	11.0	13.0	15.0	14.0	16.0	18.0	18.0	21.0	24.0
12	18	13.2	15.6	18.0	16.8	19.2	21.6	21.6	25.2	28.8
14	21	15.4	18.2	21.0	19.6	22.4	25.2	25.2	29.4	33.6
16	24	17.6	20.8	24.0	22.4	25.6	28.8	28.8	33.6	38.4
18	27	19.8	23.4	27.0	25.2	28.8	32.4	32.4	37.8	43.2
20	30	22.0	26.0	30.0	28.0	32.0	36.0	36.0	42.0	48.0
22	33	24.2	28.6	33.0	30.8	35.2	39.6	39.6	46.2	52.8
24	36	26.4	31.2	36.0	33.6	38.4	43.2	43.2	50.4	57.6
26	39	28.6	33.8	39.0	36.4	41.6	46.8	46.8	54.6	62.4
28	42	30.8	36.4	42.0	39.2	44.8	50.4	50.4	58.8	67.2
30	45	33.0	39.0	45.0	42.0	48.0	54.0	54.0	63.0	72.0
Sq. ft. per lineal inch		0.733	0.867	1.000	0.933	1.067	1.200	1.200	1.400	1.600

*Depth at feet same as depth of section. Add ½ in. to length for each bushing. Bottom tapping 1¼ in. i.p. Top tapping 1 in. i.p.



McKeesport Radiator
212J

McKEESPORT RADIATION

Tubes	Width of section, in.	Feet per section						
		36 in.	30 in.	26 in.	23 in.	20 in.	16½ in.	13½ in.
3	5	3 1/2	3	2 1/3	2	1 3/4	.....	.....
4	6 5/8	4 1/4	3 1/2	2 3/4	2 1/2	2 1/4	.....	.....
5	8 3/8	5	4 1/3	3 1/2	3	2 2/3	.....	.....
6	9 3/4	6	5	4	3 1/2	3	.....	.....
7	12	7	6	5	4 1/4	3 2/3	3	2 1/2

ESTABLISHED 1864

FARRAR & TREFTS INC.

BUFFALO, N. Y.

Heating and Power Boilers
Bison Compact Boilers
Bisonette Compact Boilers
Firebox Return Tubular Boilers
Firebox Locomotive Type Boilers
Scotch Marine Type Boilers
Vertical Boilers
Horizontal Return Tubular Boilers
Bison Two-pass Return Tubular Boilers

Steel Plate Construction
Storage and Pressure Tanks
Receivers, Welded or Riveted
Steel Pipe, Welded or Riveted
Buoys, Welded or Riveted
Condensers and Kettles
Smokestacks and Breechings
Special Work in Stainless Steel, Everdur, Nickel, Aluminum or Monel Metal

BISON COMPACT WELDED HEATING BOILERS



The F&T Bison Compact Welded Heating Boiler has been designed carefully so as to have a large furnace volume, the proper volume of water, just the right amount of steam liberating surface, the correct volume for steam storage and a balanced circulation. The result is a remarkably steady water line—*a balanced boiler.*

Construction is in accordance with the A.S.M.E. Code and boilers are designed for hand firing with anthracite or bituminous coal or for mechanical firing with oil, gas or stoker. All ratings are as required by the Steel Heating Boiler Institute.

FARRAR & TREFTS INC. have designed a *special Bison Compact* boiler with a *high firebox* which is ideally suited to stoker firing. The increased volume of the furnace makes it the perfect boiler for efficient and continuous operation with a stoker.

STANDARDIZED 100 SERIES—BISON COMPACT WELDED BOILERS—15-LB. W. P.

Boiler No.*	150	152	154	156	158	160	162	164	166	168	170	172	174	176	178	180	182	184	186
Steam rating (Hand fired) sq. ft.	1800	2200	2600	3000	3500	4000	4500	5000	6000	7000	8500	10000	12500	15000	17500	20000	25000	30000	35000
(Mech. fired) sq. ft.	2190	2680	3160	3650	4250	4860	5470	6080	7290	8500	10330	12150	15180	18220	21250	24290	30360	36430	42500
Width boiler...in.	36	36	36	36	36	42	42	42	48	48	54	54	60	66	72	72	78	84	84
Length boiler...in.	42	51	60	69	78	72	81	90	91	105	93	108	118	123	118	136	139	132	150
Height overall...in.	74	74	74	74	74	85	85	85	87	87	98	98	106	112	121	121	122½	136	136
Height waterline...in.	64½	64½	64½	64½	64½	71	71	71	71½	71½	83½	83½	88½	94	101	101	102	114	114
Weight (Hand fired)...lbs.	3000	3400	3800	4300	4800	5300	5800	6300	7200	8100	9400	10600	12500	14400	16100	17900	21200	24400	27500
(Mech. fired)...lbs.	2500	2900	3300	3700	4100	4600	5000	5400	6100	6900	8000	9100	10700	12300	13800	15400	18100	20900	23400

*100-A Series, for anthracite coal; 100-B Series, smokeless for bituminous coal; 100-O Series, for oil, gas or stoker.

STANDARDIZED 900 SERIES—BISON COMPACT HIGH FIREBOX WELDED BOILERS—15-LB. W. P.

Boiler No.*	950	952	954	956	958	960	962	964	966	968	970	972	974	976	978	980	982	984	986
Steam rating (Hand fired)...sq. ft.	1800	2200	2600	3000	3500	4000	4500	5000	6000	7000	8500	10000	12500	15000	17500	20000	25000	30000	35000
(Mech. fired)...sq. ft.	2190	2680	3160	3650	4250	4860	5470	6080	7290	8500	10330	12150	15180	18220	21250	24290	30360	36430	42500
Width boiler...in.	36	36	36	36	36	42	42	42	48	48	54	54	60	66	72	72	78	84	84
Length boiler...in.	42	51	60	69	78	72	81	90	91	105	93	108	118	116	118	136	139	132	150
Height overall...in.	78	78	78	78	78	90	90	90	95	95	108	108	117	125	134	134	142	162	162
Height waterline...in.	68¾	68¾	68¾	68¾	68¾	76	76	76	80	80	91	91	100½	105	113	113	121	140	140
Weight (Hand fired)...lbs.	3200	3600	4000	4500	5100	5600	6200	6700	7800	8800	9200	11500	13600	14700	16600	19500	23400	26700	30200
(Mech. fired)...lbs.	2700	3100	3500	3900	4400	4900	5400	5800	6700	7600	8800	10000	11800	13600	15300	17000	20100	23200	26100

*900-A Series, for coal; 900-O Series, for oil, gas or stoker.

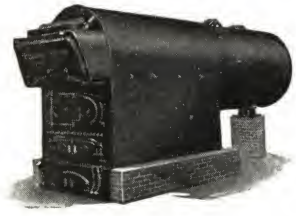


400 Series

400 SERIES—BISONETTE COMPACT WELDED BOILERS—15-LB. W. P.

Boiler No.*	401	403	405	407	409	411	413	415	417	419	421
Steam rating (Hand fired) sq. ft.	760	840	1000	1230	1370	1600	1820	1960	2240	2590	2860
(Mech. fired) sq. ft.	920	1020	1210	1490	1660	1940	2210	2380	2720	3140	3400
Width boiler...in.	26½	26½	26½	26½	26½	29½	29½	29½	29½	29½	29½
Length boiler...in.	55	57	61	69	75	64	70	76	82	94	100
Height Overall...in.	60	60	60	60	60	67½	67½	67½	67½	67½	67½
Height waterline...in.	48	48	48	48	48	55	55	55	55	55	55
Weight (Hand fired)...lbs.	2000	2160	2200	2450	2550	2800	3000	3100	3300	3650	3800
(Mech. fired)...lbs.	1800	1880	1960	2190	2290	2520	2670	2740	2900	3170	3280

*400-A Series, for coal; 400-O Series, for oil, gas or stoker.



500 Series
See table below

STANDARDIZED 500 SERIES—BISON FIREBOX UPDRAFT BOILERS—15-, 100-, 125-, 150-LB. W.P.

Boiler No.*	550	552	554	556	558	560	562	564	566	568	570	572	574	576	578	580	582	584	586
Steam rating (Hand fired)...sq. ft.	1800	2200	2600	3000	3500	4000	4500	5000	6000	7000	8500	10000	12500	15000	17500	20000	25000	30000	35000
(Mech. fired)...sq. ft.	2190	2680	3160	3650	4250	4860	5470	6080	7290	8500	10330	12150	15180	18220	21250	24290	30360	36430	42500
Width boiler...in.	36	36	36	42	42	42	48	48	54	54	60	60	66	66	72	78	78	84	84
Length boiler...ft.-in.	6-9	8-0	9-6	7-8	8-8	9-8	8-11	9-8	8-10	10-1	11-4	12-10	12-8	14-6	14-0	14-3	17-0	17-5	19-5
Height overall...in.	73	73	73	82	82	82	86	86	93	93	100	100	107	107	113	116	116	125	125
Height waterline...in.	65	65	65	71	71	71	75	75	81	81	87	87	91	91	94	100	100	107	107
Weight (Hand fired)...lbs.	3900	4500	5000	5500	6100	6700	7300	7900	9000	10000	11500	13000	15200	17300	19300	21200	25000	28400	31700
(Mech. fired)...lbs.	3500	3900	4400	4900	5500	6100	6600	7100	8100	9000	10400	11800	13700	15700	17600	19300	23000	26300	29400

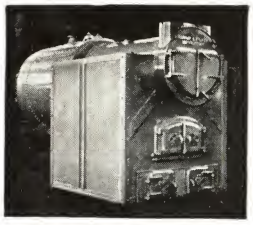
*500-W Series, welded for coal; 500-WO Series, welded for oil, gas or stoker; 500-R Series, riveted for coal; 500-RO Series, riveted for oil, gas or stoker.

STANDARDIZED 600 SERIES—BISON FIREBOX SMOKELESS DOWNDRAFT BOILERS—15-, 100-, 125-, 150-LB. W.P.

Boiler No.*	650	652	654	656	658	660	662	664	666	668	670	672	674	676	678	680	682	684	686
Steam rating (Hand fired)...sq. ft.	1800	2200	2600	3000	3500	4000	4500	5000	6000	7000	8500	10000	12500	15000	17500	20000	25000	30000	35000
(Mech. fired)...sq. ft.	2190	2680	3160	3650	4250	4860	5470	6080	7290	8500	10330	12150	15180	18220	21250	24290	30360	36430	42500
Width boiler...in.	36	36	36	42	42	42	48	48	54	54	60	60	66	66	72	78	78	84	84
Length boiler...ft.-in.	6-8	8-0	9-3	7-11	8-8	9-10	8-8	9-7	9-10	11-7	11-10	13-7	14-6	16-9	15-11	15-11	19-2	18-9	21-4
Height overall...in.	73	73	73	81	81	81	87	87	93	93	100	100	107	107	112½	116	116	125	125
Height waterline...in.	65	65	65	71	71	71	75	75	81	81	87	87	91	91	98	99	99	108	108
Weight (Hand fired)...lbs.	3600	4250	5050	5820	6800	7500	8100	8800	10000	11100	13600	15300	18000	20500	22900	25100	29500	33600	37500
(Mech. fired)...lbs.	3200	3650	4450	5220	6200	6900	7400	8000	9100	10100	12500	14100	16500	18900	21200	23200	27500	31500	35200

*600-W Series, welded for coal; 600-WO Series, welded for oil, gas or stoker; 600-R Series, riveted for coal; 600-RO Series, riveted for oil, gas or stoker.

BISON TWO-PASS BOILERS



Bison Two-Pass Boiler

The Bison Two-Pass Return Tubular Refractory-Lined Boiler is favored by engineers because it *eliminates water legs, flat sides and staybolts.* It is constructed to measure up to the high standards set by the profession to give unfailing service under all conditions. It has been designed to stand up under heavy loads, is dependable for long years of continuous and economical operation and will provide that surplus of power so often needed. It requires a minimum of space for installation and is a portable type. Each boiler will be found a *rapid steamer.*

These boilers are built according to the A.S.M.E. Code for ratings from 25 to 250 hp. They are adaptable for coal and for oil, gas or stoker firing.

6000 SERIES—BISON TWO-PASS BOILERS—15-, 100-, 125-, 150-LB. W. P.

Boiler No.	6025	6030	6035	6040	6050	6060	6070	6075	6080	6090	6100	6115	6125	6150	6175	6200	6225	6250
Horsepower (as usually rated)	25	30	35	40	50	60	70	75	80	90	100	115	125	150	175	200	225	250
Heating surface.....sq. ft.	261	317	361	410	530	618	702	756	819	925	1041	1177	1275	1533	1794	2055	2282	2547
Width boiler.....ft.-in.	5-4	5-4	5-4	5-4	6-5	6-5	6-5	6-11	6-11	6-11	7-3	7-3	7-9	7-9	7-9	8-9	8-9	8-9
Length boiler.....ft.-in.	10-1	11-7	12-7	14-1	13-1	14-7	16-1	14-10	15-10	17-4	16-5	17-11	16-7	18-7	20-7	18-5	19-11	21-5
Height overall.....ft.-in.	7-11	7-11	7-11	7-11	8-9	8-9	8-9	9-7	9-7	9-7	9-11	9-11	10-2	10-2	10-2	11-9	11-9	11-9
Height waterline.....ft.-in.	6-8	6-8	6-8	6-8	7-2	7-2	7-2	7-10	7-10	7-10	7-11	7-11	8-3	8-3	8-3	9-4	9-4	9-4
Weight (Hand fired, 100 lbs.).lbs.	14025	14750	16500	18750	21100	23650	26050	28425	30350	32150	34075	36050	38300	44400	49600	54800	58300	61800
(Mech. fired, 100 lbs.)..lbs.	13400	14150	15800	17950	20200	22650	25050	27375	29225	30900	32700	34600	36800	42200	47700	52850	56150	59550

SCOTCH MARINE BOILERS

Scotch Marine Boilers are designed for installation where there is a limited amount of head room and where power and economy of operation are essential. They are most suitable for operation in plants which require only intermittent demands for steam. These boilers are *well-built* and will give all the service demanded of them when properly installed and operated.



F & T Scotch Marine Boiler

Scotch Boilers are built according to the A.S.M.E. Code of welded or riveted construction for 15 lbs. working pressure and for higher pressures.

Sizes are available from 6 to 325 hp. for either coal or oil, gas or stoker firing. Boilers 72 in. in diameter and larger are furnished with corrugated furnaces.

1000 SERIES—SCOTCH MARINE TYPE BOILERS—15,- 100-, 125-, 150-LB. W. P.

Boiler No.	1006	1012	1015	1020	1025	1030	1035	1040	1050	1060	1075	1090	1100	1125	1150	1175	1200	1225	1250	1275	1300	1325
Horsepower (as usually rated)	6	12	15	20	25	30	35	40	50	60	75	90	100	125	150	175	200	225	250	275	300	325
Heating surface.....sq. ft.	52	102	121	166	207	258	307	335	423	596	760	904	1004	1255	1506	1760	2022	2236	2508	2758	3012	3261
Width boiler.....in.	35	42	42	48	48	54	54	60	60	72	72	78	78	84	90	96	102	102	108	108	114	120
Length boiler.....ft.-in.	5-11	8-8	9-8	9-6	11-0	11-3	12-9	11-9	13-9	12-7	15-1	16-5	17-9	18-3	18-4	18-10	19-9	21-3	21-2	22-8	22-4	22-7
Height overall.....ft.-in.	5-4	6-5	6-5	6-11	6-11	7-9	7-9	8-3	8-3	7-7	7-7	8-1	8-1	8-8	9-3	9-9	10-3	10-3	10-9	10-9	11-3	11-9
Height waterline.....ft.-in.	3-6	3-9	3-9	4-0	4-0	4-8	4-8	4-11	4-11	5-7	5-7	5-10	5-10	6-6	7-1	7-4	7-8	7-8	8-4	8-4	8-7	9-0
Weight (Hand fired, 100 lbs.).....lbs.	3000	5100	5300	5800	6600	7900	9200	11000	13250	16250	19800	25000	26400	30000	33000	36000	42000	45000	46000	49000	50000	53000
(Mech. fired, 100 lbs.).....lbs.	2700	4600	4800	5200	6000	7200	8400	10100	12350	15200	17550	23500	24900	27300	30900	33750	39500	42350	43350	46200	47000	49850

CLASS I WELDED H.R.T. BOILERS

FARRAR & TREFTS now manufacture a *Horizontal Return Tubular Boiler of Class I Fusion Welded* construction, as well as a boiler of riveted construction, for high pressures. The X-Ray welded boiler is fast becoming the *"Modern"* H.R.T. Boiler. It is built in accordance with the A.S.M.E. Code and eliminates all riveted girth seams, which, in normal riveted construction, are exposed to the fire. The welded seams will remain tight under high pressures. A boiler of this construction will give long and steady service under continuous operation. It is built strong and well and can be depended upon to produce an even supply of steam power economically. An *F&T Class I Welded H.R.T. Boiler* is a *boiler of strength and quality.*



F & T Riveted H.R.T. Boiler

H.R.T. Boilers are designed for either coal or oil, gas or stoker firing in sizes from 12 to 300 hp. They can be furnished with various types of settings and supports.

CLASS I WELDED TANKS

Tanks of Class I Welded construction are now taking their places alongside riveted tanks. They are built strictly in accordance with the A.S.M.E. Code for almost any pressure and the X-Ray welded seams will remain tight under high pressure.

These tanks will stand up under hard usage for long years of continuous service.



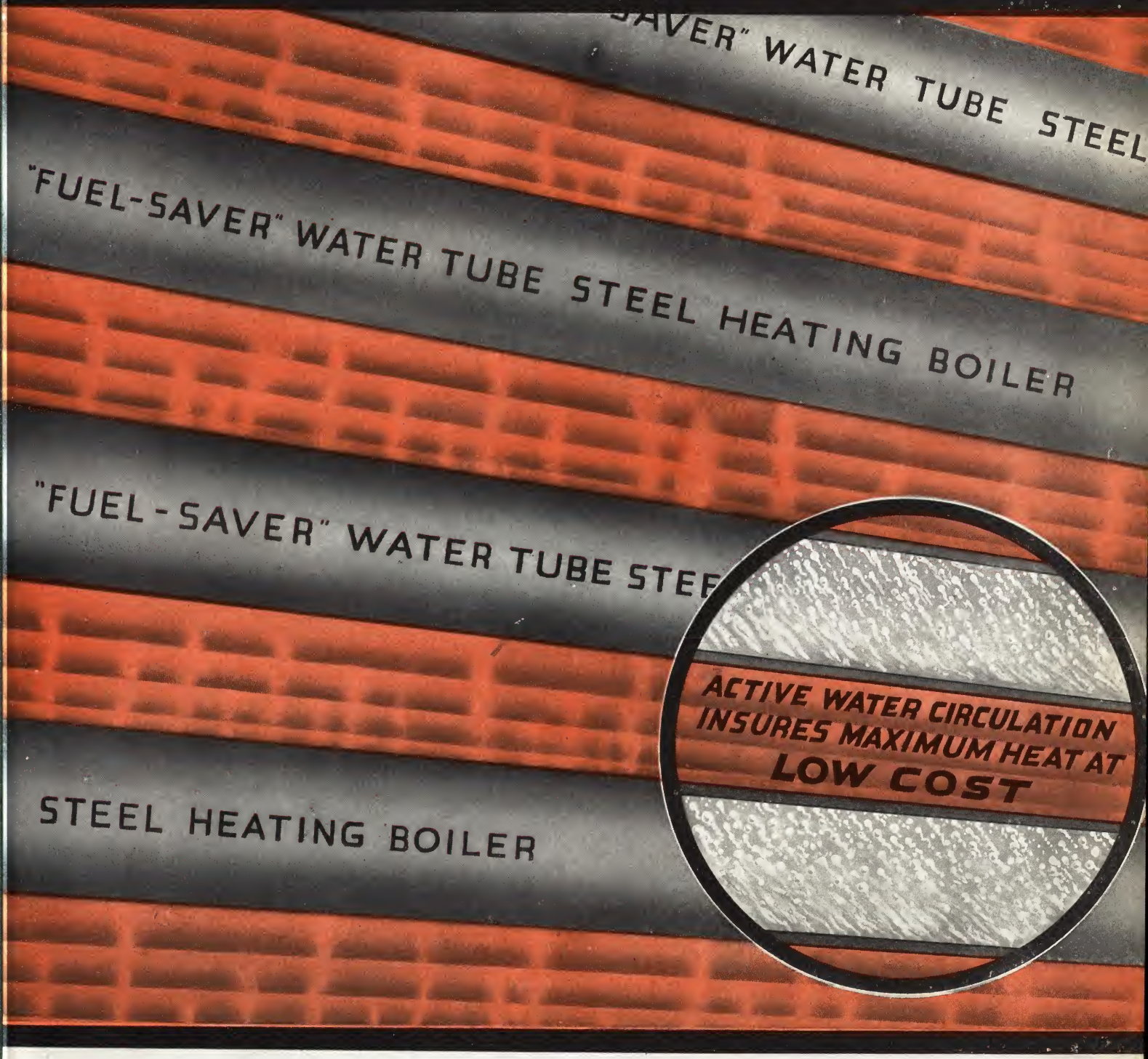
Class I Welded Tank

8000 SERIES—HORIZONTAL RETURN TUBULAR BOILERS—15-, 100-, 125-, 150-LB. W. P.

Boiler No.	8012	8020	8030	8035	8045	8050	8060	8070	8080	8090	8100	8115	8125	8150	8175	8180	8200	8225	8250	8300
Horsepower (as usually rated)	12	20	30	35	45	50	60	70	80	90	100	115	125	150	175	180	200	225	250	300
Width boiler.....in.	30	36	36	42	48	48	54	54	60	60	66	66	72	72	72	78	78	84	84	90
Length shell.....ft.	8	10	12	12	12	14	14	16	16	18	16	18	16	18	20	18	20	18	20	20
Setting height floor to shell.....in.	56	58	58	60	62	62	66	66	66	66	66	66	66	66	66	72	72	72	72	72
Overall height.....ft.-in.	8-4	9-0	9-0	9-8	10-4	10-4	11-2	11-2	11-8	11-8	12-2	12-2	12-8	12-8	12-8	13-8	13-8	14-2	14-2	14-8
Weight (bare boiler, 100 lbs.).....lbs.	2500	3100	3500	5000	6300	6900	8700	9700	12000	13300	13600	15100	16800	18500	20200	23400	25400	27400	30000	34000

MEMORANDA

INTERNATIONAL "FUEL-SAVER" WATER TUBE STEEL HEATING BOILERS



OIL-BURNING
HAND-FIRED COAL
STOKER-FIRING

WATER TUBE BOILERS FOR SMALL OR LARGE CAPACITY HEATING PLANTS for Residences, Public Commercial, Institutional, and Industrial Buildings

THE INTERNATIONAL BOILER WORKS CO.

EAST STROUDSBURG PENNSYLVANIA, U. S. A.

NOW the savings of Water Tube Steel Boilers are available for LOW PRESSURE HEATING PLANTS

THE INTERNATIONAL BOILER WORKS COMPANY **ESTABLISHED 1886**

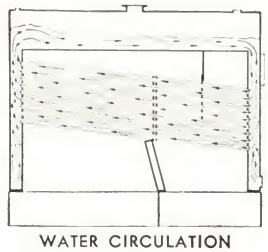
Engineers have long accepted the *water tube* type of boiler as the most efficient for industrial and marine use, yet, it remained for the International Boiler Works Company to prove with its Water Tube "Fuel-Saver" that the same quick-steaming and economy demanded by industry could be reproduced in a steel boiler for heating purposes and that such a boiler could be built and sold at a price decidedly in line with less up-to-date heating boilers.

The superiority of "Fuel-Saver" Water Tube Boiler performance is best indicated by their remarkably quick pickup and fuel economy, which is comparable to the efficiency required of the most modern steam generating plants.

Four Reasons Why INTERNATIONAL WATER TUBE Steel Boilers are *"FUEL-SAVERS"*

1 QUICKER HEATING —Because of More Active Water Circulation

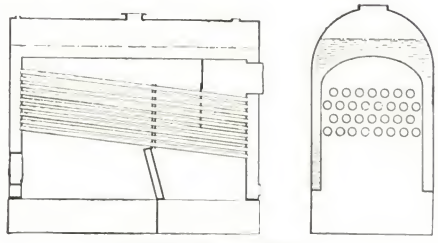
The drawing to the right illustrates the exceptionally active circulation of water in "Fuel-Saver" Water Tube Steel Boilers. Instead of lying sluggishly in a large mass, the water travels in a natural ring circuit formed by the slanting water tubes, the front and rear headers and the water over the crown. The faster the circulation, the more heat is absorbed and carried into the heating system. As the water passes through the water tubes, it is divided into small streams, greatly facilitating the quick absorption of heat.



WATER CIRCULATION

2 INCREASED HEAT ABSORPTION —Due to Effective Distribution of Heated Gases

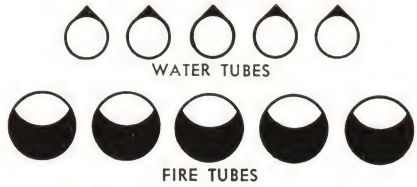
In the drawings to the right note how the hot gases in a "Fuel-Saver" pass directly upward into the banks of tubes and are broken up into innumerable small currents by the successive layers of tubes. This breaking-up action forces every particle of heat into close contact with the tube heating surfaces where it is then rapidly absorbed. Note also that most of the heating surface is located above and directly in the path of the heated gases. Such surface is known as "prime" heating surface and is an important measure of the economy of a boiler.



HEAT DISTRIBUTION

3 EASY TO KEEP CLEAN

In the drawing to the right, the upper layer of tubes shows the maximum amount of soot that can accumulate on the surface of water tubes. In contrast, note how the soot can gather on the inside of fire tubes and reduce the draft and heat absorbing surfaces, as shown in the lower row of tubes.



4 GREATER STRENGTH —For Long Life—Dependable Service and Heavy Duty

"Fuel-Saver" Boilers are constructed of open hearth steel plates welded into a solid unit by the improved "Shielded-Arc" method. Every seam and joint is tested under pressure and will not open or leak under the most severe strains caused by expansion or contraction. These boilers are built in conformity with, or excess of, requirements of A.S.M.E. code for Low Pressure heating boilers.

The economical features of the International Water Tube Boiler mentioned above, combine to justify the name "Fuel-Saver," because they result in the absorption of more heat units into the heating system and less waste of heat through the chimney.

SAVE WITH THE INTERNATIONAL "FUEL-SAVER"

Quick Pick-up of *"FUEL-SAVER"* Boilers is Highly Effective in OIL FIRING

"FUEL-SAVER"

Type "C" Water Tube Steel Heating Boiler

FOR OIL OR GAS FUEL

FOR

OFFICE and APARTMENT BUILDINGS

SCHOOLS

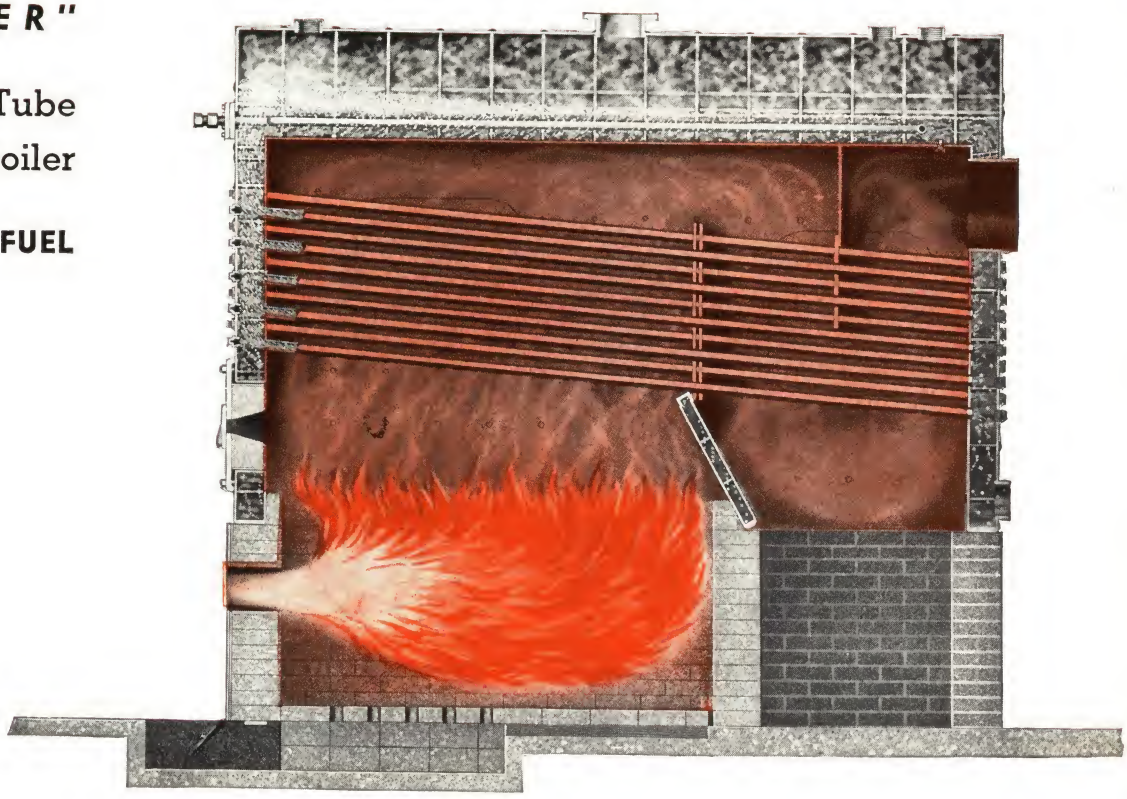
THEATRES

HOTELS

INSTITUTIONS

INDUSTRIAL PLANTS

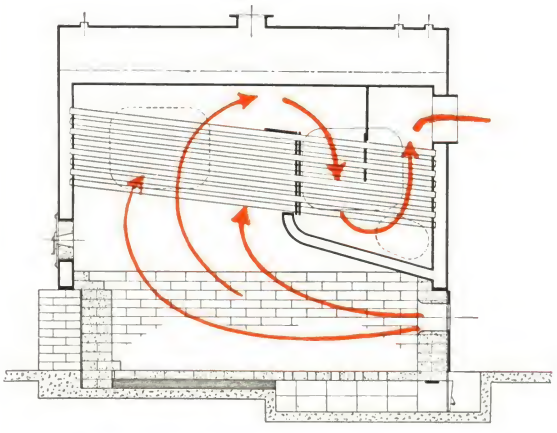
AND SIMILAR REQUIREMENTS



REAR-FIRED "FUEL-SAVER"

Type C "Fuel-Saver" for oil-firing can be furnished for rear-firing as shown below. Note extra long combustion chamber and possibility for provision of coal grates at rear of combustion chamber for incineration or emergency coal-firing.

The rear-fired boiler also provides a front smoke outlet with three gas passes where location of stack or breeching requires.



FRONT FIRED "FUEL-SAVER"

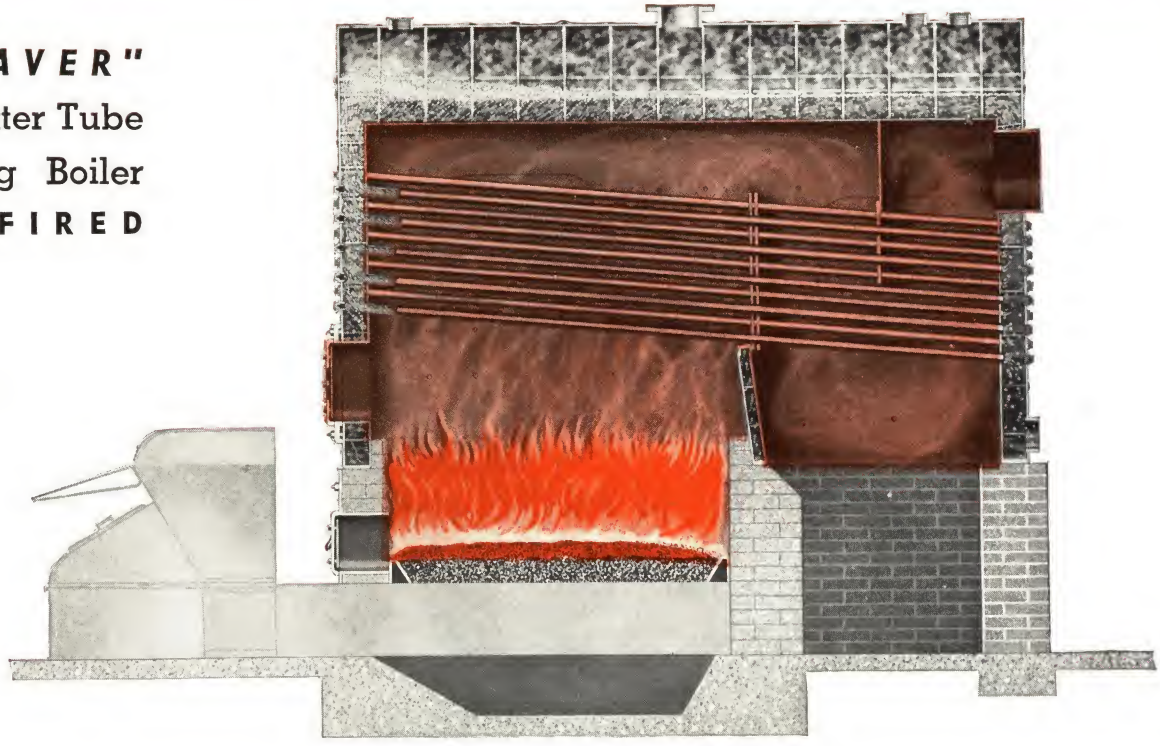
The intense heat generated by the oil flame and the intermittent automatic firing necessitate a type of construction providing exceptionally rapid pickup. The outstanding superiority of Water Tube Boilers in this respect makes The International "Fuel-Saver" the ideal boiler for oil.

The advent of oil fired heating systems for low-pressure heating increased the demand for the water tube boiler in this field. Older methods of design and construction leave much to be desired in automatic firing of heating boilers. Intermittent on and off periods in oil-heating call for quick action on the part of the boiler. Water tube boilers with their active water circulation, quickly respond to the heat of the oil burner when it comes on after an idle period. Thus room temperatures are maintained within closer limits than in other types of boilers, where the response is slower because of less active water circulation.

The high quality of construction employed in making "Fuel-Savers" shows to its best advantage in oil-firing. Intermittent firing, with its quick changes in internal boiler temperatures, puts a severe stress on the materials and workmanship incorporated in a boiler. The excellent performance of "Fuel-Savers" and the extremely low insurance rates obtainable are a strong testimonial to the soundness of their construction. Type C Oil-Fired Boilers can be furnished for either front or rear firing.

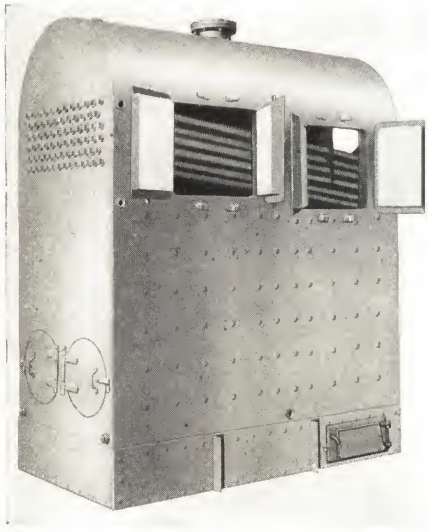
"FUEL-SAVERS" Synchronize STOKER FIRING with Outstanding Success

"FUEL-SAVER" Type "C" Water Tube Steel Heating Boiler STOKER FIRED



At Right
Section Showing
Stoker Fired
"Fuel-Saver"
Boiler

HIGH FIREBOX BOILER FOR MECHANICAL FIRING



Extended Water Leg or High Fire Box Boiler can also be furnished when required as shown above.

Increased combustion volume and proper height to first row of water tubes is accomplished by addition of actual heating surface in form of extended water legs instead of by brick setting. An extra charge for this construction is made over standard type "C" boiler.

The International "FUEL-SAVER" because of its water tube design is well qualified to utilize the extreme flexibility of stoker operation.

The Modern stoker is capable of producing in furnace of heating boiler the same high combustion rates and efficiencies that are demanded in power plant practice, but for maximum heating economy the heat thus liberated must be absorbed by the boiler at correspondingly high rates and efficiencies.

The high fire box temperatures and heat release normal to stoker operation are readily absorbed by the water tube heating surface of International "FUEL-SAVER" boilers. The effective distribution of the products of combustion in contact with the water tube heating surface and the rapid and positive circulation of boiler water combine to carry the heat units away from the fire at accelerated speed as the combustion rate increases.

The stoker capacity for high combustion rates is especially valuable in connection with "FUEL-SAVER" as water tube boilers operate at maximum efficiency when carrying loads considerably in excess of their rating. Overloads will not cause priming.

The water tube heating surface of International "FUEL-SAVER" is ideally located in relation to radiant heat of the fuel bed on stoker retort, approximately 60 percent of this heating surface lying directly over the fire in the form of water tubes which are the most effective heat absorbing surface. The crown sheet, which is the least effective, is furthest removed from the fire and is thus fully protected.

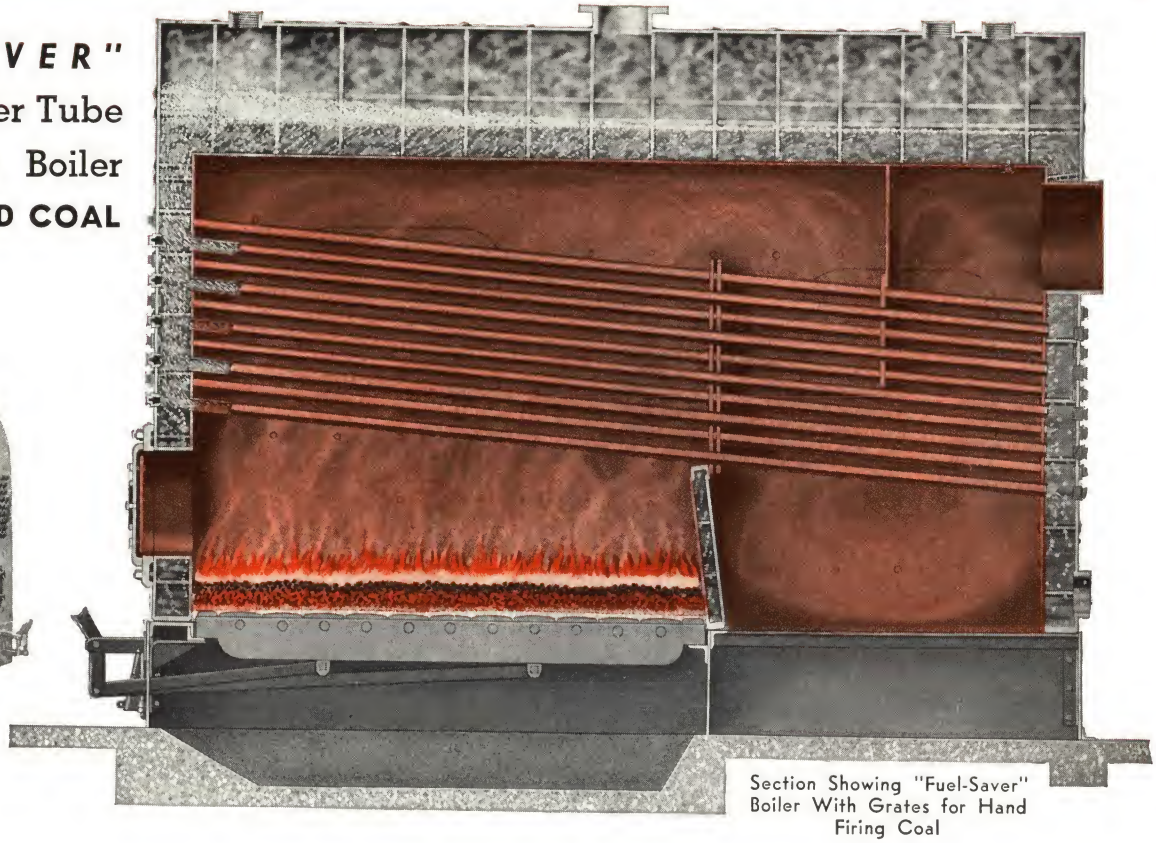
"FUEL-SAVER" boilers are virtually self cleaning due to the fact that water tube heating surface and vertical baffling presents minimum space for fly ash and soot collection. This is an important factor in stoker firing as the boiler will operate for longer periods without excessive loss in efficiency or draft.

SAVE WITH THE INTERNATIONAL ''FUEL-SAVER''

INTERNATIONAL *"FUEL-SAVER"* Gets the utmost in B.T.U.s from COAL FIRING

"FUEL-SAVER"
Type "C" Water Tube
Steel Heating Boiler
FOR HAND-FIRED COAL





Section Showing "Fuel-Saver" Boiler With Grates for Hand Firing Coal

The steady, even heat of solid fuel is generated to best advantage in a "Fuel-Saver" Type C Coal-Burning Boiler.

Equipped with vertical baffles, the "Fuel-Saver" does not accumulate dirt, ashes or soot. Even the tube surfaces afford little foothold because of their roundness and the sweeping action of the draft. All ash falls to the base of the boiler where it can readily be removed, thus preventing the clogging up of the boiler draft areas.

The unusually large combustion space and the long three-pass draft travel of all "Fuel-Saver" Water Tube Steel Boilers, combined with the low draft loss through the boiler, insure exceptionally complete combustion of the entire input of fuel. The burning fuel requires plenty of combustion and draft space for best results and these are found nowhere in better proportion than in the "Fuel-Saver." The low draft loss in the Type C Boiler also permits maintenance of satisfactory firing conditions with minimum attention.

The grates and shaking mechanism are made of best materials and are of extra heavy and durable construction. Grate bars can be provided for burning any type of solid fuel and are shipped completely assembled in bases.

"FUEL-SAVER" For High Pressure Service

Type "CR" Riveted for 100, 125, 150 lbs. W.P. A.S.M.E. ST'D.

For installations requiring high pressure steam such as Hospitals, Laundries, Hotels, and Industrial Plants the type CR boilers offer the quick steaming and high fuel economy of the modern water tube design.

The boiler is of heavy riveted construction and meets all of the requirements of A.S.M.E. Code.

Type "CR" is manufactured in a complete range of sizes from 5 to 250 horsepower.



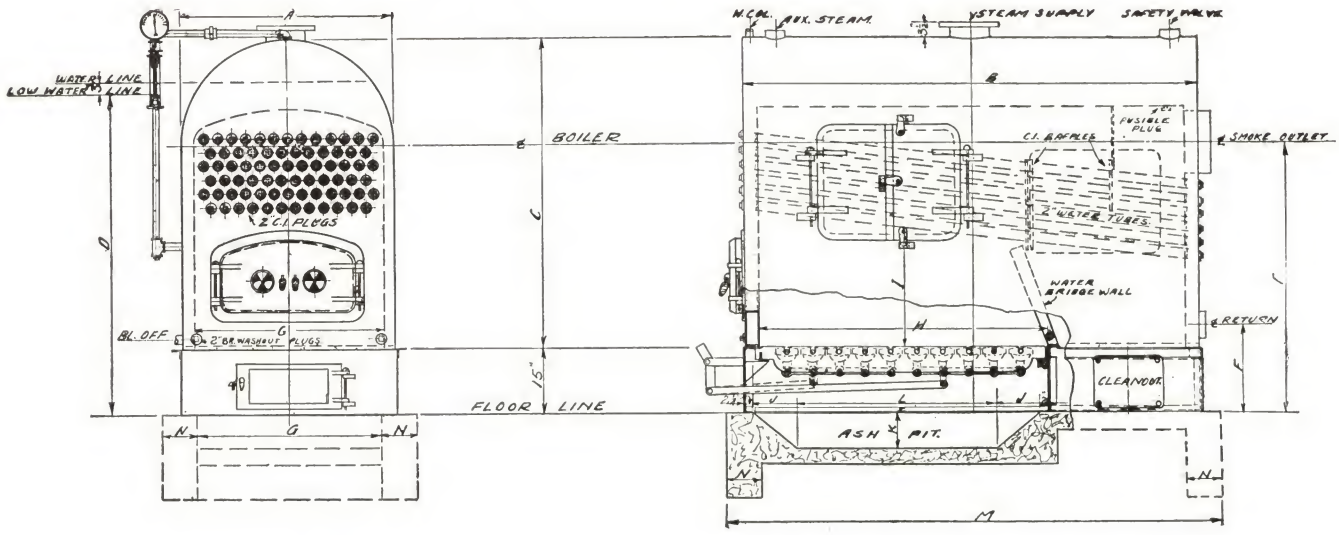
Catalog on Request

THE INTERNATIONAL BOILER WORKS COMPANY

CAPACITIES and DIMENSIONS FOR "FUEL-SAVER"

Type "C"—Series 500 Welded Steel Heating Boilers

FOR OIL, GAS, STOKER OR HAND FIRED COAL



Boiler Number		521	522	523	524	525	526	527	528	529	530	531	532	533	534	535	536	537	538
Steam rating—mech. fired	sq. ft.	2680	3160	3650	4250	4860	5470	6080	7290	8500	10330	12150	15180	18220	21250	24290	30360	36430	42500
Steam rating—hand fired	sq. ft.	2200	2600	3000	3500	4000	4500	5000	6000	7000	8500	10000	12500	15000	17500	20000	25000	30000	35000
Heating surface—water tube	sq. ft.	158	186	215	250	286	322	358	429	500	608	715	893	1072	1250	1429	1786	2143	2500
Grate area	sq. ft.	9.4	9.4	10.3	11.6	12.3	13.8	15.4	16.9	19.7	20.4	22.4	25.2	29.8	30.5	33	39.1	42.5	46.1
A—Boiler width*	in.	30	30	36	36	43	43	43	43	49	55	55	61	61	68	68	74	80	86
B—Boiler length	ft. in.	5-9	5-9	5-9	6-9	6-9	7-9	7-9	8-9	8-9	8-9	9-9	9-11	10-11	10-9	12-9	13-9	14-9	15-9
C—Boiler only, height**	ft. in.	4-5½	4-8½	5-0	5-0	5-6½	5-6½	5-9½	5-9½	6-0	6-9	6-9	7-9½	7-9½	8-5	8-5	8-9	9-1	9-3
D—Water column height	ft. in.	5-0	5-3	5-6	5-6	5-11	5-11	6-2	6-2	6-2½	6-9½	6-9½	7-8	7-8	8-2	8-2	8-4	8-7	8-9
E—Smoke outlet height	ft. in.	4-3	4-6	4-8	4-8	5-0	4-10¾	5-1¾	5-1¾	5-2½	5-8½	5-8½	6-5½	6-5½	6-10	6-10	6-10½	7-0	7-0½
F—Return height	in.	19	19	19	19	19	19	19	20	20	20	20	20	20	20	20	21	21	21
G—Comb. chamber and pit width	in.	24⅞	24⅞	30¾	30¾	36¾	36¾	36¾	36¾	42¾	48¾	48¾	54½	54½	60½	60½	66½	72⅝	78¼
H—Comb. chamber length	in.	54½	54½	48½	54½	48½	54½	60½	66½	66½	60½	66½	66½	78½	72½	78½	84½	84½	84½
I—Tube ht. comb. cham. front	in.	25¼	25	26½	26½	28¼	28¼	29¼	29¼	30½	35	35	36	36	38	38	40	41	42¼
J—Ash pit taper	in.	8	8	8	8	8	8	8	8	8	10	10	10	10	10	10	10	10	10
K—Ash pit depth	in.	6	6	6	6	6	6	6	6	6	8	8	8	8	8	8	8	8	8
L—Ash pit length	ft. in.	3-2	2-8	3-2	2-8	3-2	3-8	4-2	3-8	4-2	3-10½	3-11⅝	4-5⅝	4-6⅝	5-0⅝	5-0⅝	5-0¾	5-6¾	5-6¾
M—Foundation length	ft. in.	6-6	6-6	6-6	7-6	7-6	8-6	8-6	9-6	9-6	9-6	10-6	11-0	12-0	11-10	13-10	14-10	15-10	16-10
N—Foundation thickness	in.	8	8	8	8	8	8	8	8	8	8	8	12	12	12	12	12	12	12
Disengagement area	sq. ft.	12.4	12.4	14.3	16.8	20	23	23	28	30.4	35	38	43.4	48.5	52.4	57.4	74	84.3	94.8
Water content	gal.	116	128	167	190	228	252	262	300	315	458	480	615	740	875	950	1215	1405	1555
Steam supply size	in.	6	6	6	6	6	6	6	8	8	8	8	8	8	8	8	10	10	10
Return size	in.	4	4	4	4	4	4	4	5	5	5	5	5	5	5	5	6	6	6
Number of safety valves		1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2
Safety valve size	in.	2	2	2	2	2	2	2½	2½	3	3	3	2	2½	2½	2½	3	3	3
Fire door size	in.	11x24	11x24	11x24	11x24	11x24	11x24	11x24	11x24	11x32	11x32	11x32	16x30	16x30	16x30	16x30	16x30	2-16x24	2-16x24
Cleanouts number		1	1	1	2	2	2	2	2	2	2	2	2	2	2	3	3	3	3
Cleanout size	in.	18x30	18x30	18x30	18x24	18x24	18x30	18x30	18x30	24x30	24x30	24x30	30x30	30x30	30x30	30x30	30x30	30x36	30x36
Smoke outlet size	in.	8x17	8x20	10x20	10x20	12x22	12x22	14x22	14x22	14x28	14x36	14x36	16x36	16x39	18x42	18x48	20x54	20x60	22x66
Smoke outlet area	sq. in.	122	146	178	178	233	233	266	266	350	462	462	521	569	686	794	994	1114	1348
Breeching diameter, one boiler	in.	17	18	18	19	20	21	22	23	24	26	28	30	31	33	35	39	41	43
Stack diameter, one boiler	in.	15	16	16	17	18	19	20	21	22	24	26	28	29	31	33	36	38	40
Minimum height of stack, one boiler	ft.	45	50	50	55	55	55	60	60	65	65	70	70	75	75	80	95	95	110
Breeching diameter, two boilers	in.	23	24	24	25	26	27	28	30	31	34	36	40	41	44	47	50	54	56
Stack diameter, two boilers	in.	21	22	22	23	24	25	26	28	29	32	34	37	38	41	44	47	50	53
Minimum height stack, two boilers	ft.	55	60	60	65	65	65	70	70	75	75	80	80	85	85	90	105	105	120
Covering surface	sq. ft.	80	83	95	107	125	139	143	156	171	197	207	245	268	305	325	390	444	490
Weight complete, approximately	lbs.	3885	4085	4850	5425	6235	6900	7175	8200	9360	10580	11625	15050	16610	18885	21450	25420	30620	34760
Furnace volume	cu. ft.	15.9	15.9	19	22	24	27.5	31.8	35.8	42.6	51	54.2	64.4	76.6	84.7	90	111.1	128.6	165.5

*Cleanout door hinges project on side of Boiler—Allow 3-inch for clearance purposes.
**Steam outlet nozzle projects beyond height—Allow 6-inch for clearance purposes.

Steam trimmings consist of safety valve, steam gauge and syphon, water column with water gauge and gauge cocks. Damper regulator with Coal Boilers only.

No trimmings furnished with Water Boilers; flue brush only tool furnished.

Oil, Gas or Stoker Fired Boilers may be provided with the following height bases at no additional cost:

Boiler Ratings 2,000 to 6,000, 18 in. High Bases.
Boiler Ratings 6,001 to 12,500, 20 in. High Bases.
Boiler Ratings 12,501 to 17,500, 22 in. High Bases.
Boiler Ratings 17,501 and larger, 24 in. High Bases.

Flue brushes, poker, hoe and slice bar are only tools furnished with Coal Boilers.

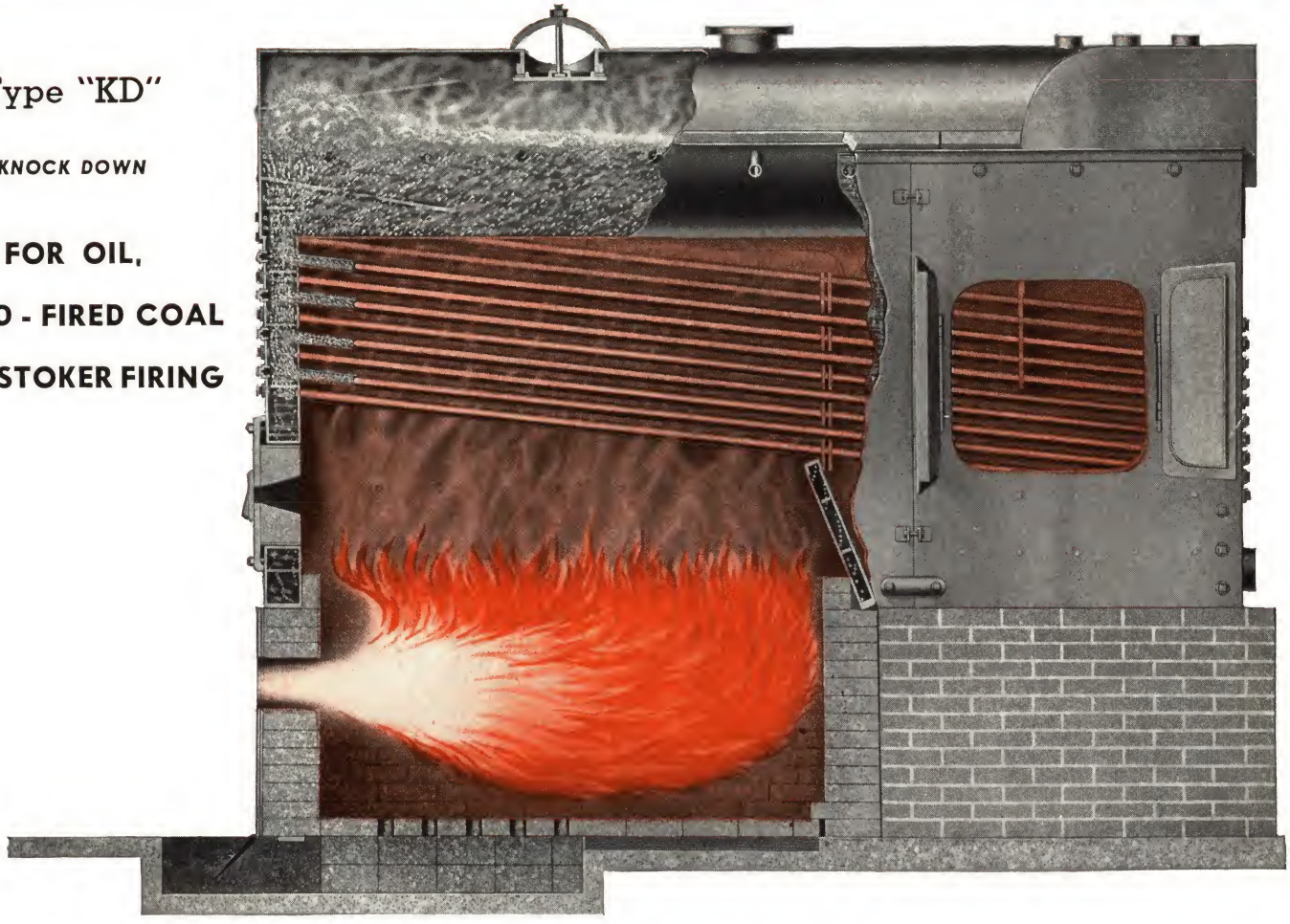
SAVE WITH THE INTERNATIONAL "FUEL-SAVER"

"FUEL-SAVER" Type KD for Renovation and Replacement in Existing Buildings with Small Openings

Type "KD"

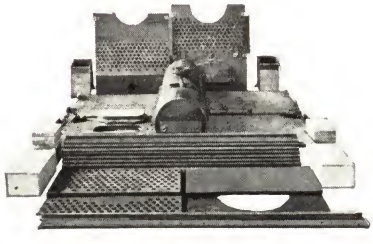
KNOCK DOWN

FOR OIL, HAND - FIRED COAL AND STOKER FIRING



Eliminates Costly Cutting and Patching of Building Walls

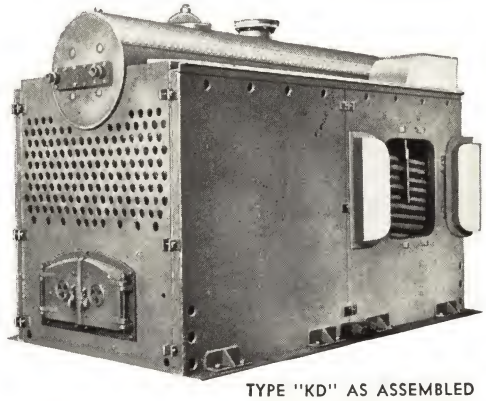
The Type KD Steel Water Tube Boiler was designed to meet the growing need for a boiler that would heat large buildings, where there is no way of getting a one-piece steel boiler in the building without excessive cutting and patching. It is shipped in parts and erected in the boiler room.



TYPE "KD" BOILER COMPLETELY KNOCKED DOWN AS FOR SHIPMENT

Erected in Boiler Room by Competent Boiler Makers

All work is done by our own boiler makers or by local boiler makers who have satisfied us that they are as competent as our men, for we accept full responsibility for the boiler erection work. In the knocked down condition the parts of even a 300 horse power Type KD boiler may be taken through an ordinary boiler room door or down an ordinary fire passage in a basement.

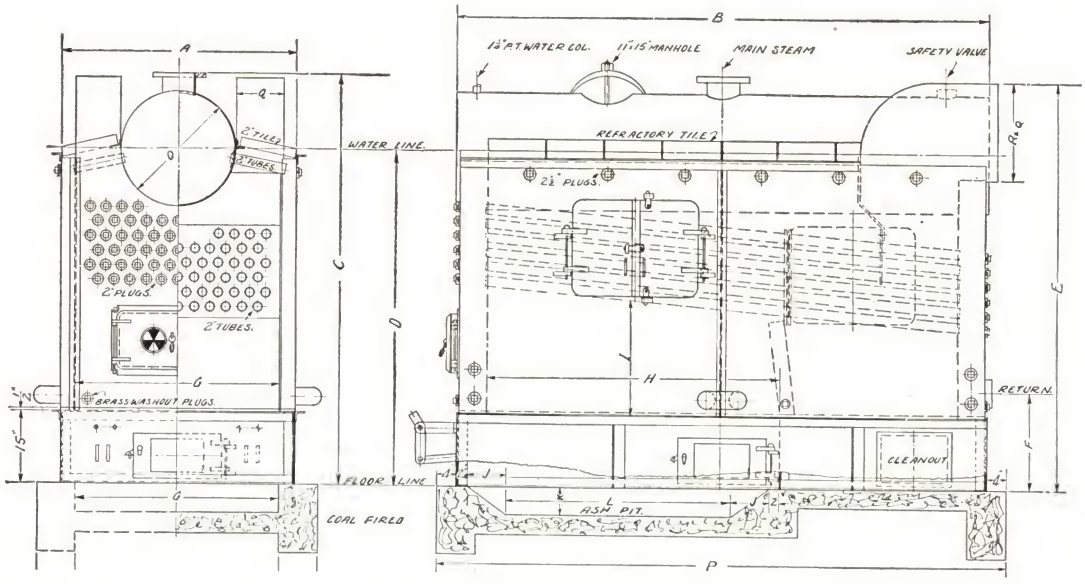


TYPE "KD" AS ASSEMBLED IN THE BOILER ROOM

It Possesses the Same Features of Economy and Other Advantages as the Type C

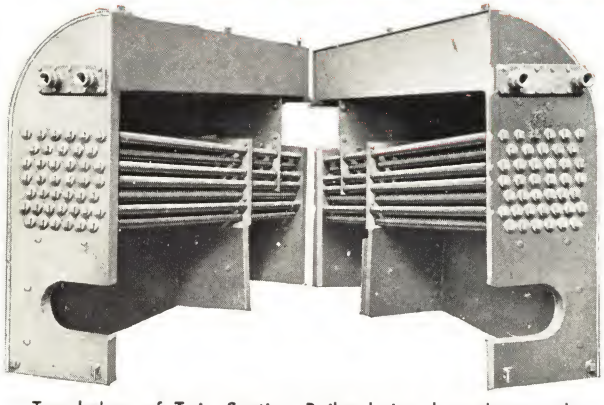
The boiler is set up and when turned over to the heating contractor for connection, is a permanent installation and carries the same guarantee as all our other boilers. Like the Type C Boiler, it is of the latest water tube design and the same rugged construction throughout. The Type KD Boiler combines the same features of water tube economy as the Type C, with the same quick steaming qualities and differs only in that it is so designed that it can be shipped in parts and erected on the job, thereby effecting substantial savings in renovation and replacement work.

DIMENSIONS and CAPACITIES of *"FUEL-SAVER"* TYPE "KD" BOILER



Boiler Number KD	30	40	50	60	70	80	90	100	120	140	160	180	200	250	300
Steam rating—mech. fired sq. ft.	5850	7630	9640	11420	13190	15160	17150	18970	22490	26380	30720	34030	37980	47410	56470
Steam rating—hand fired sq. ft.	4810	6280	7940	9410	10860	12490	14125	15625	18520	21730	25300	28030	31280	39050	46510
Heating surface—water tube sq. ft.	344	449	567	672	776	892	1009	1116	1323	1552	1807	2002	2234	2789	3322
Grate area sq. ft.	15.75	17.5	20	22	24.75	27	29.25	30	32.5	35.75	38.5	42	45	49	60
Combustion volume cu. ft.	31	34.4	43.5	46.9	53.7	60.8	80.1	72.6	78	101.7	111.4	131.7	150.6	173.9	196.3
A—Boiler width ft. in.	4'-1¼"	4'-1¼"	4'-7¼"	4'-7¼"	5'-1¼"	5'-1¼"	5'-1¼"	5'-7¼"	5'-7¼"	6'-1¼"	6'-1¼"	6'-7¼"	6'-7¼"	7'-7¼"	8'-7¼"
B—Boiler length ft. in.	8'-3¼"	9'-2¼"	10'-0"	10'-0"	10'-2¼"	11'-0¼"	11'-10¼"	10'-10¼"	12'-10¼"	13'-10¼"	14'-10¼"	14'-10"	15'-9¾"	15'-10"	15'-10"
C—Hght. to top of steam outlet ft. in.	6'-9½"	7'-0½"	7'-9½"	8'-0½"	8'-0½"	8'-3½"	8'-9½"	8'-10½"	8'-10½"	9'-9½"	9'-9½"	10'-3½"	10'-5½"	11'-3½"	11'-3½"
D—Hght. tol'w'st safe water line ft. in.	5-6	5-9	6-3	6-6	6-6	6-9	7-3	7-4	7-4	8-0	8-0	8-6	8-8	9-3	9-3
E—Hght. to top of smoke outlet ft. in.	6-3½	6-11¾	7-10	8-4½	7-9¾	8-2¼	8-11¾	8-8½	9-1	10-2½	10-6	10-7¼	11-0¼	11-5¾	11-2¼
F—Height of return in.	19	19	20	20	20	20	20	20	20	20	21	21	21	21	21
G—Width of comb. chamber & pit in.	42½	42½	48½	48½	54½	54½	54½	60½	60½	66½	66½	72½	72½	84½	96½
H—Lgth. of comb. chamber—coal in.	54½	60½	60½	66½	66½	72½	78½	72½	78½	78½	84½	84½	90½	84½	90½
I—Tube ht. at comb. chamb. front in.	26	26	29	29	29	30½	36½	32½	32½	41	39	42½	44½	47	43¾
L—Length of ash pit ft. in.	40½	46½	46½	52½	48½	54½	60½	54½	60½	60½	66½	66½	72½	66½	72½
O—Diameter of drum in.	24	24	30	30	30	30	30	30	30	36	36	36	36	42	42
P—Foundation length ft. in.	8-11	9-10	10-8	10-8	11-2	12-2	12-10	11-10	13-10	14-10	15-10	15-10	16-10	16-10	16-10
QxR—Smoke outlets—outside, ea. in.	9½x14¾	9½x20	9½x25¼	9½x28¾	12½x22	12½x23¾	12½x27	15½x23¾	15½x28¼	15½x33¾	15½x37¼	18½x34½	18½x37½	21½x36	27½x32½
Area of smoke outlets—Total sq. in.	268	365	462	527	532	575	655	716	854	1078	1128	1250	1360	1480	1755
Water content gal.	308	370	480	570	580	680	730	745	862	940	1160	1273	1355	1714	1861
Size of main steam outlet in.	6	8	8	8	8	8	8	8	8	10	10	10	10	10	10
Size of return in.	4	5	5	5	5	5	5	5	5	6	6	6	6	6	6
Number and size of cleanouts	2-18x24	2-18x24	2-24x30	2-24x30	2-24x30	2-30x30	2-30x30	2-30x30	3-30x30	3-30x30	3-30x36	3-30x36	3-30x36	3-30x42	3-30x42
Diameter of breeching—1 boiler in.	21	23	26	28	28	30	31	31	33	35	39	41	41	43	45
Diameter of stack—1 boiler in.	19	21	24	26	26	28	29	29	31	33	36	38	38	40	42
Minimum height of stack—1 boiler ft.	55	60	65	70	70	70	75	75	75	80	95	95	95	110	110
Diameter of breeching—2 boilers in.	27	30	34	36	36	40	41	41	44	47	50	54	54	56	58
Diameter of stack—2 boilers in.	25	28	32	34	34	37	38	38	41	44	47	50	50	52	54
Minimum hght. of stack—2 boilers ft.	65	70	75	80	80	80	85	85	85	90	105	105	105	120	120
Covering surface sq. ft.	131	146	184	196	198	218	247	240	271	342	359	375	400	457	472
Weight complete, oil burning lbs.	6740	8150	9860	10630	11210	12350	13190	14550	16230	18530	21020	23390	25420	29670	33070
Weight complete, coal burning lbs.	7520	9020	10820	11700	12410	13650	14610	16010	17830	20630	23300	25865	28120	32610	36670

TWIN SECTION BOILER
FOR USE WHERE COMPLETE KNOCKDOWN IS NOT REQUIRED

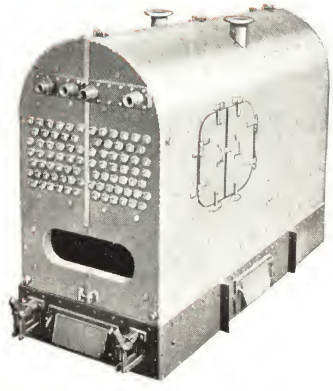


Two halves of Twin Section Boiler being brought together for setting.

The Twin Section Boiler is a Type C Boiler built in two integral sections, complete in every detail and tested before shipment.

Each section is equipped with main steam and return outlets which are twinned together when boiler is connected to the heating system.

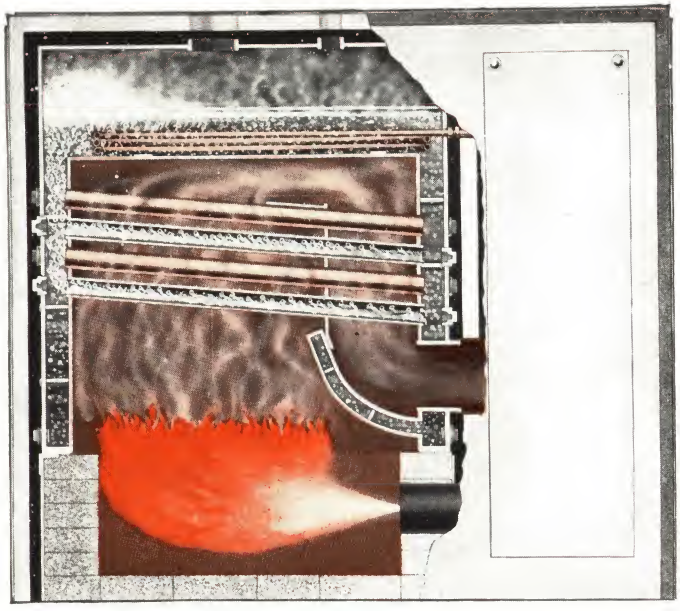
Dimensions for Twin Section Boiler when two halves are set on base are same as for Type C Boiler.



Twin Section Boiler set on Base ready for pipe connections.

SAVE WITH THE INTERNATIONAL "FUEL-SAVER"

"FUEL-SAVER" Type "DD" Oil Burning WATER TUBE RESIDENTIAL STEEL BOILERS





Jacket for DeLuxe Model entirely enclosing Oil Burner. Standard Model has similar appearance but Oil Burner is exposed in rear.

The International "Fuel-Saver" for residential heating meets the increasing demand for a boiler capable of absorbing the highly efficient heat generation of the various types of automatic firing devices. The superiority of water tube boilers lies mainly in their quicker steaming ability and maximum utilization of heat produced because of more effective circulation of boiler water and heated gases.

The residential "Fuel-Saver" is actually a miniature of large water tube boilers described in preceding pages and duplicates their design and rugged construction for benefit of home owner. The three principal features of water tube boiler performance of particular importance to residential heating are:

(1) *Quicker steaming* due to rapid and positive internal water circulation.

(2) *Maximum heat absorption* due to effective distribution of heated gases.

(3) *Easy to keep clean* due to accessibility of heating surfaces.

These three outstanding characteristics are producing savings for home owners in excess of twenty percent.

AIR CONDITIONING APPLICATION

The value of the efficient "Fuel-Saver" design is emphasized when used with the modern split system of air conditioning. The unusually quick steaming feature assures an adequate flow of steam to the air heat exchangers, in response to call from air conditioning controls, with an ample reserve for the direct radiation resulting in even and efficient heating.

The domestic hot water heater included in "Fuel-Saver" as standard equipment also tends to simplify the air conditioning system as it eliminates the necessity of a separate piece of equipment.

Complete information on the many other advantages of "Fuel-Saver" for split system heating will be furnished on request.

OTHER "FUEL-SAVER" FEATURES

COMPLETE COMBUSTION—Large combustion space permits mixing of air and fuel in proper proportions, insuring complete combustion.

ADEQUATE DRAFT—Hot gases passing around water tubes have self-cleaning action, preventing choking of draft through collection of soot.

LONG FLUE TRAVEL—Note how verticle baffle and low flue outlet compel gases to travel twice across tubes. This long flue travel insures absorption of maximum heat value from fuel.

LARGE STEAM SPACE—Unusually large steam disengagement area running the full length of the boiler facilitates quick steaming and provides ample storage of dry steam. Because of their free circulation, water tube boilers do not "prime" or boil over, thus eliminating the cause of annoying knocking in pipes and radiators.

AMPLE WATER CONTENT—Ample water walls entirely enclosing the boiler and water covering the crown for the full length of the boiler maintain uniform room temperatures, without lowering the boiler water line.

CONTINUOUS HOT WATER SUPPLY—Location of the oversize copper coil in the rapidly moving water hot from the "Fuel-Saver" tubes eliminates the possibility of failure of hot water supply from stagnant chilled water around the coil.

EASILY CLEANED—Tubes and combustion chamber easily cleaned through large access door in side of boiler.

EASY BURNER SERVICING—Quick and easy access to the enclosed burner and controls in the De Luxe Jacket is provided by a full height door on each side and a removable lower panel at the rear.

INTERNATIONAL "FUEL-SAVERS"
Save for Home Owners by Stoker Operation



TYPE "DD" STOKER FIRED

The advantages of Fuel Saver water tube design and performance covered on previous pages are of even greater value in connection with stoker firing for large and small residences.

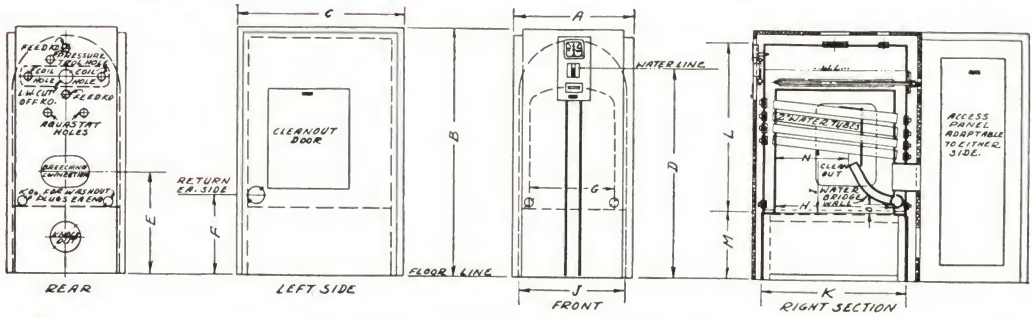
The increased heat absorption and quick pick up of the water tube heating surface which is located directly over the stoker retort give wide latitude to the flexibility and high combustion rates of the modern stoker. It is therefore possible for these boilers to carry loads considerable in excess of listed ratings which have proven to be very conservative for stoker firing.

Frequent cleaning to prevent stoppage of draft passages and insulation of heating surfaces is not a problem with the stoker fired Fuel Saver. The water tube heating surface and vertical baffling offer an absolute minimum space for the collection of fly ash and soot. This self cleaning feature has been widely recommended by stoker manufacturers as little attention is required by the owners to assure continuous trouble free and highly efficient operation.

Domestic hot water is furnished by a removable copper coil submerged in the boiler water which is standard equipment with this boiler.

The jacket is well insulated and handsomely finished in two tones of grey enamel, blending perfectly with any color scheme desired in the modern basement.

CAPACITIES AND DIMENSIONS FOR TYPE "DD" BOILERS OIL AND STOKER FIRED



Boiler Number		DD-61	DD-62	DD-63	DD-64	DD-65	DD-66	DD-67	DD-68	DD-69
S.H.B.I. steam rating	sq. ft.	634	788	1028	1201	1451	1688	1932	2271	2550
S.H.B.I. hot water rating	sq. ft.	1014	1260	1644	1921	2321	2700	3091	3633	4080
Heating surface	sq. ft.	37.3	46.4	60.5	70.7	85.4	99.3	113.7	133.6	150
Furnace volume—less base	cu. ft.	2.4	3.2	4	5.2	6.4	7.8	9.5	10.9	12.5
Gross base volume	cu. ft.	5.9	7.1	9.2	10.6	12.7	15	19.3	22.5	25.4
A—Width overall	in.	28	28	31	31	34	34	34	34	34
B—Height overall	in.	61	61	61	61	61	67	67	67	67
C—Length overall Std. Jacket	in.	36½	36½	48¼	48¼	51¼	64	64	74	82
Space required to remove tubes	in.	21½	26½	32½	38	41	47	54	64	72
F—Low water line height	in.	52½	52½	52	52	52	58	58	58	58
G—Breeching conn. height	in.	28	28	25¾	25¾	25¾	28¼	28¼	28¾	28¾
Breeching conn. size	in.	6x9	6x9	7x10	7x10	7x11½	7x16	7x16	7x19	7x19
Smoke pipe size	in.	8	8	9	9	10	13	13	15	15
H—Return height	in.	20	20	20	20	20	24	24	24	24
I—Furnace width	in.	18	18	21	21	24	24	24	24	24
J—Furnace length	in.	18½	23½	29½	35¼	38¼	44	51	61	69
P—Length to water bridge wall	in.	11¼	15	19¼	23¾	27¾	27¾	33¾	41¼	46¾
Q—Clearance at rear from base to basewall	in.	4	4	¼	¼	¼	¼	¼	¼	¼
K—Average height to bottom of tubes	in.	17	17	15¾	16	15½	17¾	17¾	17¼	17¼
L—Boiler and base width*	in.	23-24	23-24	26	26	29	29	29	29	29
M—Boiler and base length	in.	25	30	36	41¾	44¾	50½	57½	67½	75½
N—Boiler height**	in.	42½	42½	42½	42½	42½	45½	45½	45½	45½
O—Base height	in.	17	17	17	17	17	20	20	20	20
Coil heating surface	sq. ft.	15	15	15	15	21	21	21	21	21
Maximum number gal. 140° domestic hot water per hour copper coil can	Steam, vapor	182	227	296	346	418	436	525	525	525
Discharge based on 40° feed water	hot water	180	180	180	252	252	252	252	252	252
Supply and return size	in.	4-3	4-3	4-3	4-3	5-3	6-4	6-4	6-4	6-4
Weight of bare boiler	lbs.	940	1040	1200	1300	1450	1760	1860	2270	2370
Weight of boiler—total	lbs.	1180	1275	1485	1625	1780	2130	2180	2800	2900

* Add 4" to these widths for projection of return couplings. ** Add 2" to these heights for projection of steam couplings.

TESTED AND APPROVED BY Anthracite Industries Laboratory

The following statements are quoted from the laboratory report.

1. "The International Stoker Fired Boiler is particularly adapted to stoker fired operation."

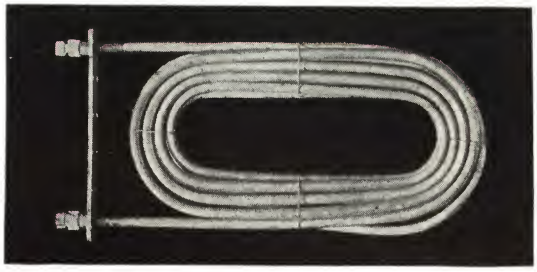
2. "Extremely satisfactory overall efficiencies were obtained when fired by a typical anthracite stoker."

3. "Either bin feed or hopper feed stokers may be installed through the front, back or either side."

SAVE WITH THE INTERNATIONAL "FUEL-SAVER"

INTERNATIONAL "FUEL-SAVERS" provide plenty of hot water, at low cost, clean enough for cooking

NO STORAGE TANK NECESSARY



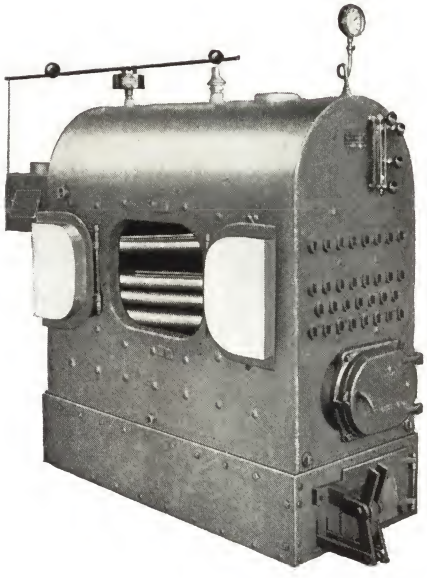
Removable Coil of seamless copper tubing used for supplying clean hot water for domestic use.

A valuable feature of "Fuel-Saver" Water Tube Steel Boilers is the ample supply of hot water they provide for household use. The whole year round, regardless of season, "Fuel-Savers" instantaneously furnish fresh clean hot water direct from the drinking water supply. No storage tanks are necessary and thus no sediment or rust collects to taint the water used and make it unsuitable for cooking purposes. Households equipped with "Fuel-Saver" Water Tube Steel Boilers habitually use hot water direct from the faucet for cooking as well as cleaning.

An oversize heavy-gauge copper coil submerged in the heated water above the crown of the boiler furnishes an adequate supply of hot water for all domestic needs. The coil is large enough to insure an uninterrupted supply of uniformly hot water for all household requirements. In summer, when the heating system is shut down, the domestic hot water service continues in operation, automatically controlled by an aquastat.

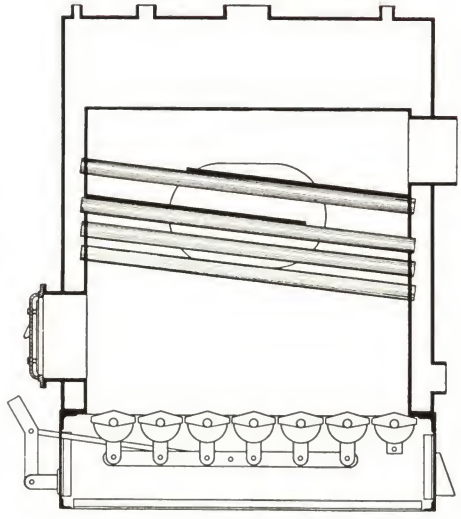
"FUEL-SAVER" Type SP For Hand-Fired Coal

ADAPTABLE FOR GAS OR OIL FUEL



International "Fuel-Saver" Water Tube Steel Heating Boiler, Type SP

Note large clean-out door providing easy accessibility for cleaning and inspection.



Line drawing showing horizontal baffling and three pass flue gas travel. Note that the grates extend the full length of the base, eliminating bridge walls and providing maximum radiant heat to the tube bank.

Horizontal baffling may be supplied for Type C and other International Boilers when required.

CAPACITY—
STEAM 430 TO 1960 SQ. FT.
HOT WATER 690 TO 3140 SQ. FT.

For those installations that do not require the large capacity of the Type C Boiler, the Type SP Water Tube Steel Boiler is recommended.

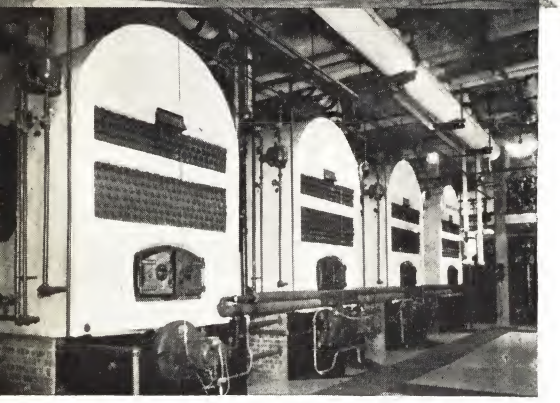
Although smaller than the Type C Boiler, the Type SP embodies the same sound water tube design and high quality of construction. It possesses the same quick steaming qualities and the same fuel economy and has all the desirable features of design and construction of the Type C Boiler. It is a three-pass boiler with horizontal baffles instead of vertical as in Type C.

Installations of "FUEL-SAVERS" and Where They Are Made

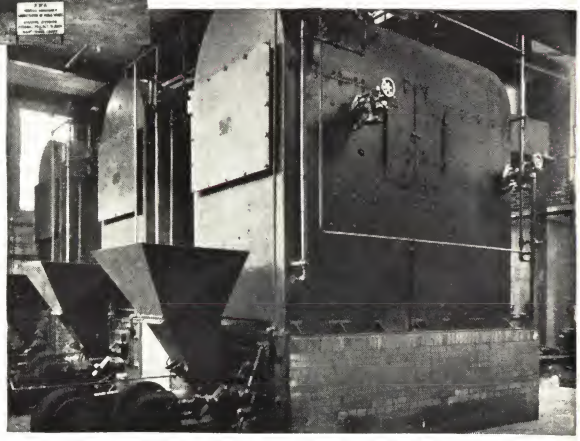




Picture at left shows W.P.A. project at Boston, Mass., and below, stoker-fired "Fuel-Saver" installations in heating plant for the project.

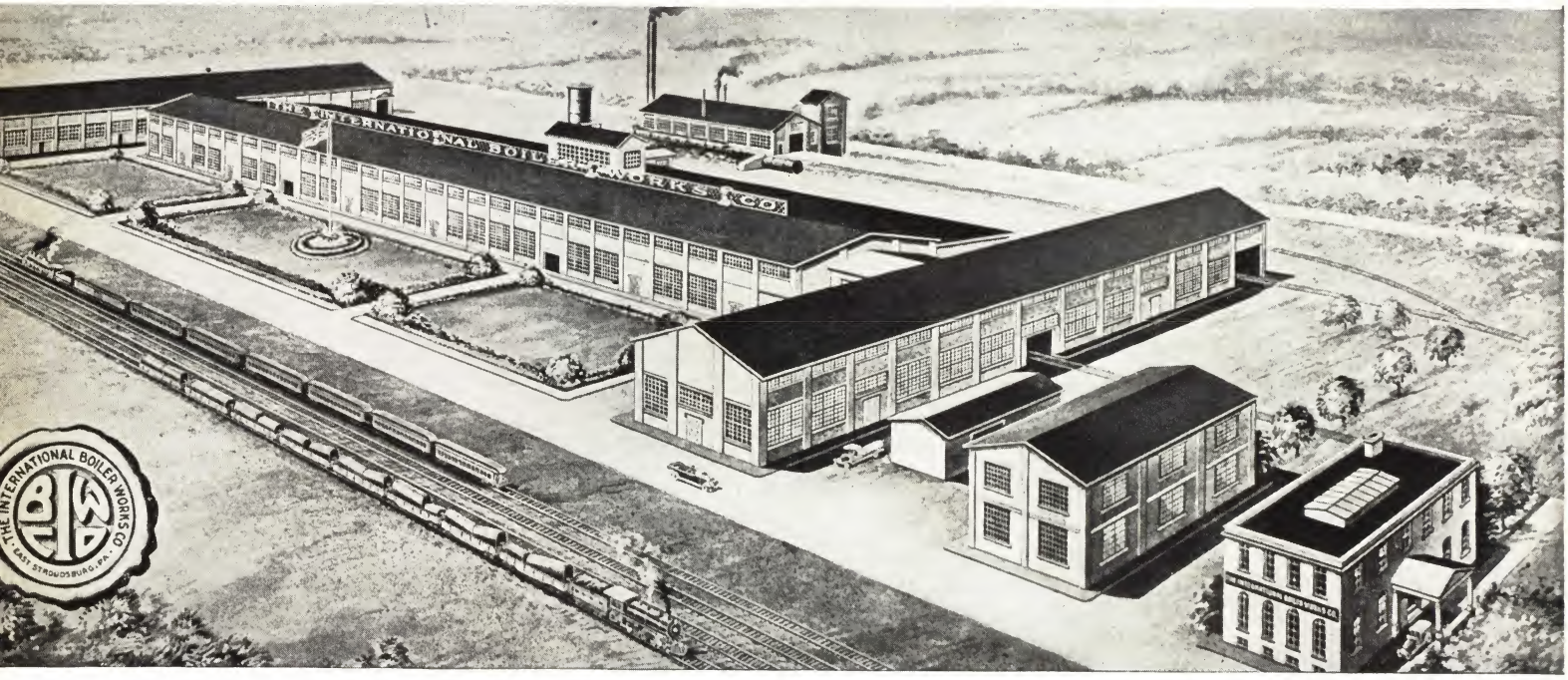


Picture of large high school at Dobbs Ferry, N. Y., and below, illustration of installations of four oil-fired "Fuel-Savers" in its modern-equipped boiler room.



THE name of the International Boiler Works Company has been well-known in the field of commercial boilers for more than a half-century. In designing boilers for this work, only the soundest engineering principles can prevail, because the success or failure of such installations has far-reaching consequences. It may involve the question of profit or loss in operating an entire business enterprise.

International "Fuel-Saver" Water Tube Steel Heating Boilers are a sound investment for the owners of income-producing buildings where profits can be realized only if the cost of operation and maintenance is reduced to a minimum.



THE INTERNATIONAL BOILER WORKS CO

EAST STROUDSBURG, PENNSYLVANIA

SALES OFFICES

NEW YORK — 101 PARK AVENUE

PHILADELPHIA SCRANTON, PA. WASHINGTON, D. C. WILMINGTON, DEL. BOSTON, MASS.

SECTION 26

CONTINUED ⟶

KEWANEE BOILER CORPORATION

Manufacturers of Steel Riveted Firebox Heating Boilers, Smokeless Boilers, Types "C" and "R" Welded Boilers, Water Heaters, Garbage Burners and Tanks

KEWANEE, ILL.

BRANCH OFFICES IN PRINCIPAL CITIES

KEWANEE BOILERS

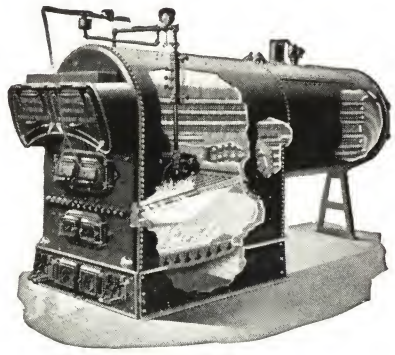
Kewanee Boilers are built sound and strong with 70 years' experience of an extensive organization backing them.

They burn any kind of fuel: hard and soft coal, hand-fired or stoker, screenings or coke; gas or oil.

Conform to the Steel Heating Boiler Institute Code of rating and American Society of Mechanical Engineers Code for construction.

Rated capacity for any water boiler is 60% greater than capacity of steam boiler specified on these four pages.

Separate catalogs on Kewanee Steel Riveted Firebox Heating Boilers, Smokeless Boilers, Power Boilers; Type "C" Welded and Type "R" Residence Boilers; Weld + Rivet Boilers, Water Heaters, Garbage Burners and Tanks, sent on request.



Smokeless Boiler
Portable Down-draft Type

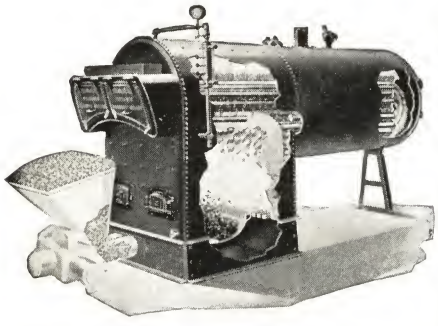
KEWANEE PORTABLE SMOKELESS RIVETED BOILER

With down-draft water grate. Preeminent for heavy duty wherever soft coal must be burned smokelessly. Used effectively either in single units for moderate loads or in batteries of big sizes for heating larger buildings with utmost economy.

SPECIFICATIONS—SMOKELESS DOWN-DRAFT BOILER—"300" SERIES

Boiler No.	376	377	378	379	380	381	382	383	384	385	386	387	388	389	390
Rated steam capacity															
Coal, sq. ft.	3500	4000	4500	5000	6000	7000	8500	10000	12500	15000	17500	20000	25000	30000	35000
Oil, gas or stoker, sq. ft.	4250	4860	5470	6080	7290	8500	10330	12150	15180	18220	21250	24290	30360	36430	42500
Diameter x length, in. x ft. in.	42x8-3	42x9-3	48x8-7½	48x9-5	54x11-2½	54x12-11	60x12-8½	60x14-9	66x14-11	66x17-4	72x16-5	78x17-0½	78x20-7½	84x19-11	84x22-8
Over-all height, in.	80	80	86	86	94	94	101	101	107	107	113	115	115	125	125
Height of water line, in.	70	70	73	73	78	78	85	85	88½	88½	94½	95	95	107½	107½
Approximate weight															
Coal, lbs.	6800	7500	8100	8800	10000	11100	13600	15300	18000	20500	22900	25100	29500	33600	37500
Oil, lbs.	6200	6900	7400	8000	9100	10100	12500	14100	16500	18900	21200	23200	27500	31500	35200

KEWANEE PORTABLE RIVETED FIREBOX BOILERS



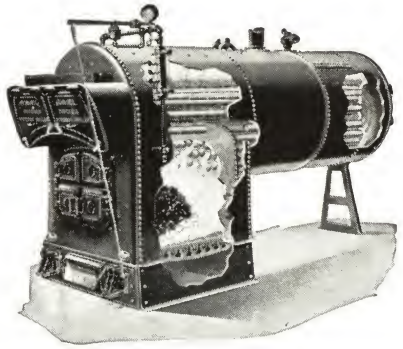
Firebox Boiler for Stoker

The "400" and "500" series are riveted up-draft firebox boilers. The "400" series have two-pass 4-in. tubes. The "500" series have two-pass 3-in. tubes. The Portable Firebox Boiler generally requires less floor space than the Brickset type and is easier to clean.

The high-class workmanship on Kewanee Boilers is proverbial in the trade and in the architectural profession. They are soundly constructed. Every seam is made tight at the factory. They go into the building all in one piece and need no brick setting in the Portable type.

Low Upkeep Costs—Comprehensive records extending back many years on quite a number of fairly large installations, proved the average repair cost less than $2.00 a year. Many of those boilers had been in constant use 25 years or more, and most repairs consisted of replacing grate bars—an inexpensive operation.

Kewanee Boilers are used extensively for burning oil because the extreme heat is fully developed in the ample firebox and absorbed by the large water content.



Firebox Boiler
Portable Up-draft Type

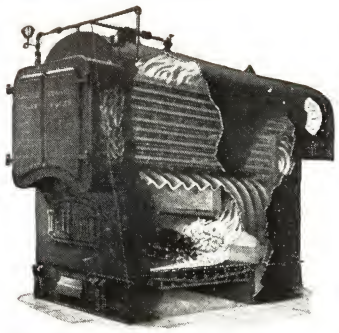
SPECIFICATIONS—PORTABLE UP-DRAFT BOILER—"400" SERIES

Boiler No.	480	481	482	483	484	485	486	487	488	489	490
Rated steam cap.											
Coal, sq. ft.	6000	7000	8500	10000	12500	15000	17500	20000	25000	30000	35000
Oil, gas or stoker, sq. ft.	7290	8500	10330	12150	15180	18220	21250	24290	30360	36430	42500
Diameter x length, in. x ft. in.	54x11-5	54x13-1½	60x13-4½	60x15-5½	66x15-6½	66x18-0½	72x17-0	78x17-7½	78x21-3½	84x20-7	84x23-4
Over-all height, in.	94	94	101	101	107	107	113	115	115	125	125
Ht. of water line, in.	78	78	85	85	88½	88½	94½	95	95	107½	107½
Approximate weight											
Coal, lbs.	10200	11400	13300	14800	17300	19700	22000	24200	28400	32300	36100
Oil, lbs.	9300	10400	12200	13600	15800	18100	20300	22300	26400	30200	33800

SPECIFICATIONS—PORTABLE UP-DRAFT BOILER—"500" SERIES

Boiler No.	576	577	578	579	580	581	582	583	584	585	586	587	588	589	590
Rated steam capacity															
Coal, sq. ft.	3500	4000	4500	5000	6000	7000	8500	10000	12500	15000	17500	20000	25000	30000	35000
Oil, gas or stoker, sq. ft.	4250	4860	5470	6080	7290	8500	10330	12150	15180	18220	21250	24290	30360	36430	42500
Diameter x length, in. x ft. in.	42x8-7	42x9-6½	48x8-10	48x9-6½	54x9-2½	54x10-6	60x11-1	60x12-9	66x12-10	66x14-9	72x14-9	78x14-9	78x17-7½	84x17-9½	84x20-0½
Over-all height, in.	80	80	86	86	94	94	101	101	107	107	113	115	115	125	125
Height of water line, in.	70	70	73	73	79½	79½	84½	84½	89½	89½	94	96½	96½	105	105
Approximate weight															
Coal, lbs.	6100	6700	7300	7900	9000	10000	11500	13000	15200	17300	19300	21200	25000	28400	31700
Oil, lbs.	5500	6100	6600	7100	8100	9000	10400	11800	13700	15700	17600	19300	23000	26300	29400

KEWANEE TYPE "C" WELDED BOILERS



Type "C" Boiler with Corrugated Crown Sheet

774-790 and 2773-2790 for coal. Also 1773-1790 for burning oil

This highly perfected series is a compact welded boiler with 3-in. tubes. Adaptable to restricted accommodations. A later Kewanee development with corrugated crown sheet.

This corrugated crown sheet, an exclusive Kewanee feature, has much greater strength and adds more heating surface where it does most good for quick steaming. Additionally the corrugations give greater height for better combustion, are self-draining and self-cleaning of mud and sediment. Expansion and contraction help to break up and eliminate scale. This type of crown sheet draws a larger volume of water to protect the hottest parts, promoting faster circulation and easier firing.

The "700" series has smokeless arch and drum for soft coal; "2700" series is direct-draft for hard coal; "1700" series is direct-draft for oil or gas burning; "0700" series is the regular direct-draft for stoker; or the Hi-Firebox Boiler with extended water leg, 7L70 series is for mechanical firing; and 27L70, hand fired.



Type "C" Hi-Firebox Boiler

7L70 Series. Long water leg with extra height in firebox to comply with S.H.B.I. Code for stoker firing

SPECIFICATIONS—TYPE "C" WELDED BOILER

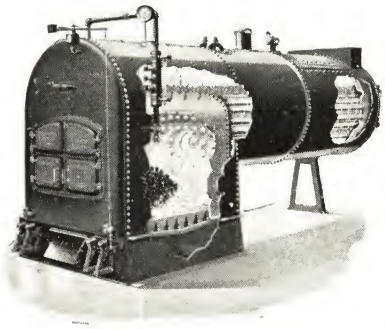
Boiler No.	2773	774 2774	775 2775	776 2776	777 2777	778 2778	779 2779	780 2780	781 2781	782 2782	783 2783	784 2784	785 2785	786 2786	787 2787	788 2788	789 2789	790 2790
Rated steam capacity																		
Coal, sq. ft.	2200	2600	3000	3500	4000	4500	5000	6000	7000	8500	10000	12500	15000	17500	20000	25000	30000	35000
Oil, Gas or stoker, sq. ft.	2680	3160	3650	4250	4860	5470	6080	7290	8500	10330	12150	15180	18220	21250	24290	30360	36430	42500
Diameter x length, in. x ft. in.	36x5-10	36x6-4	36x6-10	36x7-8½	42x7-10½	42x8-6½	42x9-2	48x9-4½	48x10-7	54x9-11	54x11-2½	60x11-6½	66x12-3½	72x12-1½	72x13-4½	78x14-9½	84x14-2½	84x15-11½
Over-all height, in.	77½	77½	77½	77½	83½	83½	83½	86½	86½	99	99	108½	112	118	118	122	135	135
Height of water line, in.	69	69	69	69	72	72	72	73	73	85	85	94	95	101	101	103	114	114
Approximate weight																		
700 series coal, lbs.		3900	4400	5000	5500	6000	6500	7500	8400	9700	11000	12900	14900	16600	18400	22000	25200	28400
2700 series coal, lbs.	3400	3800	4300	4800	5300	5800	6300	7200	8100	9400	10600	12500	14400	16100	17900	21200	24400	27500
Oil, lbs.	2900	3300	3700	4100	4600	5000	5400	6100	6900	8000	9100	10700	12300	13800	15400	18100	20900	23400

Boiler series 1773-1790 for oil, gas, stoker; series 2773-2790 for anthracite.

SPECIFICATIONS—TYPE "C" HI-FIREBOX WELDED BOILER

Boiler No.	7L73	7L74	7L75	7L76	7L77	7L78	7L79	7L80	7L81	7L82	7L83	7L84	7L85	7L86	7L87	7L88	7L89	7L90
Rated steam capacity, stoker, sq. ft.	2680	3160	3650	4250	4860	5470	6080	7290	8500	10330	12150	15180	18220	21250	24290	30360	36430	42500
Diameter x length, in. x ft. in.	36x5-10	36x6-4	36x6-10	36x7-8½	42x7-10½	42x8-6½	42x9-2	48x9-4½	48x10-7	54x9-11	54x11-2½	60x11-6½	66x12-3½	72x12-1½	72x13-4½	78x14-9½	84x14-2½	84x15-11½
Over-all height, in.	82½	82½	82½	82½	88½	88½	88½	94½	94½	108	108	119½	123	131	134	140	157	161
Height of water line, in.	74	74	74	74	77	77	77	81	81	94	94	105	106	114	117	121	136	140
Approximate weight, lbs.	3100	3500	3900	4400	4900	5400	5800	6700	7600	8800	10000	11800	13600	15300	17000	20100	23200	26100

KEWANEE TYPE "K" RIVETED BOILER



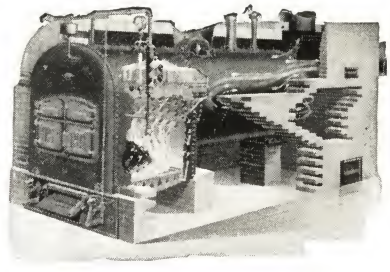
Type "K" Up-draft Boiler

Type "K" is designed for heating average and moderate size buildings dependably. Has the same rugged construction as the larger Kewanee Boiler. Fits in limited headroom. This up-draft Type "K" burns coal, oil or gas economically.

Kewanee makes a steel heating boiler to heat every size and type of building and to suit any condition of service. Shipment of boilers may usually be made same day order is received.

KEWANEE BRICKSET RIVETED FIREBOX BOILER

Standard of the trade for years. An up-draft boiler for use in apartment houses, hotels, office buildings, factories, etc., burning coal, oil or gas.



Brickset Boiler Up-draft Type

SPECIFICATIONS—TYPE "K" UP-DRAFT BOILER

Boiler No.	3K	4K	5K	6K	8K	9K	10K	11K	12K	13K	14K	15K	16K	18K	20K
Rated steam capacity															
Coal, sq. ft.	1240	1380	1800	2200	3000	3500	4000	4500	5000	6000	7000	8500	10000	12500	15000
Oil, gas or stoker, sq. ft.	1770	2020	2190	2680	3650	4250	4860	5470	6080	7290	8500	10330	12150	15180	18220
Diameter x length, in. x ft. in.	30x9-10	36x8-10	36x10-4	36x11-10	42x11-4	42x12-10	48x11-10	48x13-4	48x14-10	54x15-3	54x17-9	60x17-0	60x19-6	66x19-6	72x19-6
Over-all height, in.	59	65	65	65	71	71	77	77	77	83	83	93	93	99	105
Height of water line, in.	52	55	55	55	58½	58½	61	61	61	66	66	75	75	80	85½
Approximate weight															
Coal, lbs.		3500	3900	4200	4700	5700	6400	7000	7600	8200	9500	10700	12600	14500	17600	20700
Oil, lbs.		3130	3550	3800	4200	5100	5800	6400	6900	7400	8600	9700	11500	13300	16100	19100

SPECIFICATIONS—BRICKSET UP-DRAFT BOILER

Boiler No.	3	4	5	6	8	9	10	11	12	13	14	15	17	18	19	20
Rated steam capacity																
Coal, sq. ft.	1240	1380	1800	2200	3500	4000	4500	5000	6000	7000	8500	10000	12500	15000	17500	20000
Oil, gas or stoker, sq. ft.	1770	2020	2190	2680	4250	4860	5470	6080	7290	8500	10330	12150	15180	18220	21250	24290
Diameter x length, in. x ft. in.	30x8-6	36x7-6	36x9-0	36x10-6	42x10-0	42x11-6	48x10-6	48x12-0	48x13-6	54x13-11	54x16-5	60x15-6	66x16-0	66x18-0	72x16-0	72x18-0
Over-all height, in.	47	53	53	53	59	59	65	65	65	71	71	78	84	84	90	90
Height of water line, in.	52	55	55	55	58½	58½	61	61	61	66	66	75	80	80	85½	85½
Approximate weight																
Coal, lbs.	2900	3300	3500	3900	5200	5700	6200	6700	7800	8800	10300	11800	14300	16800	19400	21900
Oil, lbs.	2500	2900	3100	3400	4600	5100	5500	5900	6900	7800	9200	10600	12800	15200	17700	20000

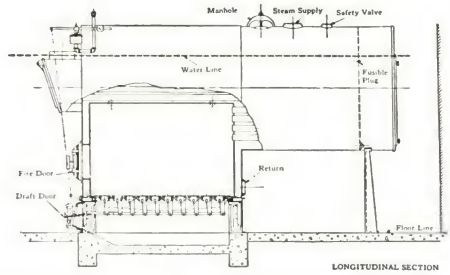
Kewanee Weld + Rivet Firebox Boilers

These Weld + Rivet Boilers are portable firebox type with 3-in. tubes. "5000" series is up-draft and "6000" series has the smokeless down-draft water grate.

They are adapted for coal hand-fired; and oil, gas or stoker 5100 series and 6100 series.

This design features increased heating surface, steam space, disengaging area, furnace volume and water content, yet takes up less room.

The steel base is shipped assembled, with grates. All seams are welded solid but the longitudinal butt-strap is riveted as required in some states and cities.



LONGITUDINAL SECTION

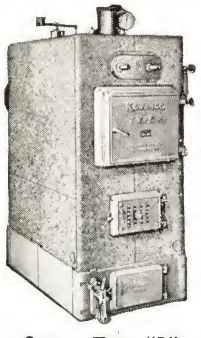
SPECIFICATIONS—WELD + RIVET FIREBOX BOILER—"5000" SERIES; WELD + RIVET SMOKELESS BOILER—"6000" SERIES

Boiler Nos.	5076 /	5077 / 6077	5078 / 6078	5079 / 6079	5080 / 6080	5081 / 6081	5082 / 6082	5083 / 6083	5084 / 6084	5085 / 6085	5086 / 6086	5087 / 6087	5088 / 6088	5089 / 6089	5090 / 6090
Rated steam capacity															
Coal, sq. ft.	3500	4000	4500	5000	6000	7000	8500	10000	12500	15000	17500	20000	25000	30000	35000
Oil, gas or stoker, sq. ft.	4250	4860	5470	6080	7290	8500	10330	12150	15180	18220	21250	24290	30360	36430	42500
Over-all height, in.	81	81	81	81	86½	86½	92½	92½	100½	100½	105	105	112	117	117
Height of water line, in.	70	70	70	70	73½	73½	78	78	84	84	86	86	94½	96	96
Diam. x length, in. x ft. in. "5000"	42x7–3	42x8–0	42x8–11	42x9–10	48x9–9	48x11–1¼	54x11–1	54x12–9	60x13–2½	60x15–3	66x14–5½	66x16–0½	72x16–8½	78x17–5½	78x19–8½
"6000"	.....	42x8–2	42x8– 8	42x9– 6	48x9–7	48x11–0	54x10–8½	54x12–4½	60x12–9½	60x14–9½	66x14–0½	66x15–7½	72x16–4½	78x17–1	78x19–4
Approx. weight, lb., coal "5000"	5100	5600	6100	6600	7500	8400	9600	10800	12600	14400	16100	17900	21200	24400	27500
coal "6000"	.....	5800	6300	6800	7700	8600	9900	11200	13100	14900	16600	18300	21500	24500	27300
oil "5000"	4500	5000	5400	5800	6600	7400	8500	9600	11100	12800	14400	16000	19200	22300	25200
oil "6000"	.....	5100	5600	6100	7000	7800	8900	10100	11900	13500	15100	16700	19800	22700	25300

KEWANEE TYPE "R" RESIDENCE BOILERS

Kewanee Type "R" Boilers are especially designed and constructed to meet all heating and hot water requirements for homes and small buildings. Every kind of solid fuel, coke, all grades of hard or soft coals and their briquette or treated forms are burned with excellent results. Also, any liquid fuel, oil, and natural or commercial gas can be used with high efficiency.

The Square Type "R" jacketed or unjacketed steel boiler is built to provide dependable heat from all fuels, either with hand firing or mechanical firing, in medium and large residence size jobs.


Square Type "R" Jacketed Boiler

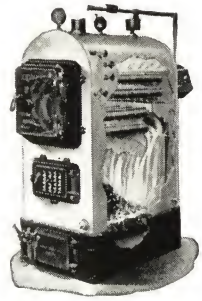
The two smaller size Square Type "R's" have tapered sides. The four larger size Square Type "R's" have straight sides.

Fire door for coal and stoker has air slides; oil or gas has peephole. All Square "R" boilers have flanged box for fitting with hot water coil.

For oil, gas or stoker boilers the efficiency is increased 5% by the spinner blades, which are furnished as regular equipment in the two-pass tubes. Base is steel.

Type "R" steel boiler is a recent Kewanee development employing characteristically sound steel construction in the compacted style of heating unit. All "R" boilers are completely built, assembled and tested at the factory. They go into the building in one piece. Even the larger sizes will go through the average size doorway. And they are ready to set on their bases and hook up to the mains without any assembling charges, header or piping connections to make.

Kewanee Hot Water Copper Coils may be fitted in all sizes for domestic hot water needs.


Square Type "R" Residence Boiler

SPECIFICATIONS—SQUARE TYPE "R" RESIDENCE BOILER

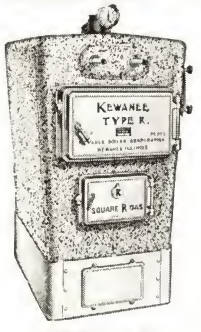
*Boiler No.	742	743	745	746	747	748
Rated steam capacity:						
Coal, sq. ft.	790	1000	1350	1600	1780	1960
Oil, gas or stoker, sq. ft.	840	1120	1470	1900	2160	2380
Width and length, in.	32½x39½	32½x45½	32x45½	32x51½	32x57½	32x63½
Over-all height, in.	59½	59½	70¼	70¼	70¼	70¼
Height water line, without coil, in.	48	48	58½	58½	58½	58½
Shipping weight, unjacketed:						
Coal, lbs.	2150	2360	2800	3050	3300	3550
Oil, lbs.	1900	2060	2500	2730	2920	3125
Jacket, crated, add., lbs	205	225	175	190	200	225

*Boiler Series 2742-2748 for anthracite; Series 1742-1748 for oil, gas; 0742-0748 for stoker.

KEWANEE 83R SERIES JACKETED SQUARE TYPE RESIDENCE BOILERS OIL, GAS OR STOKER

The Kewanee 83R Series Boiler is a Square Type "R" designed exclusively for oil, gas and for stoker. In it are combined all those typical Kewanee features of design and construction which insure perfect results with mechanical firing.

The 83R series has 2-pass tubes to provide double travel for the gases, holding them in the boiler longer, to use all available heat. These are equipped with spinner blades that force the hot gases to "scrub" the tube walls with an unobstructed streamline swirl, transferring the heat to the water quickly and certainly.

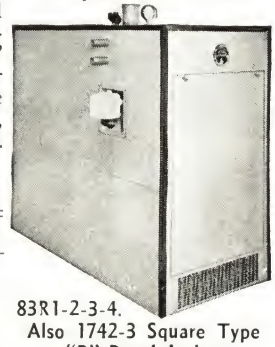


83R Oil or Gas Jacketed Boiler

A two-way draft adjuster, of special Kewanee design and make, provides automatic, accurate and even control of the draft, resulting in considerable fuel saving.

In the front head is a covered coil box for Kewanee copper coils of any capacity for storage tank hot water or instantaneous flow without tank. Incinerator grates can be installed in larger sizes.

A stack control opening is provided in the rear hood and in the front smokebox frame. Tapped openings on either side of the boiler shell can be used for aquastat. There are plenty of washout plugs in the shell, and knock-out discs in jackets opposite all boiler openings. All jacketed Kewanee Boilers have an indestructible baked enamel steel jacket lined with insulation, or blanket. Kewanee Type "R" Boilers burning oil or gas or stoker fired can be operated in the average home at efficiencies of 80% and more, providing dependable heat at low cost.


83R1-2-3-4. Also 1742-3 Square Type "R" Regal Jacket

SPECIFICATIONS—SQUARE TYPE 83R FOR OIL, GAS OR STOKER

Boiler No.	83R1	83R2	83R3	83R4	83R6	83R7	83R8	83R9
Rated capacity, steam, sq. ft.	901	1105	1326	1513	2091	2363	2652	2924
Over-all boiler width, in.	32½	32½	32½	32½	32	32	32	32
Over-all shell length, in.	27½	33½	39½	45½	45½	51½	57½	63½
Over-all height, in.	60¾	60¾	60¾	60¾	71½	71½	71½	71½
Height water line, without coil, in.	48	48	48	48	58½	58½	58½	58½
Shipping weight, complete, lbs.	1600	1800	2000	2200	2800	2900	3100	3300

KEWANEE ROUND "R" STEEL BOILERS—REGAL, SQUARE AND ROUND JACKETS

For heating homes and smaller buildings, the Round Type "R" Boiler fully measures up to those Kewanee standards of craftsmanship which positively insure dependable performance from smart looking equipment.

This boiler operates with equally high efficiency (80% plus) in steam, vapor, or hot water heating systems, using any of the locally available fuels for mechanical firing with oil, gas and stoker or for hand firing with bituminous coal, coke or anthracite, or is used as direct water heater 500 to 900-gal. capacity.

A domestic hot water coil heating 65 to 75 gal. 100° in 3 hours is included. For larger storage tank service, 95 to 110 or 170-gal. coil may be ordered; and on 736 and 1737 boilers only, a 200-gal. coil is available, at small extra cost.

For instantaneous flow, 170-gal. coil may be purchased; or on 735, 736 and 1737 boilers, 210-gal. coil is available; or a 250-gal. coil on 736 and 1737 only, all for use without tank.

The chief advantages to be found in the Kewanee Round Vertical Boiler are:

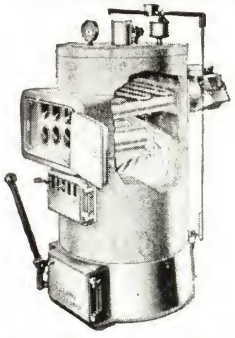
Simple one-piece steel welded construction. Shell goes through 31-34 in. doorway, easily handled, ready to set on base. So there are no assembling charges.

Two-pass tubes give the economy of long gas travel with easy accessibility for instant cleaning.

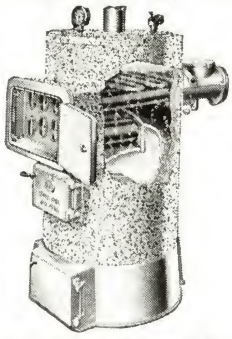
Equipment is substantial to stand rough usage and the refractory insulated doors are ground to gas-tight finish.

Upkeep costs are kept low due to good design, yet mass production methods keep the purchase price low also.

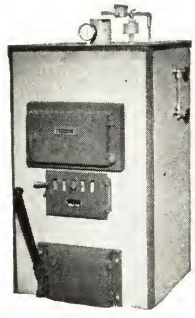
Smartline Regal and Rex Square Jackets match modern basements. Small floor space is occupied by circular base only when the round insulating jacket is used.



Round Jacket Round "R" Coal



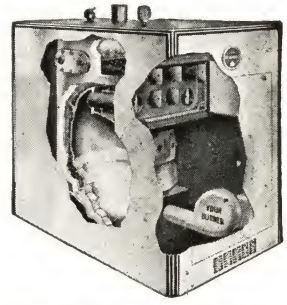
Round Jacket Round "R" Oil, Gas or Stoker



Smartline Round "R" Rex Square Coal



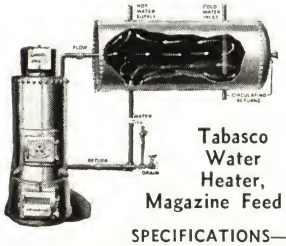
Smartline Round "R" Rex Square Oil or Gas



Round "R" Regal Jacket for Complete Enclosures

SPECIFICATIONS—ROUND TYPE "R" BOILER

Boiler No.: Soft coal / Hard coal	734 / 2734	735 / 2735	736 / 2736	Boiler No.: Oil, gas / Stoker	1734 / 0734	1735 / 0735	1736 / 0736	1737 / ....
Rated capacity, steam, sq. ft	320	410	550	Rated capacity, steam, sq. ft	400	540	680	900
Inside diameter, firebox, in.	20	23	26	Inside diameter, firebox, in.	20	23	26	26
Over-all height, in	54¾	55¼	59½	Over-all height, in	54¾	55¼	59½	61
Height water line, without coil, in	44	44	46	Height water line, without coil, in	44	44	46	49
Shipping weight, unjacketed, lbs	880	1040	1280	Shipping weight, unjacketed, lbs	800	920	1130	1400



Tabasco Water Heater, Magazine Feed

KEWANEE TABASCO WATER HEATERS

Kewanee Riveted Steel Water Heaters are economical to operate with any kind of fuel. Riveted steel construction makes them safe for high water pressure now carried in most cities and insures against repairs from cracking or breaking. Brass clean-out plugs or handholes are furnished on all Heaters and Garbage Burners. Tabasco Heaters, both magazine feed and surface burning type are equipped with Tabasco improved rocking—a sectional clinker-cutting dumping grate.

Maximum working pressure is 60 lbs. standard, 100 lbs. for extra heavy.

All Heater ratings, both Tabasco and Garbage Burner, are based on raising temperature of water 50° in 1 hour.

SPECIFICATIONS—TABASCO WATER HEATERS

Heater No.	Capacity, gal., per hr.	Heater, Size in.	Hgt., in.	Flow and return, in.	Weight, lbs. Magazine feed	Weight, lbs. Surface burner	Diam. smoke conn., in.	Diam. grate, in.
17	130	17x32	57	Two-1¼	570	500	6	12½
18	150	17x36	61	Two-1¼	590	520	6	12½
21	200	21x30	55	Two-1½	700	600	7	15
22	250	21x36	62	Two-1½	760	660	7	15
25	300	25x37	63	Two-2	1030	880	8¼	19
26	350	25x43	69	Two-2	1100	950	8¼	19
27	400	25x49	75	Two-2	1200	1050	8¼	19
30	500	30x43	70	Two-2½	1400	1220	8¼	24
31	600	30x49	76	Two-2½	1620	1420	8¼	24
32	700	30x58	85	Two-2½	1700	1510	8¼	24

EXTRA HEAVY HEATERS—TYPE R

No.	Capacity, gal.	Hgt., ft. in.	Aprx. ship. wt. lbs. Surface burner	Aprx. ship. wt. lbs. Magazine feed
150	150	5 1	520	590
200	200	4 7	600	700
300	300	5 3	880	1030
400	400	6 3	1050	1200
500	500	5 10	1220	1400
600	600	6 4	1420	1620
700	700	7 1	1510	1700

EXTRA HEAVY HEATERS AND TYPE S VERTICAL TANK

Size, in. ft.	Capacity, gal.	Height, tank and stand, ft.	Height, tank and stand, in.	Weight, lbs. Tank	Weight, lbs. Tank stand
36x5	265	7	2	1000	160
42x5	360	7	3	1300	180
48x5	470	7	4	1500	200
54x5	590	7	5	2000	220
60x5	730	7	6	2400	250
60x5½	800	8	0	2500	250
60x6	875	8	6	2600	250

KEWANEE WATER HEATING GARBAGE BURNERS

Water heating garbage burners are built of riveted steel for a working pressure of 125 lbs. per sq. in., to withstand city water pressure without cracking or bursting. They eliminate unpleasant features of accumulated garbage in apartments, clubs, sanitariums, hotels, restaurants, save expense of its removal, and in producing hot water by incineration cut the fuel bill of an ordinary heater in half. Operation is very simple. A small fire is started on lower grates, and garbage thrown into the upper chamber in any quantity; even when filled, garbage is dried to a combustible condition in a short time by means of the patented *by-pass* and burns without odor, leaving only a small amount of ash. These burners will produce best results when hot water storage tank attached has a capacity of 50% greater than the hourly heating capacity of the burner.

SPECIFICATIONS—WATER HEATING GARBAGE BURNERS

	Type A				Type D							Type H				
Burner No.	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Capacity, gal. per hr., 50° raise	200	300	400	600	500	600	800	1000	1200	1500	1800	1200	1500	1800	2200	2600
Capacity, garbage chamber, 1 charge, bu.	1	2	3	4	2	3	4	5	7	9	12	6	8	9	11	12
Over-all height, in	62	68	68	68	57	57	57	57	57	57	57	65	65	65	65	65
Floor space, in	22	25	30	36	29x29	29x35	35x35	35x41	35x47	41x53	41x59	38x36	38x42	38x48	38x54	38x60
Approx. ship. wt., lbs.	730	970	1190	1640	1650	1800	2100	2320	2550	3100	3320	2620	2820	3020	3450	3700



Type D

Working pressure 125 lbs. per sq. in. for Nos. 30-31-32; 100 lbs. for No. 33. Working pressure 100 lbs. per sq. in. for Nos. 34 to 45.

MEMORANDA

WATERFILM BOILERS, INC.

154 Ogden Avenue, JERSEY CITY, N. J.

"KOVEN" WATERFILM BOILERS

TYPE: Low Pressure—Steam 15 lbs. W.P.—Water 30 lbs. W.P.
STYLE: Welded Steel—for Automatic Firing by gas, oil or stoker
EXCLUSIVE FEATURES: Patented Generators produce steam quickly with 15% of boiler water heated

MODEL "O"

For the Smaller Home



Model "O"

Features

Low price.

Economy.

Quick heat.

Jackets

Round.

Square enclosing.

No.	E.D.R Rating	
	Steam	Water
01	400	640
02	600	960

DE LUXE MODEL

For the Larger and Better Grade Home

Features

Economy.

Quick heat.

Beauty.

Hot water tank concealed.

No.	E.D.R. Rating	
	Steam	Water
2	600	960
3	875	1400
4	1150	1840
5	1400	2240



"DeLuxe" Model

SECTIONAL BOILERS (STEEL)

Features

(1) Quick heat.

(2) Can be brought through a 2-ft. door. Eliminates building alterations. Eliminates rigging.

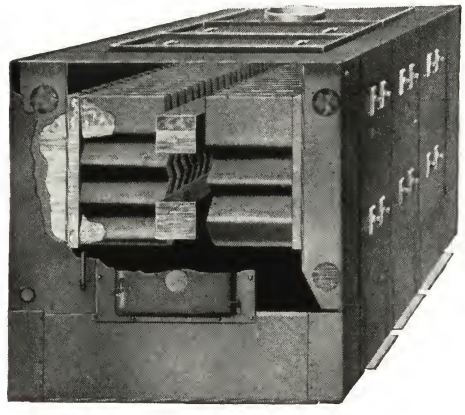
(3) Base supplied to specifications at no added cost.

(4) Boiler can be enlarged by adding sections.

(5) Boiler can be fired by multiple units, oil burners or stokers of small capacity.

(6) Vertical flue travel. Eliminates fly ash or loose carbon.

The illustration shows a cutaway view of a Double Sectional Boiler.



SINGLE SERIES

Boiler Number	Recommended load E.D.R. including pickup		Guaranteed B.t.u.
	Steam	Water	
1- 6	1,500	2,400	390,000
1- 7	1,750	2,800	450,000
1- 8	2,000	3,200	510,000
1- 9	2,250	3,600	570,000
1-10	2,500	4,000	630,000
1-11	2,750	4,400	690,000
1-12	3,000	4,800	750,000
1-13	3,250	5,200	810,000
1-14	3,500	5,600	870,000
1-15	3,750	6,000	930,000

DOUBLE SERIES

Boiler Number	Recommended load E.D.R. including pickup		Guaranteed B.t.u.
	Steam	Water	
2- 7	3,500	5,600	870,000
2- 8	4,000	6,400	990,000
2- 9	4,500	7,200	1,110,000
2-10	5,000	8,000	1,230,000
2-11	5,500	8,800	1,350,000
2-12	6,000	9,600	1,470,000
2-13	6,500	10,400	1,590,000
2-14	7,000	11,200	1,710,000
2-15	7,500	12,000	1,830,000
2-16	8,000	12,800	1,950,000
2-17	8,500	13,600	2,070,000
2-18	9,000	14,400	2,190,000
2-19	9,500	15,200	2,310,000
2-20	10,000	16,000	2,430,000
2-21	10,500	16,800	2,550,000
2-22	11,000	17,600	2,670,000
2-23	11,500	18,400	2,790,000
2-24	12,000	19,200	2,910,000
2-25	12,500	20,000	3,030,000
2-26	13,000	20,800	3,150,000
2-27	13,500	21,600	3,270,000
2-28	14,000	22,400	3,390,000
2-29	14,500	23,200	3,510,000
2-30	15,000	24,000	3,630,000
2-31	15,500	24,800	3,750,000
2-32	16,000	25,600	3,870,000
2-33	16,500	26,400	3,990,000
2-34	17,000	27,200	4,110,000
2-35	17,500	28,000	4,230,000
2-36	18,000	28,800	4,350,000
2-37	18,500	29,600	4,470,000
2-38	19,000	30,400	5,630,000
2-39	19,500	31,200	5,750,000
2-40	20,000	32,000	5,870,000
2-41	20,500	32,800	5,990,000

SPENCER HEATER DIVISION

LYCOMING MANUFACTURING COMPANY

WILLIAMSPORT, PA.

SALES REPRESENTATIVES IN PRINCIPAL CITIES

Spencer Automatic Magazine Feed Heaters are furnished in cast iron sectional types—and steel tubular types for larger buildings—for steam, vapor and hot water heating. There is a size and capacity for every type of building, to provide economical and convenient heat—safe, dependable, sure.

The Spencer Automatic Magazine Feed Warm Air Furnace also makes available the advantages of the Spencer principle of magazine feed, sloping grates, automatic coal action, and low operating cost—for warm air systems of either gravity or forced circulation type.

THE MOST COMFORTABLE HEAT IN THE WORLD—AND AT LOW COST

Why Spencer Heaters and Furnaces perform so satisfactorily can best be explained by an inspection of their design and construction. The Spencer principle, illustrated in the cross-sectional view, is simple:

Once a day fuel (No. 1 Buckwheat Anthracite or small size by-product coke) is put into the magazine. It fills the sloping grate to the level of the magazine mouth. The fire bed always stays at the proper level, for as fast as fuel burns to ash it shrinks and settles on the sloping grate; and more fuel rolls down automatically over the top of the fire bed. Fuel feed is by gravity alone, in just the right amount to keep the fire always burning at its most efficient combustion point.

This explains why a Spencer Automatic Magazine Feed Heater or Furnace always gives the same uniform, satisfying heat, and burns less fuel. These exclusive Spencer advantages are available in all types of the magazine feed heaters and furnaces.



Cutaway Sectional View
Spencer Cast Iron Heater

Coal—Coke—Gas—Oil—Spencer J and L series heaters, M series boilers and W series furnaces are primarily designed to burn low cost No. 1 Buckwheat Anthracite or small size coke; the CN series Nut or Pea Anthracite, or Nut size coke.

If at any time a property owner desires to burn more expensive fuels—oil or gas—his Spencer Heater will show a higher efficiency than can be secured with any ordinary boiler.

Thermostats—Thermostats and electric damper motors are furnished as optional equipment.

Jacketed Covering—Attractive metallic jackets, as illustrated, are available for Spencer Cast Iron Heaters, either with or without the enclosing jacket doors.

SIZES AND GUARANTEED CAPACITIES—CAST IRON SECTIONAL TYPE

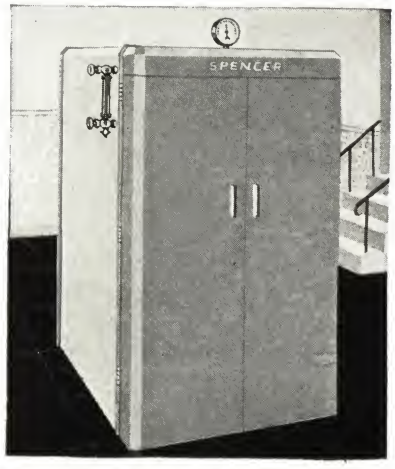
No.	Steam		Water		Tank capacity, gallons	Chimney flue
	*Guaranteed direct cast iron column radiation, loads, sq. ft.	**E. D. R. rating	*Guaranteed direct cast iron column radiation, loads, sq. ft.	**E. D. R. rating		
For Buckwheat Anthracite, or Small Size Coke						
J-3	175	220	290	360	240	8″x 8″x35′
J-4	265	330	440	550	390	8″x 8″x35′
J-5	355	440	590	740	540	8″x 8″x35′
L-105	390	490	645	800	600	8″x 8″x35′
L-106	510	640	845	1050	810	8″x 8″x35′
L-107	630	790	1045	1300	1020	8″x12″x35′
L-205	550	690	910	1140	900	8″x12″x35′
L-206	725	910	1200	1500	1170	8″x12″x35′
L-207	900	1130	1490	1860	1440	8″x12″x40′
L-208	1075	1350	1780	2220	1740	12″x12″x40′
L-209	1250	1570	2070	2580	2040	12″x12″x40′
L-305	1150	1430	1900	2375		12″x12″x40′
L-306	1500	1870	2475	3095		12″x12″x40′
L-307	1850	2310	3050	3815		12″x12″x40′
L-308	2200	2750	3625	4535		12″x16″x45′
L-309	2550	3190	4200	5255		12″x16″x45′
L-310	2900	3630	4775	5975		16″x16″x50′
L-311	3250	4070	5350	6695		16″x16″x50′
For Chestnut or Pea Anthracite, or Nut Coke						
CN-502	280	350	460	575		8″x 8″x30′
CN-502½	360	450	590	735		8″x 8″x30′
CN-503	440	550	725	905		8″x 8″x35′
CN-5K3	520	650	860	1070		8″x 8″x35′
CN-504	600	750	995	1235		8″x12″x35′
CN-5K4	680	850	1130	1400		8″x12″x35′
CN-505	760	950	1265	1565		8″x12″x35′
CN-5K5	840	1050	1400	1730		8″x12″x35′
CN-506	920	1150	1535	1895		8″x12″x45′

*The SPENCER HEATER DIVISION guarantees that when installation is made in accordance with accepted standards, the heater will carry the number of feet of direct cast iron column radiation listed. This allows ample provision for heat loss in covered mains, risers and returns, and for peak loads.

**E.D.R. ratings represent the attached net radiation load plus piping losses expressed in square feet of equivalent direct radiation (240 B.t.u. steam, 150 B.t.u. hot water) which may be placed on heater in accordance with accepted standards for economical operation.

Spencer Heavy Duty Tank Heaters

Of the magazine feed type, they are available in the capacities indicated. With the automatic magazine feed construction, they provide ample domestic hot water at lowest cost, and with a minimum of tank heater attention.



L-1 Type Spencer Magazine Feed Heater with Jacket

SPENCER AUTOMATIC MAGAZINE FEED WARM AIR FURNACES

Spencer Furnaces operate on the automatic magazine feed principle. Once fuel (No. 1 Buckwheat Anthracite or small size coke) is in the storage magazine, it feeds over the fire on the sloping grate in just the right amount for the heat required. Attention is necessary only once or twice a day.

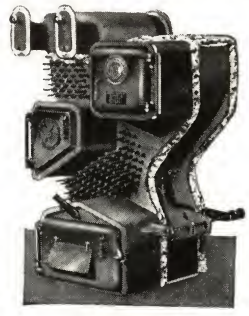


DeLuxe Jacket

Unique in furnace design, the Spencer burns low cost No. 1 Buckwheat Anthracite or small size coke, and eliminates the disadvantages of ordinary furnaces—no "hot spots," no furnace cement, no brick lined fire pot, no leaky joints. Assures an airtight, gastight, leakproof, long life installation.

Spencer Furnaces are compact, streamlined, and so designed that other air-conditioning features can be readily added.

Illustrated here is the attractive enameled metallic jacket. Galvanized casing also available, if desired.



Unjacketed

SIZES AND GUARANTEED CAPACITIES

No.	Output		Sq. in. leader pipes	Height casing	Width	Length	Chimney Flue
	B.T.U. at furnace	B.T.U. at register					
W-3	66,000	49,500	364	64″	40½″	32⅝″	8″x 8″x25′
W-4	88,000	66,000	485	64″	42½″	36⅝″	8″x 8″x25′
W-5	110,000	82,500	610	64″	43½″	40⅝″	8″x 8″x30′
W-6	132,000	99,000	730	64″	44½″	44⅝″	8″x 8″x30′
W-7	154,000	115,500	850	64″	45¼″	48⅝″	8″x 8″x30′
W-8	176,000	132,000	970	64″	46″	52⅝″	8″x 8″x30′
W-9	198,000	148,000	1100	64″	46½″	56⅝″	8″x12″x30′

SPENCER STEEL TUBULAR MAGAZINE FEED BOILERS

For large buildings we recommend Spencer Steel Tubular Magazine Feed Boilers, burning low cost No. 1 Buckwheat Anthracite or coke.

In the cross section diagram, part of the fire bed is cut away to show the sloping grates and the two magazines filled with fresh coal, ready to feed down automatically of its own weight to the fire. These boilers are built in two vertical sections for ease in handling and installation—a great advantage on replacement jobs, eliminating the necessity of costly tearing out of wall or partitions. Combination water and fire tube construction; built to A.S.M.E. standards.



Steel Tubular Magazine Feed Boiler

SIZES AND GUARANTEED CAPACITIES

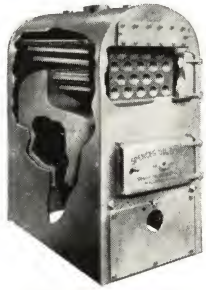
No.	Steam		Chimney flue	No.	Steam		Chimney flue
	*Guaranteed direct cast iron column radiation loads, sq. ft.	**E. D. R. rating			*Guaranteed direct cast iron column radiation loads, sq. ft.	**E. D. R. rating	
M6-6	2300	2875	12″x12″x40′	M7-9	6100	7625	22″x22″x70′
M6-7	2600	3250	12″x16″x45′	M7-10	6800	8500	22″x22″x70′
M6-8	2900	3625	12″x16″x45′	M8-6	8000	10000	24″x24″x65′
M6-9	3200	4000	16″x16″x50′	M8-7	9750	12185	24″x24″x65′
M6-10	3500	4375	16″x16″x50′	M8-8	11500	14370	30″x30″x70′
M7-6	4000	5000	20″x20″x60′	M8-9	13250	16555	36″x36″x70′
M7-7	4700	5875	20″x20″x60′	M8-10	15000	18740	36″x36″x70′
M7-8	5400	6750	20″x20″x65′				

* **See note bottom of previous page.

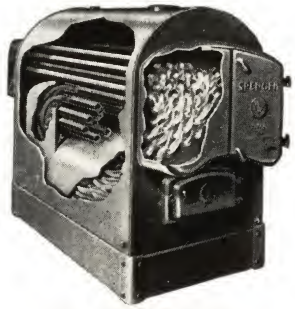
SPENCER STEEL BOILERS FOR OIL, STOKER, GAS OR HAND-FIRING

For more than 40 years, Spencer has been building, in the opinion of experts, one of the most efficient, economical and dependable coal burning boilers on the market. With this background of experience, Spencer Engineers developed the Spencer Steel Tubular Boiler for oil, gas, stoker and hand-firing—the C series for residential use, and the Type A for larger buildings. It is a better boiler both for the property owner and for the architect or engineer who specifies it.

The high sustained efficiency of these boilers means adequate heat for a lower fuel cost. Design is of the three-pass type. Combustion chamber is amply large. Built of best quality open hearth steel boiler plate, and tubes. Can be furnished with domestic hot water heating coils, either of the storage tank or instantaneous type.



"C" Series Steel Boiler



Type "A" Steel Boiler

SIZES AND CAPACITIES (S.H.B.I. RATINGS)

	For mechanical firing			Hand firing		Chimney flue		For mechanical firing			Hand firing		Chimney flue	
	Steam	Water		Steam	Water			Steam	Water		Steam	Water	Diameter	Height
C-1	600	960	CH1	500	800	8″x 8″x30′	A-1180	2190	3500	A-118	1800	2880	16″	35′
C-2	700	1120	CH2	580	920	8″x 8″x30′	A-1220	2680	4280	A-122	2200	3520	16″	35′
C-3	800	1280	CH3	670	1070	10″x10″x30′	A-2260	3160	5050	A-226	2600	4160	18″	35′
C-4	950	1520	CH4	780	1240	10″x10″x30′	A-2300	3650	5840	A-230	3000	4800	18″	40′
C-5	1100	1760	CH5	910	1450	10″x10″x35′	A-3350	4250	6800	A-335	3500	5600	20″	40′
C-6	1250	2000	CH6	1030	1640	12″x12″x35′	A-3400	4860	7770	A-340	4000	6400	20″	40′
C-7	1450	2320	CH7	1200	1920	12″x12″x35′	A-3450	5470	8750	A-345	4500	7200	22″	45′
C-8	1700	2720	CH8	1410	2250	12″x12″x40′	A-4500	6080	9720	A-450	5000	8000	22″	45′
C-9	1950	3120	CH9	1620	2590	12″x12″x40′	A-4600	7290	11660	A-460	6000	9600	24″	50′
							A-4700	8500	13600	A-470	7000	11200	26″	55′
							A-5700	8500	13600	A-570	7000	11200	26″	55′
							A-5850	10330	16530	A-585	8500	13600	28″	60′

MEMORANDA

THE TITUSVILLE IRON WORKS COMPANY

DIVISION OF STRUTHERS WELLS-TITUSVILLE CORPORATION

Boilers and Tanks, Riveted and Welded Steel Plate Work

TITUSVILLE, PA.

OFFICES

ALLENTOWN, PA.	CINCINNATI, OHIO	DETROIT, MICH.	LITTLE ROCK, ARK.	PHILADELPHIA, PA.	ST. LOUIS, MO.
ATLANTA, GA.	CLEVELAND, OHIO	ERIE, PA.	LOS ANGELES, CALIF.	PITTSBURGH, PA.	ST. PAUL, MINN.
BOSTON, MASS.	COLUMBUS, OHIO	INDIANAPOLIS, IND.	MEMPHIS, TENN.	SALT LAKE CITY, UTAH	TULSA, OKLA.
BUFFALO, N. Y.	DALLAS, TEX.	KANSAS CITY, MO.	MISSION, TEX.	SAN ANTONIO, TEX.	TYLER, TEX.
CHARLOTTE, N. C.	DAVENPORT, IOWA	KENDALLVILLE, IND.	NEW ORLEANS, LA.	SAN FRANCISCO, CALIF.	WASHINGTON, D. C.
CHICAGO, ILL.	DENVER, COLO.	KNOXVILLE, TENN.	NEW YORK, N. Y.	SHREVEPORT, LA.	YOUNGSTOWN, OHIO

Products

FIRETUBE STEEL BOILERS for power and heating.

Also Heaters, exhaust or live steam; Steel Plate Work, riveted and welded, including Tanks, Smokestacks and Breechings, Boiler Fronts, Grates and Castings.

Heating Boilers for Coal, Gas, Oil or Stoker Firing

The Company specializes in low pressure heating boilers and builds a complete range of designs and sizes. Large stocks of tubes and plates are carried to facilitate speedy execution of orders. Standard firebox boilers, riveted and welded, are stocked in the popular sizes.

Welding

All seams of Titusville welded boilers are welded inside and outside by electric-arc machines, in the hands of experts who do nothing else. Our welding technique is of outstanding merit.

Inspection and Test

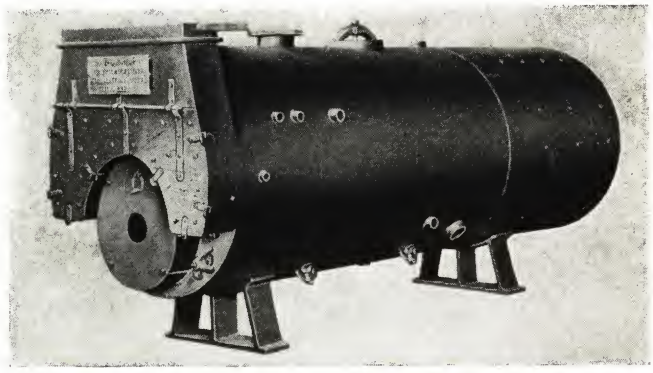
All boilers are thoroughly inspected during their entire construction by a representative of the Hartford Steam Boiler Inspection & Insurance Co., who is in continual attendance at our works. Boilers are tested to required hydrostatic pressure, made absolutely tight and stamped "ASME." All workmanship and material are guaranteed first class in every respect. The insurance company's test certificate is furnished if desired.

Fabrication

The Titusville Plant is one of the largest and is completely equipped with the latest improved machinery, including best hydraulic flanging equipment and pneumatic and hydraulic riveting machines. The highest standards of workmanship prevail.

Titusville Scotch Marine Wet Back Top Boilers

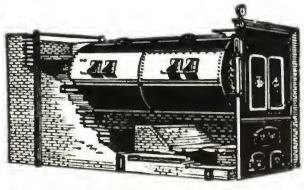
For Any Type of Fuel—Oil, Gas, Stoker, Hand Firing.



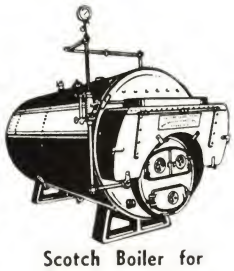
Scotch Marine Mechanically Fired Heating Boiler Series SOH

Made by the oldest and largest manufacturer of Scotch Boilers, this line of Titusville Wet Back Top Type Heating Boilers represents a distinct advance in Scotch Boiler design. To their time-tried and time-proved advantages of compactness and economy of operation have been added new and exclusive refinements of design that assure greater heating efficiency than ever before. These boilers are of A.S.M.E. construction with S.H.B.I. ratings and are Hartford inspected. They are equipped with standard 3-in. tubes—the only proven satisfactory size.

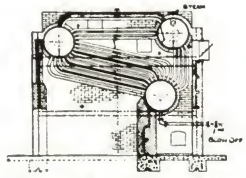
Exclusive features of Titusville design include the wet back top, which adds 30% more disengaging area; and an unusually large furnace volume equal to 1½ cu. ft. per rated horsepower at 10 sq. ft. heating surface per horsepower. No tile arch is necessary and the water heating coils may be installed in rear of boiler, out of the fire.



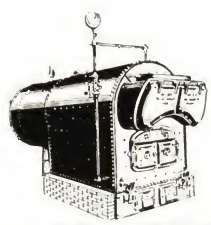
Series "HRT" Horizontal Return Tubular Boiler for Power and Heating



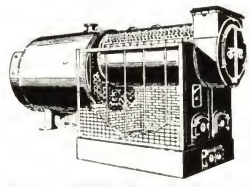
Scotch Boiler for Power and Low Pressure Heating



3-Drum Bent Tube Boiler, Low Head Type, Built to 500 Hp.



Series "RP" and "RC" Riveted High and Low Pressure Firebox Boiler

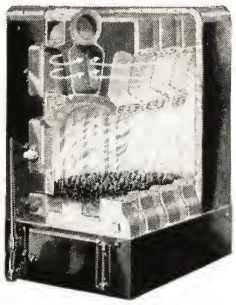


Series "XL" Return Tubular Power and Heating Boilers

UNITED STATES RADIATOR CORPORATION

Manufacturers of Capitol Boilers, Radiators, Air Conditioning, Pacific Boilers

GENERAL OFFICES
DETROIT, MICH.
BRANCHES AND SALES OFFICES IN PRINCIPAL CITIES

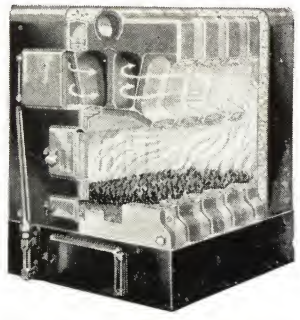


Series "A" Red Top Boiler

SERIES "A" RED TOP BOILERS

For All Fuels Direct cast iron radiator loads, sq. ft.			For Oil Direct cast iron radiator loads, sq. ft.		
Boiler No.	Steam	Water	Boiler No.	Steam	Water
A- 6	280	460	A-06	280	450
A- 7	355	585	A-07	340	545
A- 8	430	710	A-08	400	640
A- 9	505	835	A-09	460	735
A-10	580	960	A-010	520	830
A-11	655	1085	A-011	580	925

Height, including trimmings, 49⅝ in.; width 32⅞ in. Height of water line 42½ in.

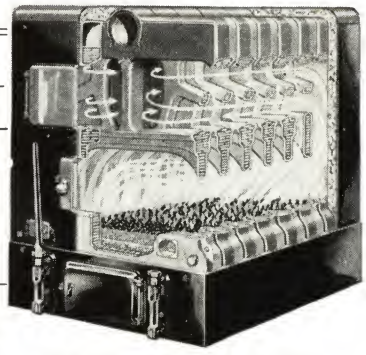


Fire Travel "B" Series Red Top Boiler

SERIES "B" FOR ALL FUELS AND SMOKELESS TYPES*

For All Fuels Direct cast iron radiator loads, sq. ft.			For Oil Direct cast iron radiator loads, sq. ft.		
Boiler No.	Steam	Water	Boiler No.	Steam	Water
B- 6	550	910	B-07	735	1215
B- 7	735	1215	B-08	920	1520
B- 8	920	1520	B-09	1105	1825
*B- 9	1105	1825	B-010	1290	2130
*B-10	1290	2130	B-011	1475	2435
*B-11	1475	2435	B-012	1660	2740
*B-12	1660	2740	B-013	1845	3045
*B-13	1845	3045	B-014	2030	3350
*B-14	2030	3350			

Height, including trimmings, 65⅞ in.; width, 42⅝ in. Height of water line, 46½ in. *Sizes marked * furnished in smokeless type. B-13 and B-14 not furnished in all fuels type. Extra high base furnished for stoker firing.



Cut-away Section Series "C" Red Top Boiler

SERIES "C" RED TOP BOILERS

For All Fuels Direct cast iron radiator loads, sq. ft.			For Oil Direct cast iron radiator loads, sq. ft.		
Boiler No.	Steam	Water	Boiler No.	Steam	Water
C-12	1865	3080	C-012	1865	3080
*C-14	2375	3920	C-014	2375	3920
*C-16	2930	4840	C-016	2930	4840
*C-18	3485	5750	C-018	3485	5750
*C-20	4050	6680	C-020	4050	6680
*C-22	4575	7550	C-022	4575	7550
*C-24	5045	8320	C-024	5045	8320
*C-26	5455	9000	C-026	5455	9000
*C-28	5805	9580	C-028	5805	9580

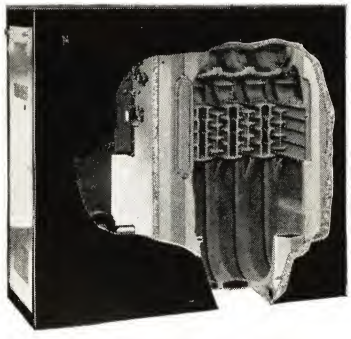
Height including trimmings, 73¾ in.; width 54¼ in.
Height of water line 55 in.
*Sizes marked * furnished in smokeless type.



Oil Burning Red Cap F.S. Type Boiler

CAPITOL RED CAP BOILERS

For All Fuels					Oil Burning and F.S. Type				
Boiler No.	Direct cast iron radiator loads square feet		Diameter at hearth, inches	Water line, inches	Boiler No.	Direct cast iron radiator loads square feet		Diameter at hearth, inches	Water line, inches
	Steam	Water				Steam	Water		
19-4	300	495	46 7/8	1.76	O-19-4	300	495	17 1/2	46 7/8
19-5	350	580	51 11/16	1.76	O-19-5	350	580	17 1/2	51 11/16
20-4	400	660	46 7/8	2.24	O-20-4	400	660	19 3/4	46 7/8
20-5	450	745	51 11/16	2.24	O-20-5	450	745	19 3/4	51 11/16
22-4	500	825	46 7/8	2.76	O-22-4	500	825	22	46 7/8
22-5	550	910	51 11/16	2.76	O-22-5	550	910	22	51 11/16
25-4	625	1030	47 1/2	3.54	O-25-4	625	1030	25	47 1/2
25-5	675	1115	52 5/16	3.54	O-25-5	675	1115	25	52 5/16



U.S.-20 Oil Burning Boiler

CAPITOL U-S-20 AND U-S-25 OIL BURNING BOILERS*

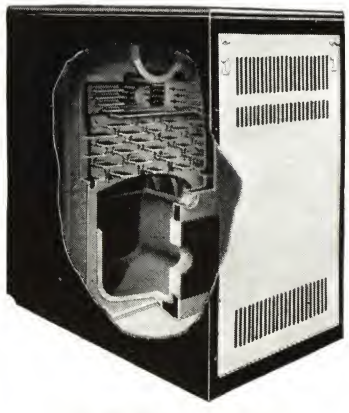
Ratings U.S.20		U. S. 20-3	U. S. 20-4	U. S. 20-5	U. S. 20-6
Direct C.I. Radiator load sq. ft. 4,000 B.t.u. transmission rate.	Steam...	290	415	540	665
Nothing need be added for piping and pickup. See Standard Requirements in our Literature.	Water...	460	665	865	1060

**Ratings U.S.25	U. S. 25-3	U. S. 25-4	U. S. 25-5	U. S. 25-6	U. S. 25-7
***(Choose boiler size from this load).					
Steam, sq. ft.....	500	800	1080	1335	1500
Water, sq. ft.....	800	1280	1730	2135	2400

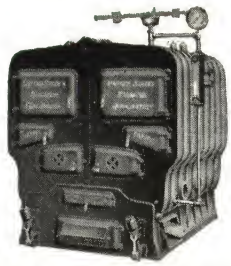
*Biltin Taco Heaters of various capacities can be furnished for these boilers—and openings are provided for all automatic control equipment.

**All ratings expressed in square feet are based on a heat emission of 240 B.t.u. per sq. ft. for steam and 150 B.t.u. per sq. ft. for hot water.

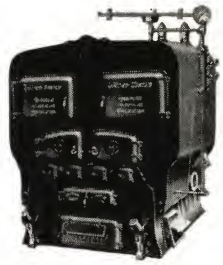
***Nothing need be added for piping and pickup. See Standard Requirements in our literature.



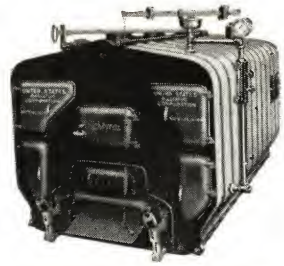
U.S.-25 Oil Burning Boiler



Capitol WN-270 Series Boiler



Capitol 50-in. Series Smokeless Boiler



Capitol 4111 Square Boiler

WN270 AND WN0270 SERIES

Boiler No. all fuels	Direct cast iron radiator load, square feet		Boiler No. oil burning	Direct cast iron radiator load, square feet		Grate area, square feet	Minimum chimney sizes	
	Steam	Water		Steam	Water		Height, feet	Dimensions, inches
WN276	3700	6105	.....	.....	.....	15.25	50	20x24
WN277	4300	7095	.....	.....	.....	18.29	55	24x24
WN278	4900	8085	.....	.....	.....	21.33	60	24x24
WN279	5500	9075	WNO279	6200	10230	24.37	60	24x24
WN280	6100	10065	WNO280	6900	11400	27.41	65	24x28
WN281	6700	11055	WNO281	7600	12550	30.45	70	28x28
WN282	7300	12045	WNO282	8300	13700	30.45	70	28x28
WN283	7900	13035	WNO283	9000	14850	30.45	75	28x32
WN284	8500	14025	WNO284	9700	16000	30.45	80	28x32
.....	.....	.....	WNO285	10400	17150	.....	90	32x32
.....	.....	.....	WNO286	11100	18300	.....	100	32x32

Inclusive of trimmings—height, 92 in.; width, 82 in. Height of water line, 66 in.

Furnished with extra high bases for stoker firing.

4100 AND 0400 SERIES

Boiler No.		Direct cast iron radiator load, square feet		Grate area, square feet	Minimum chimney sizes	
All Fuels	Oil Burn.	Steam	Water		Height, feet	Dimensions, inches
4106	.....	2000	3300	10.31	45	18x18
4107	0407	2500	4125	12.47	50	18x18
4108	0408	3000	4950	14.63	55	18x20
4109	0409	3500	5775	16.79	60	20x20
4110	0410	4000	6600	18.95	65	20x24
4111	0411	4500	7425	21.11	70	24x24
....	0412	4900	8085	.....	70	24x28
....	0413	5400	8910	.....	75	24x28
....	0414	5800	9570	.....	80	24x28

40-INCH SMOKELESS

Boiler No.	Direct cast iron radiator loads, square feet		Grate area, square feet	Minimum chimney sizes	
	Steam	Water		Height, feet	Dimensions, inches
740	2500	4125	8.15	50	18x18
840	3000	4950	10.31	55	18x20
940	3500	5775	10.31	60	20x20
1040	4050	6680	12.47	65	20x24
1140	4500	7425	14.63	70	24x24
1240	4900	8085	14.63	70	24x28
1340	5400	8910	16.79	75	24x28

Height including trimmings, 71 in.; width, 75 in.
Height of water line, 49 in.



50-INCH ALL FUEL AND 0500 SERIES

Boiler No. all fuels	Boiler No. oil burning	Direct cast iron radiator load, square feet		Grate area, square feet	Minimum chimney sizes	
		Steam	Water		Height, feet	Dimensions inches
750	....	4700	7755	18.29	55	24x24
850	....	5350	8825	21.33	60	24x24
950	0509	5850	9655	24.37	65	24x28
1050	0510	6500	10725	27.41	70	24x28
1150	0511	7000	11550	30.45	80	28x28
1250	0512	7650	12620	30.45	90	28x28
1350	0513	8150	13450	30.45	95	28x32
....	0514	8650	14280	.....	100	28x32
....	0515	9150	15100	.....	105	32x32
....	0516	9650	15920	.....	110	32x32

50-INCH SMOKELESS

Boiler No. all fuels	Direct cast iron radiator load, square feet		Grate area, square feet	Minimum chimney sizes	
	Steam	Water		Height, feet	Dimensions, inches
750	4700	7755	18.29	55	24x24
850	5350	8825	21.33	60	24x24
950	5850	9655	21.33	65	24x28
1050	6500	10725	24.37	70	24x28
1150	7000	11550	24.37	80	28x28
1250	7650	12620	27.41	90	28x32
1350	8150	13450	27.41	95	32x32

Height including trimmings, 92 in.; width, 82 in.
Height of water line, 66 in.

"F" SERIES CAPITOLAIRE CONDITIONER

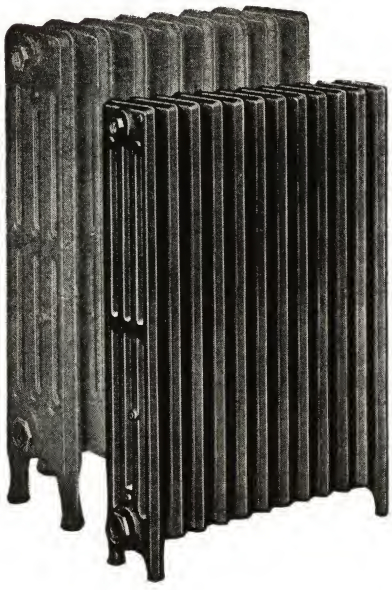
Unit	B.t.u./hr. capacity		Capacity C.f.m.	Motor H.p.
	Bonnet	Grille		
MF-015	100,000	85,000	1000	1/6
MF-125	135,000	115,000	1450	1/4
MF-235	160,000	135,000	1650	1/3
MF-350	185,000	155,000	1850	1/2
DF-015	100,000	85,000	1000	1/6
DF-125	135,000	115,000	1450	1/4
DF-235	160,000	135,000	1650	1/3
DF-350	185,000	155,000	1850	1/2
DF-475	250,000	210,000	2450	3/4

	Width inches	Height inches	Depth inches	Weight lbs.
MF-015	30	48	55	780
MF-125	33 1/2	56 1/2	74 3/4	1250
MF-235	33 1/2	56 1/2	74 3/4	1250
MF-350	33 1/2	56 1/2	74 3/4	1260
DF-015	30	48	70 1/2	800
DF-125	33 1/2	56 1/2	92 3/8	1290
DF-2 5	33 1/2	56 1/2	92 3/8	1290
DF-350	33 1/2	56 1/2	92 3/8	1300
DF-475	36	58 1/4	92	1600

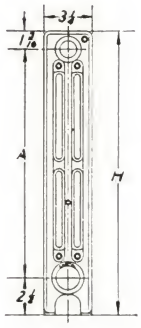
Write to Capitolaire Division of United States Radiator Corporation for complete catalog of Direct Fired and Split System Air Conditioners, Humidifiers and Room-Space Coolers.

UNITED STATES RADIATOR CORPORATION

CAPITAL THINTUBE RADIATORS

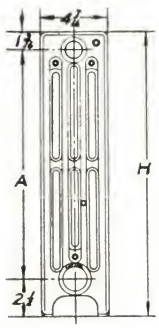


Three-Tube ThinTube



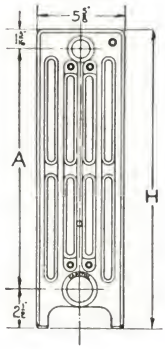
Size	A	H
19-3	15 5/16"	19"
22-3	18 5/16"	22"
25-3	21 5/16"	25"

Four-Tube ThinTube



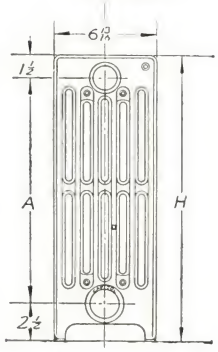
Size	A	H
19-4	15 5/16"	19"
22-4	18 5/16"	22"
25-4	21 5/16"	25"

Five-Tube ThinTube



Size	A	H
19-5	15 5/16"	19"
22-5	18 5/16"	22"
25-5	21 5/16"	25"

Six-Tube ThinTube



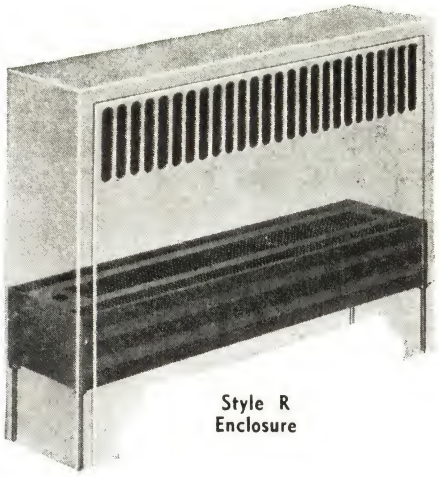
Size	A	H
19-6	15"	19"
*32-6	28"	32"

*Width 7⅞"

DIMENSIONS AND RATING FOR CAPITAL THINTUBE RADIATORS

Number of sections	* Length 1½ inch per section	3-Tube Heating Surface—Sq. Ft. 19-in. height 1.1 sq. ft. per section	3-Tube 22-in. height 1.3 sq. ft. per section	3-Tube 25-in. height 1.5 sq. ft. per section	4-Tube Heating Surface—Sq. Ft. 19-in. height 1.4 sq. ft. per section	4-Tube 22-in. height 1.6 sq. ft. per section	4-Tube 25-in. height 1.8 sq. ft. per section	5-Tube Heating Surface—Sq. Ft. 19-in. height 1.8 sq. ft. per section	5-Tube 22-in. height 2.1 sq. ft. per section	5-Tube 25-in. height 2.4 sq. ft. per section	6-Tube Heating Surface—Sq. Ft. 19-in. height 2.2 sq. ft. per section	6-Tube 32-in. height 3.85 sq. ft. per section
2	3	2.2	2.6	3.0	2.8	3.2	3.6	3.6	4.2	4.8	4.4	7.7
4	6	4.4	5.2	6.0	5.6	6.4	7.2	7.2	8.4	9.6	8.8	15.4
6	9	6.6	7.8	9.0	8.4	9.6	10.8	10.8	12.6	14.4	13.2	23.1
8	12	8.8	10.4	12.0	11.2	12.8	14.4	14.4	16.8	19.2	17.6	30.8
10	15	11.0	13.0	15.0	14.0	16.0	18.0	18.0	21.0	24.0	22.0	38.5
12	18	13.2	15.6	18.0	16.8	19.2	21.6	21.6	25.2	28.8	26.4	46.2
14	21	15.4	18.2	21.0	19.6	22.4	25.2	25.2	29.4	33.6	30.8	53.9
16	24	17.6	20.8	24.0	22.4	25.6	28.8	28.8	33.6	38.4	35.2	61.6
18	27	19.8	23.4	27.0	25.2	28.8	32.4	32.4	37.8	43.2	39.6	69.3
20	30	22.0	26.0	30.0	28.0	32.0	36.0	36.0	42.0	48.0	44.0	77.0
22	33	24.2	28.6	33.0	30.8	35.2	39.6	39.6	46.2	52.8	48.4	84.7
24	36	26.4	31.2	36.0	33.6	38.4	43.2	43.2	50.4	57.6	52.8	92.4
26	39	28.6	33.8	39.0	36.4	41.6	46.8	46.8	54.6	62.4	57.2	100.1
28	42	30.8	36.4	42.0	39.2	44.8	50.4	50.4	58.8	67.2	61.6	107.8
30	45	33.0	39.0	45.0	42.0	48.0	54.0	54.0	63.0	72.0	66.0	115.5
32	48	35.2	41.6	48.0	44.8	51.2	57.6	57.6	67.2	76.8	70.4	123.2
34	51	37.4	44.2	51.0	47.6	54.4	61.2	61.2	71.4	81.6	74.8	130.9
36	54	39.6	46.8	54.0	50.4	57.6	64.8	64.8	75.6	86.4	79.2	138.6
38	57	41.8	49.4	57.0	53.2	60.8	68.4	68.4	79.8	91.2	83.6	146.3
40	60	44.0	52.0	60.0	56.0	64.0	72.0	72.0	84.0	96.0	88.0	154.0
42	63	46.2	54.6	63.0	58.8	67.2	75.6	75.6	88.2	100.8	92.4	161.7
44	66	48.4	57.2	66.0	61.6	70.4	79.2	79.2	92.4	105.6	96.8	169.4
46	69	50.6	59.8	69.0	64.4	73.6	82.8	82.8	96.6	110.4	101.2	177.1
48	72	52.8	62.4	72.0	67.2	76.8	86.4	86.4	100.8	115.2	105.6	184.8
50	75	55.0	65.0	75.0	70.0	80.0	90.0	90.0	105.0	120.0	110.0	192.5
Sq. ft. per lineal inch		0.733	0.867	1.000	0.933	1.067	1.200	1.200	1.400	1.600	1.467	2.567

*Add ½ in. to length for each bushing. 3, 4 and 5-Tube—Tapped—Top, 1 in. both ends—Bottom, 1¼ in. both ends. 6-Tube—Tapped—Top, 1¼ in. both ends—Bottom, 1½ in. both ends. Regularly furnished with legs measuring 2½ in. from floor to center of bottom tapping. On special order can be furnished with 4½-in. legs or legless.



Style R
Enclosure

CAPITOL FINCAST CONVECTORS

Steam or Water Ratings
Front Outlet Grille

Steam in Convector at 215°—Square Feet Equivalent 240 B.t.u.

Water—Average Temperature in Convector 185°—Square Feet Equivalent 150 B.t.u.

Stack† height inches	Enclosure heights			Convector lengths—inches												
	Style R	Styles HA, HE, HB	Styles LP, LB	18	23	28	33	38	43	48	53	58	63	68	73	78	83
NO. 3 CONVECTOR—3½-IN. DEPTH																	
14	20	21	20½	10	12	15	18	21	23	26	29	31	34	....	....	....	....
17	23	24	23½	11	14	17	19	22	25	28	31	34	37	....	....	....	....
20	26	27	26½	11	15	18	21	24	27	30	34	37	40	....	....	....	....
24	30	31	30½	12	15	19	22	25	28	32	35	38	42	....	....	....	....
30	36	37	36½	12	16	19	23	26	29	33	36	40	43	....	....	....	....
36	.....	.....	.....	13	16	20	23	27	30	34	37	41	44	....	....	....	....
48	.....	.....	.....	13	17	20	24	28	31	35	38	42	46	....	....	....	....
60	.....	.....	.....	14	17	21	25	29	32	36	40	44	48	....	....	....	....
NO. 5 CONVECTOR—5⅜-IN. DEPTH																	
14	20	21	20½	13	17	21	24	28	32	35	39	43	46	50	54	57	61
17	23	24	23½	15	19	23	27	32	36	40	44	48	52	56	61	65	69
20	26	27	26½	16	21	25	30	34	39	43	48	52	57	61	66	70	75
24	30	31	30½	18	23	28	33	37	42	47	52	57	62	67	72	77	82
30	36	37	36½	19	24	30	35	40	46	51	56	62	67	72	78	83	88
36	.....	.....	.....	20	25	31	36	42	47	53	58	64	69	75	80	86	91
48	.....	.....	.....	21	27	33	38	44	50	56	62	68	73	79	85	91	97
60	.....	.....	.....	22	28	34	40	46	52	59	65	71	77	83	89	95	101
NO. 7 CONVECTOR—7¼-IN. DEPTH																	
14	20	21	20½	17	22	27	32	36	41	46	51	55	60	65	70	75	79
17	23	24	23½	20	25	31	36	41	47	52	58	63	69	74	80	85	91
20	26	27	26½	21	27	33	39	45	51	57	63	69	75	81	87	93	99
24	30	31	30½	23	29	36	42	48	55	61	67	74	80	87	93	99	106
30	36	37	36½	24	31	37	44	51	57	64	71	77	84	91	97	104	111
36	.....	.....	.....	24	31	38	45	52	59	65	72	79	86	93	100	106	113
48	.....	.....	.....	26	33	40	47	54	61	68	75	83	90	97	104	111	118
60	.....	.....	.....	27	34	42	49	57	64	72	79	86	94	101	109	116	124
NO. 10 CONVECTOR—10⅝-IN. DEPTH																	
14	20	21	20½	22	28	34	40	46	52	58	64	71	77	83	89	95	101
17	23	24	23½	25	32	39	45	52	59	66	73	80	87	94	101	108	115
20	26	27	26½	27	35	43	50	58	65	73	81	88	96	103	111	119	126
24	30	31	30½	30	38	46	54	63	71	79	87	95	104	112	120	128	137
30	36	37	36½	31	40	49	58	66	75	84	92	101	110	119	127	136	145
36	.....	.....	.....	32	41	50	59	68	77	86	94	103	112	121	130	139	148
48	.....	.....	.....	33	43	52	61	70	80	89	98	108	117	126	135	145	154
60	.....	.....	.....	35	45	54	64	74	84	93	103	113	122	132	142	152	161

†Stack height is the distance from the bottom of convector to top of air outlet grille.
Ratings shown on this sheet include an allowance for heating effect generally referred to as Available Heat Rating.

When Top Outlet Grilles are used, the Above Ratings Should be Increased as Follows:—

14-in. Stack Height multiply above ratings by 1.16
17-in. Stack Height multiply above ratings by 1.12
20-in. Stack Height multiply above ratings by 1.09
24-in. Stack Height multiply above ratings by 1.07

***CONVERSION FACTORS WHEN AVERAGE WATER TEMPERATURE IN FINCAST CONVECTOR IS OTHER THAN 185 DEGREES**

Average water temperature in convector	Multiply ratings above by	Average water temperature in convector	Multiply ratings above by	Average water temperature in convector	Multiply ratings above by
220 degrees	1.35	190 degrees	1.10	170 degrees	.85
210 degrees	1.30	185 degrees	1.00	165 degrees	.80
200 degrees	1.20	180 degrees	.95	160 degrees	.75
195 degrees	1.15	175 degrees	.90		

*To select boiler size, obtain standing radiator load—sq. ft. equivalent 150 B.t.u.—by dividing total B.t.u. requirements by 150 B.t.u.

BRANCH AND SALES OFFICES

*BALTIMORE, MD.
1309 Court Square Bldg.

*BIRMINGHAM, ALA.
1529 Second Ave., So.

*BOSTON, MASS.
233 Vassar St., Cambridge, Mass.

BUFFALO, N. Y.
303 Crosby Bldg.

*CHICAGO, ILL.
3254 No. Kilbourn Ave.

*CINCINNATI, OHIO
Wayne St. and C. L. & N. R. R.

CLEVELAND, OHIO
3221 Carnegie Ave.

*DAVENPORT, IOWA
1803 Rockingham Road

*DENVER, COLO.
2474 Blake St.

*DETROIT, MICH.
127 Campbell Ave.

*HARRISON, N. J.
Davis and Central Aves.

INDIANAPOLIS, IND.
314 E. New York St.

*KANSAS CITY, MO.
1219-1221 W. Eleventh St.

LOUISVILLE, KY.
615 State St.

*MASPETH, L. I., N. Y.
Grand Ave. and 57th St.

*MILWAUKEE, WIS.
532 E. Corcoran Ave.

*MINNEAPOLIS, MINN.
901 Washington Ave., So.

*NEW HAVEN, CONN.
Chapel and Mill Sts.

*NEW YORK, N. Y.
58-30 57th St., Maspeth, L. I.

OMAHA, NEB.
1101 Jackson St.

*PHILADELPHIA, PA.
22nd St. and Sedgley Ave.

*PITTSBURGH, PA.
941 Behan St., N. S.

*PORTLAND, ME.
2-4 Martyr St.

*PORTLAND, ORE.
630 N. W. 10th St.

*PROVIDENCE, R. I.
336 Allen's Ave.

ROCHESTER, N. Y.
Builders' Exchange, Spring St.

*ST. LOUIS, MO.
4004 Duncan Ave.

*SAN FRANCISCO, CAL.
753 Bryant St.

*SEATTLE, WASH.
334 Boren, No.

*SPRINGFIELD, MASS.
P.O. Box 5, Brightwood St.

*TROY, N. Y.
Center St., Green Island

WASHINGTON, D. C.
410 Bond Bldg.

**Assembling plants located at points indicated by star.*

WILLIAMS OIL-O-MATIC HEATING CORPORATION

Manufacturers of Automatic and Manually Controlled Fuel Oil Burners

BLOOMINGTON, ILL.

CHICAGO, 641 No. Michigan Avenue NEW YORK, 1231 Graybar Building

For Williams Ice-O-Matic Refrigeration Equipment, see File Index

A Complete Line

Williams Oil-O-Matic offers a complete line of oil heating equipment; six Oil-O-Matic burner models—a genuine Williams Oil-O-Matic of ideal capacity for every size and type of house, for every apartment, public building or commercial structure. Also, the new Williams HP-3 (high pressure) model.

New complete boiler-burner and furnace-burner units; a new and revolutionary type of oil-burning automatic water heater; and a new oil-burning range burner for heavy duty ranges are available.

HEATING CAPACITIES OF THE VARIOUS WILLIAMS OIL-O-MATIC BURNERS

	Domestic shipping weight, lbs.	Lgth., in.	Wth., in.	Ht., in.	Hp.	R.p.m.	Gals. fuel oil per operating hour	
							Minimum	Maximum
Model K-150	125	29	15¼	19¾	1/10	1800	½	1½
Model K-3	145	30	15⅝	20¾	1/10	1800	1	3
Model K-4.5	170	33½	20¼	22¼	⅛	1800	2½	4½
Model K-7	175	32½	22¼	21¾	⅛	1800	4	7
Model J-1800	255	45	20	24	½	1800	8	15
Model JJ	295	50	32	24	1	1800	12	25
HP-3	115	30	17	18	1/10	1800	1.35	3
High Pressure								

Standard draft pipe 18 in. 12-in. length draft pipe optional.
Standard electric current is 110-volt, 60 cycle. In case odd frequency motors are used, the maximum capacity of the burner will be reduced in direct proportion to the r.p.m. of the motor. The minimum capacity remains the same.

WATER HEATERS

WHA*	600	57	22½	28	1/10	1800		½
WHB**	885	75	23	28	1/10	1800	½	1
WHC***	1385	90	29	34	1/10	1800	1	1¾

*Output: 90° F. rise, 60 gal. per hour. **Output: 90° F. rise, 120 gal. per hour. ***Output: 90° F. rise, 210 gal. per hour.

How To Decide Size of Burner

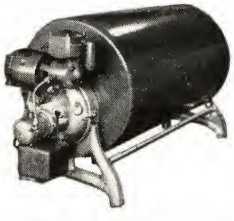
For low pressure domestic boilers, 1 gal. of fuel oil per hour (140,000 b.t.u.'s) is required for approximately:

300 sq. ft. of steam radiation or its equivalent.
480 sq. ft. of hot water radiation or its equivalent.
70,000 b.t.u's when using hot air furnace ratings.
24 sq. ft. steam boiler heating surface (or 2.2 hp.).

For exact detail data, see Oil-O-Matic Installation and Service Manual.

Oil-O-Matic Hot Water Supply

A new efficient hot water supply unit made in 3 sizes covering ordinary home use, large home or commercial use, and heavy duty requirement. The entire apparatus—including Oil-O-Matic oil burner, combustion chamber, water reservoir, and all automatic controls—is combined in one compact unit. Tank being horizontal instead of vertical, permits the use of a unique triple flame travel; the hot fire traversing the length of the tank three times before escaping, transfers all possible heat to the water. See specifications above.

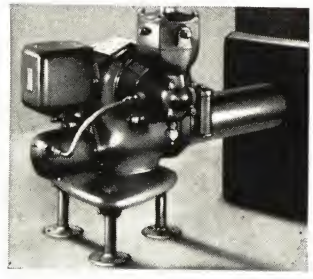


The unit illustrated WHA, will deliver 60 gal. of hot water per hour, raised 90° F. in temperature, which is equivalent to a constant flow capacity of 1 gal. of very hot water per minute, using ½ gal. of fuel oil per operating hour. WHB has twice, WHC has three and one-half times, the capacity of WHA.

Complete Boiler-Burner and Furnace-Burner Units

Oil-O-Matic burners are also used as an integral part of the following boiler burner and furnace burner units:

Abram-Cox Oil-O-Matic
Evans Oil-O-Matic
International Oil-O-Matic
Kruse Oil-O-Matic
Orr & Sembower Oil-O-Matic
Waterman-Waterbury Oil-O-Matic



Complete heating plants in which Oil-O-Matic operates as an integral part of specially designed boilers and furnaces, reflect advanced engineering in a high heating efficiency. These boiler-burner and furnace-burner units are fully enclosed in smartly styled, colored jackets. On account of their compactness these units occupy very little floor space.

Boiler-burner units automatically provide domestic hot water supply the year 'round. Indirect heating coils may be included for either instantaneous or storage tank systems. Furnace-burner units provide winter air conditioning. Installation of these Oil-O-Matic boiler-burner and furnace-burner units is quick and simple. Write for detailed information.

Horizontal Boiler-Burner Unit

This unit is a complete Oil-O-Matic product, consisting of a boiler and Oil-O-Matic oil burner. It is furnished for both steam and hot water systems. The welded steel tank used meets A.S.M.E. code specifications for operating up to 15 lbs. pressure. It is completely covered with insulating material and jacketed. Proper bosses and tappings are provided for the various controls and piping connections, including an opening in the front of the tank for a domestic water heating coil. Boiler capacities are: 610 sq. ft. equivalent direct steam radiation; 980 sq. ft. equivalent direct hot water radiation.

Underwriters' Listing

Underwriters' Laboratories, Inc. list Oil-O-Matic to burn No. 3 fuel oil. Each burner carries the Underwriters' label. Also approved by all important codes and governing bodies.

Regulations governing oil burner installations are covered thoroughly in "Regulations of the National Board of Fire Underwriters for the Installation of Oil Burning Equipment and for the Storage and Use of Fuel Oils in Connection Therewith."

Fuel Oil Range Burners

Williams Oil-O-Matic fuel oil burner for use in conjunction with heavy duty ranges. All exclusive Oil-O-Matic features. Economical and efficient. Brings oil heat economy to restaurant, hotel, hospital, steamship, dining car, resort and club. The starting and stopping of the motor, the ignition, the varying of the amount of oil burned and of air delivery, are all controlled with one single lever. The Oil-O-Matic fuel oil range burner is furnished as an integral part of the Oil-O-Matic South Bend Heavy Duty Range.

Engineering Service

Available to architects. See A.I.A. File No. 30 G-1.

AUBURN FOUNDRY, INC.

Manufacturers of Stokers

600 West 11th Street, AUBURN, IND., U. S. A.

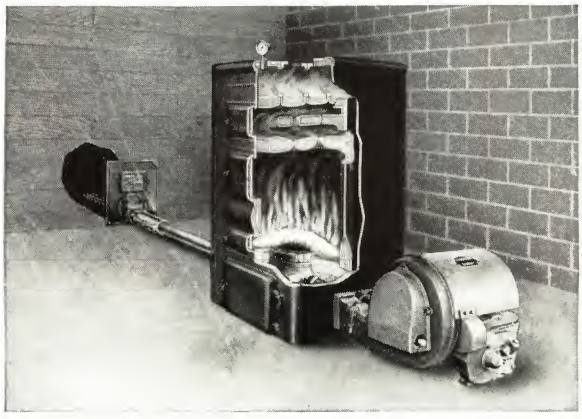
District Offices and Dealers in Principal Cities and Towns in U.S.A. and Canada, also Foreign Countries

DESCRIPTION AND APPLICATION

Auburn stokers are made in thirty-two sizes—from small domestic to 1000 boiler horsepower, both screw feed and hydraulic ram type. There are thirty years of successful combustion engineering and manufacturing experience behind the Auburn line.

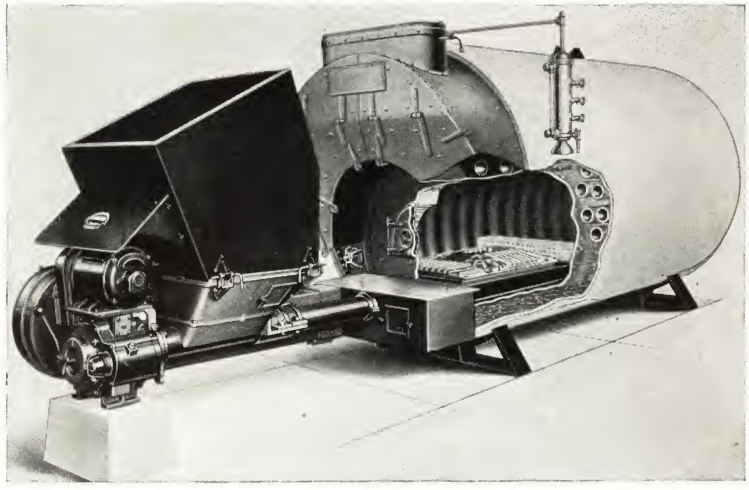
Auburn stokers are not only adapted to all types of heating and power boilers and furnaces, but special application to bake ovens, kilns, enameling ovens, dryers and foundry core ovens is also possible.

Special Bin Fed models and Bake Oven stokers are furnished only in screw type stokers.



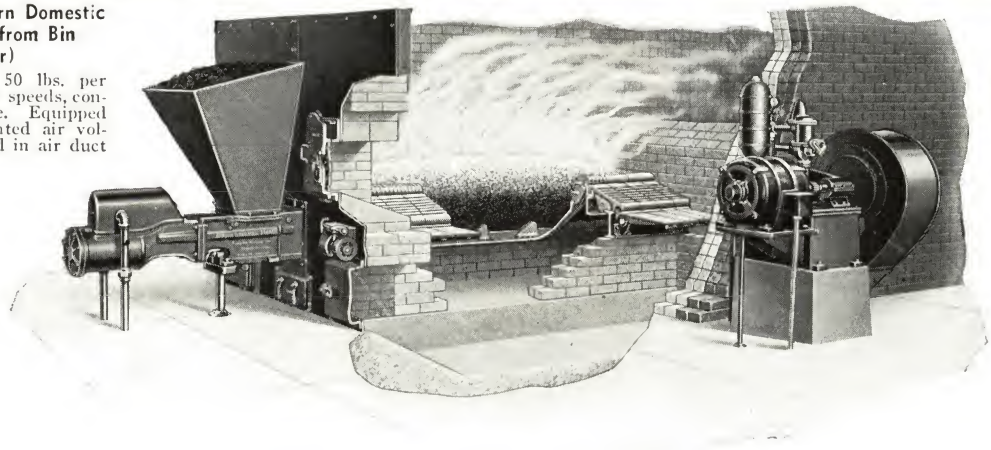
Type DXLD Auburn Domestic Stoker (Feeds from Bin to Burner)

Capacity 20 to 50 lbs. per hour coal feed, two speeds, continuous gear drive. Equipped with Auburn patented air volume meter installed in air duct



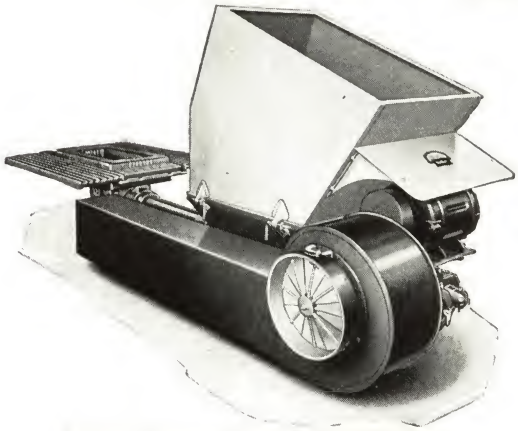
Auburn Scotch Marine Stoker

Self-contained unit, 75 to 800 lbs. coal feed per hour (screw feed)



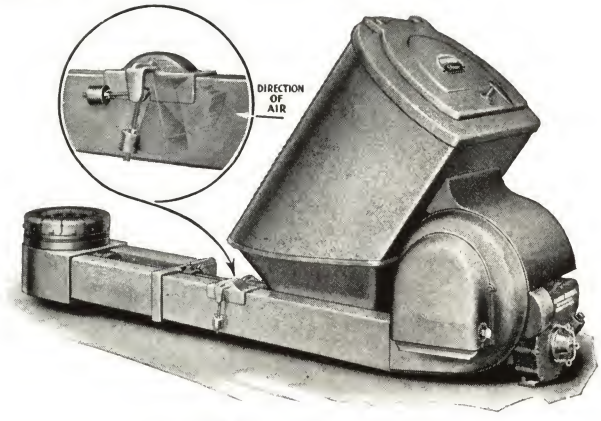
Type SD Auburn Commercial and Industrial Stoker

Hydraulic drive, ram feed, side dump type, capacity 400 to 2400 lbs. coal feed per hour, with outside secondary pusher adjustment



Auburn Commercial and Industrial Stoker

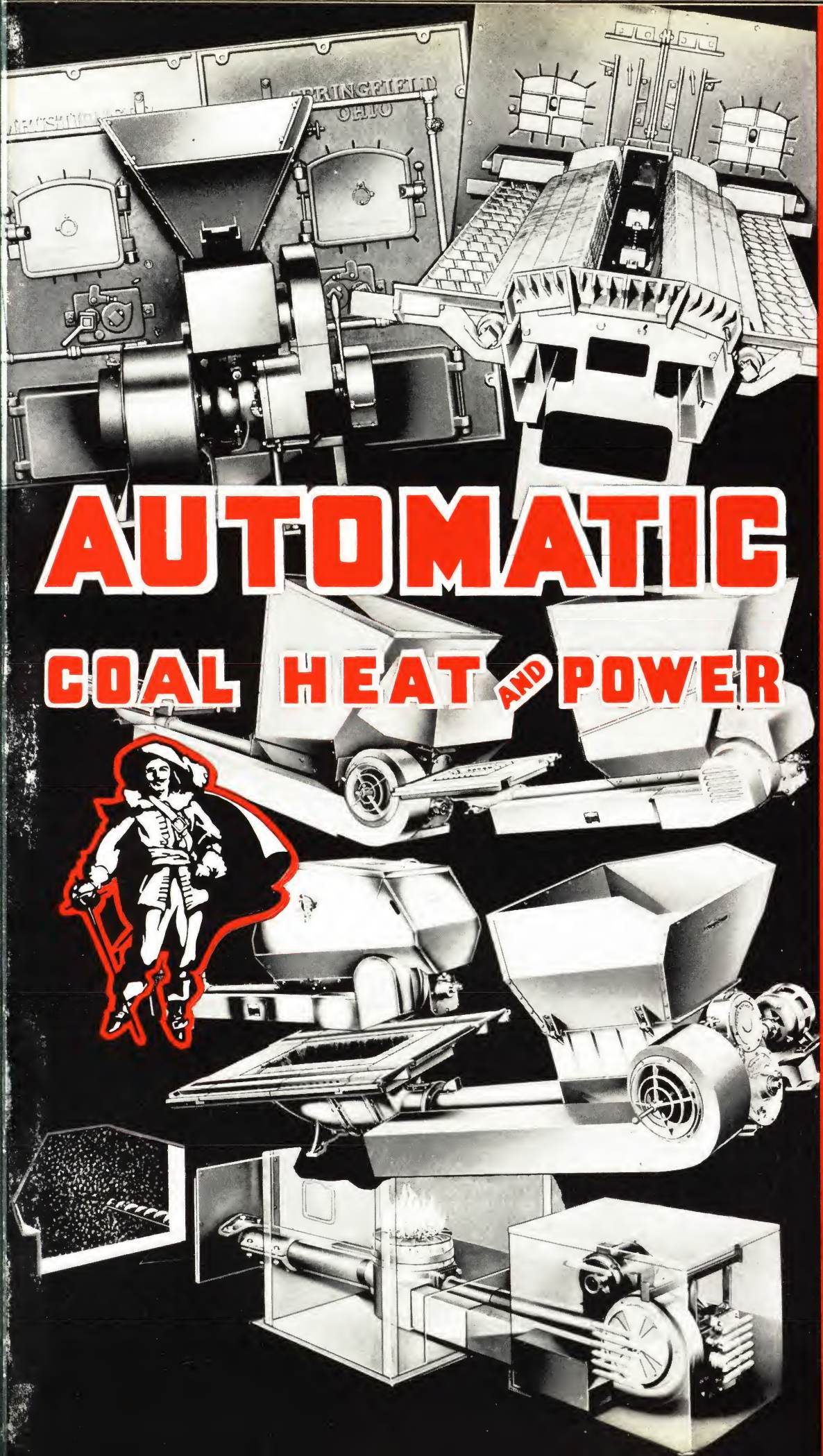
Capacity 200 to 800 lbs. coal feed per hour (screw feed)



Type DX Auburn Domestic Stoker

Equipped with Auburn patented air volume meter installed in air duct. Capacity 18 to 50 lbs. per hour, continuous gear drive

MEMORANDA



AUTOMATIC

COAL HEAT AND POWER

Combustioneer

FOR APARTMENTS AND FACTORIES • HOMES • SCHOOLS



Combustioneer

DIVISION OF THE STEEL PRODUCTS ENGINEERING CO.

SPRINGFIELD, OHIO

BACK of the COMBUSTIONEER Automatic Coal Burner stands an organization of strength, stability and integrity, whose experience dates back to the earliest pioneer days of the small stoker.

The men who today determine the policies and guide the destiny of COMBUSTIONEER, are the men who developed, sold and installed the first of the successful small stokers in this country. In the field of coal, heat and power their experience covers a period of more than a quarter of a century.

COMBUSTIONEER is today in its twelfth year of successful operation. COMBUSTIONEER stokers are built completely in our own modern plant. In Springfield, Ohio, are located our Main Offices and Factory; in Chicago, Illinois, is maintained a complete Sales and Engineering Branch; Sales offices are located in every section of the United States.

The established and demonstrated merit and quality of COMBUSTIONEER is proved by its consistent and steady growth in every state in this country where bituminous coal is burned, as well as by its success in foreign countries.

RESEARCH AND DESIGN

Today's line of COMBUSTIONEER is the finest in design, quality, workmanship and performance in the history of the company. Outstanding features, such as the Breathing Fuel Bed; Automatic Air Control, Automatic Safety Clutch insures performance second to none.

A completely equipped experimental laboratory is constantly engaged in research for improvements in design, construction and performance. Quantity production, favorable contracts and large volume sales enable COMBUSTIONEER to offer unusually attractive prices — and it is our confident belief that the value of COMBUSTIONEER is unmatched.

SERVICE TO ARCHITECTS

A COMBUSTIONEER is available for practically any heating or power job. In addition to boiler applications it can easily be adapted to many special jobs. Architects who are concerned in the installation of Automatic Coal Burning equipment in homes, factories, institutions, apartment buildings or special applications are urged to consult our local dealers or write directly to our Main Office. A competent staff of trained engineers will be at your service.

• Here in the Engineering Department is where the precision construction of Combustioneer originates.



• Combustioneer Automatic Coal Burners are given grueling tests in the Research and Testing Laboratory.



• Here the precision-built parts are assembled to make completed Combustioneers.



SELECTING THE RIGHT *Combustioneer*

The selection of the proper COMBUSTIONEER involves knowing the B.t.u. value of the coal to be used, the capacity and rating of the boiler, and the load to be carried.

When these three factors are known, the correct size of COMBUSTIONEER can be selected by referring to the "Selection Chart" shown below. The choice of ample size stoker for the particular job to be done is insurance of longer life and lower operating costs; it also results in low fuel consumption and quick pick-up response to load demands.

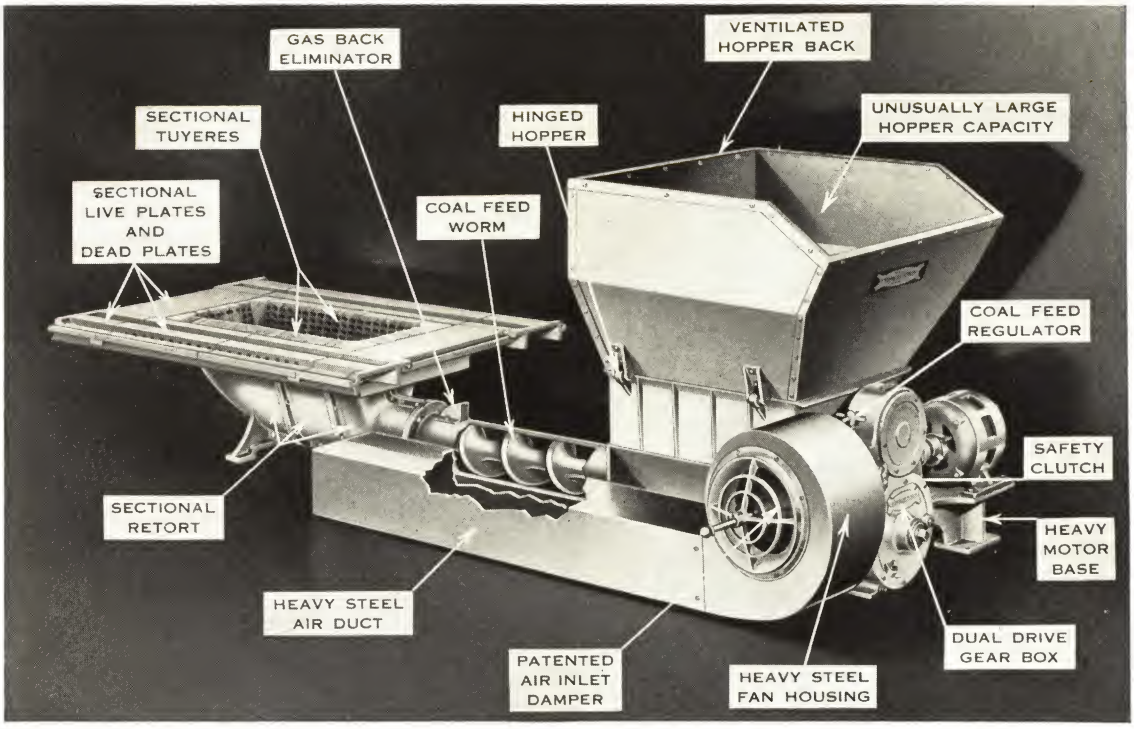
SELECTION DATA

COMMERCIAL MODELS

Coal B.t.u.	Steam Sq. ft. E.D.R.	Hot Water Sq. ft. E.D.R.	Boiler Hp.	Stoker Model	Coal Burning Capacity		Hopper Capacity Lbs. Approx.	Overall Dimensions Inches			Page No.
					Max.	Min.		Lgth.	Wdth.	Ht.	
11500	2156	3450	15	7½	75	25	700	98	27½	31¾	7
	2875	4600	21	10	100	33	700	103	27½	31¾	7
	4672	7475	33	15	150	17	750	119	40¼	47⅝	8
	6228	9964	46	20	200	40	750	118⅝	40¼	47⅝	8
	7786	12458	56	25	250	40	1000	116¾	42½	54½	9
	10901	17442	78	35	375	40	1000	130¾	43¾	56	9
	16771	26829	120	50	600	83	1250	136 11/16	67 13/32	51 3/32	10
	23479	37566	168	70	700	83	1250	148 11/16	67 13/32	51 3/32	10
	30187	48300	216	90	900	90	1250	150⅜	74 15/16	51 3/32	10
12500	2344	3750	17	7½	75	25	700	98	27½	31¾	7
	3125	5000	22	10	100	33	700	103	27½	31¾	7
	5078	8125	36	15	150	17	750	119	40¼	47⅝	8
	6769	10832	49	20	200	40	750	118⅝	40¼	47⅝	8
	8464	13541	61	25	250	40	1000	116¾	42½	54½	9
	11849	18958	85	35	375	40	1000	130¾	43¾	56	9
	18229	29162	131	50	600	83	1250	136 11/16	67 13/32	51 3/32	10
	25521	40832	183	70	700	83	1250	148 11/16	67 13/32	51 3/32	10
	32812	52500	235	90	900	90	1250	150⅜	74 15/16	51 3/32	10
14000	2625	4200	19	7½	75	25	700	98	27½	31¾	7
	3500	5600	25	10	100	33	700	103	27½	31¾	7
	5687	9100	41	15	150	17	750	119	40¼	47⅝	8
	7584	12132	53	20	200	40	750	118⅝	40¼	47⅝	8
	9479	15166	68	25	250	40	1000	116¾	42½	54½	9
	13271	21233	95	35	375	40	1000	130¾	43¾	56	9
	20417	32662	146	50	600	83	1250	136 11/16	67 13/32	51 3/32	10
	28583	45732	203	70	700	83	1250	148 11/16	67 13/32	51 3/32	10
	36750	58800	264	90	900	90	1250	150⅜	74 15/16	51 3/32	10

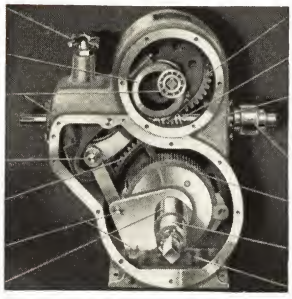
DOMESTIC MODELS

Coal B.t.u.	Steam Sq. ft. E.D.R.	Hot Water Sq. ft. E.D.R.	Warm Air Pipe Area Sq. in.	Stoker Model	Coal Burning Capacity		Hopper Capacity Lbs. Approx.	Overall Dimensions Inches			Page No.
					Max.	Min.		Lgth.	Wdth.	Ht.	
11500	517	827	857	2	20	12	400	80 3/16	24½	30¾	12
	720	1150	1190	2½	25	8.17	400	80⅛	25½	30¾	12
	1006	1610	1665	3½	35	27.19	400	80 3/16	25½	30¾	12
	1440	2300	2380	5	50	35.16	400	89	25½	30¾	12
12500	562	900	930	2	18	12	400	80 3/16	24½	30¾	12
	782	1250	1290	2½	25	8.17	400	80⅛	25½	30¾	12
	1094	1750	1811	3½	35	27.19	400	80 3/16	25½	30¾	12
	1564	2500	2580	5	50	35.16	400	89	25½	30¾	12
14000	630	1008	1044	2	18	12	400	80 3/16	24½	30¾	12
	875	1400	1450	2½	25	8.17	400	80⅛	25½	30¾	12
	1225	1960	2029	3½	35	27.19	400	80 3/16	25½	30¾	12
	1750	2800	2900	5	50	35.16	400	89	25½	30¾	12



Combustioneer CONSTRUCTION

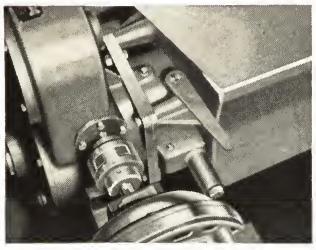
COMBUSTIONEER is a proved product. It is the fruition of many years of experience in the design, construction and operation of coal burning equipment. The entire engineering profession recognizes the principles used in COMBUSTIONEER construction as sound and correct.



GEAR BOX

GEAR BOX

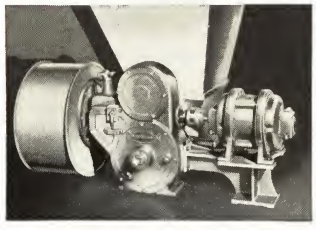
It is of a heavy duty, intermittent feed type designed to produce the COMBUSTIONEER Breathing Fuel Bed action, so essential to the efficient burning of coal. Has only three rotating parts. Positive splash and contact oil system. Every part accessible from the front. From six to thirteen rates of coal feed. Rates of feed may be changed without stopping stoker.



SAFETY CLUTCH

SAFETY CLUTCH

In case of overload, COMBUSTIONEER'S patented Safety Clutch automatically and immediately disconnects the coal feed worm from the driving gear. Shearing pins are eliminated. Adjustable to suit any kind of coal used. Reengaged by simply pulling a lever.



FRONT CONSTRUCTION

FRONT CONSTRUCTION

This shows the construction used in the larger sizes of COMBUSTIONEER. Desired coal feeds are obtained by turning the coal feed handle. Indicator plate shows the amount of coal being fed.

RETORT

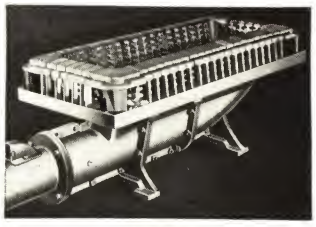
Combustion starts in the retort. Here is provided the proper mixture of air and coal for efficient combustion. The COMBUSTIONEER Retort is built in sections to take care of expansion and contraction. Sides and ends are shaped to allow free movement of air to tuyere blocks and to assure free upward flow of coal. Designed to prevent backward flow of air into hopper.

AIR SYSTEM (Hand Control)

The fan is especially designed for quietness and balance. Surging of air current and uneven static pressures eliminated. Patented, micrometer adjustment air control insures exact amount of air necessary for best combustion.

ACCESS PLATE

This patented feature permits removal of obstructions from feed worm without emptying coal hopper. Located at throat of coal feed tube.



RETORT



AIR SYSTEM



ACCESS PLATE

Combustioneer

AUTOMATIC AIR ADJUSTER

The need for automatically controlling the air supply has been recognized since stokers were first built. The COMBUSTIONEER Automatic Air Adjuster is of the static type. It affords the broadest possible range of accurate draft control.

Once adjusted for a specific installation and type of coal, the COMBUSTIONEER Automatic Air Adjuster provides and maintains, without further attention, the proper fuel-air ratio for efficient and economical operation. Fuel bed, stack draft or load changes are immediately compensated. The result is uniformly high efficiency, better clinker conditions and a marked reduction in fly ash.

Since the COMBUSTIONEER Automatic Air Adjuster operates on static pressure, it closes at once when the stoker stops. By cutting down excess air supply, longer idle periods result. When the stoker again starts, the damper cannot open until pressure has been built up. Because it opens slowly the tendency to blow fly ash out of the fire into the tubes is reduced.

For any given coal there is required a definite weight of air per pound of coal to supply the oxygen required for combustion.

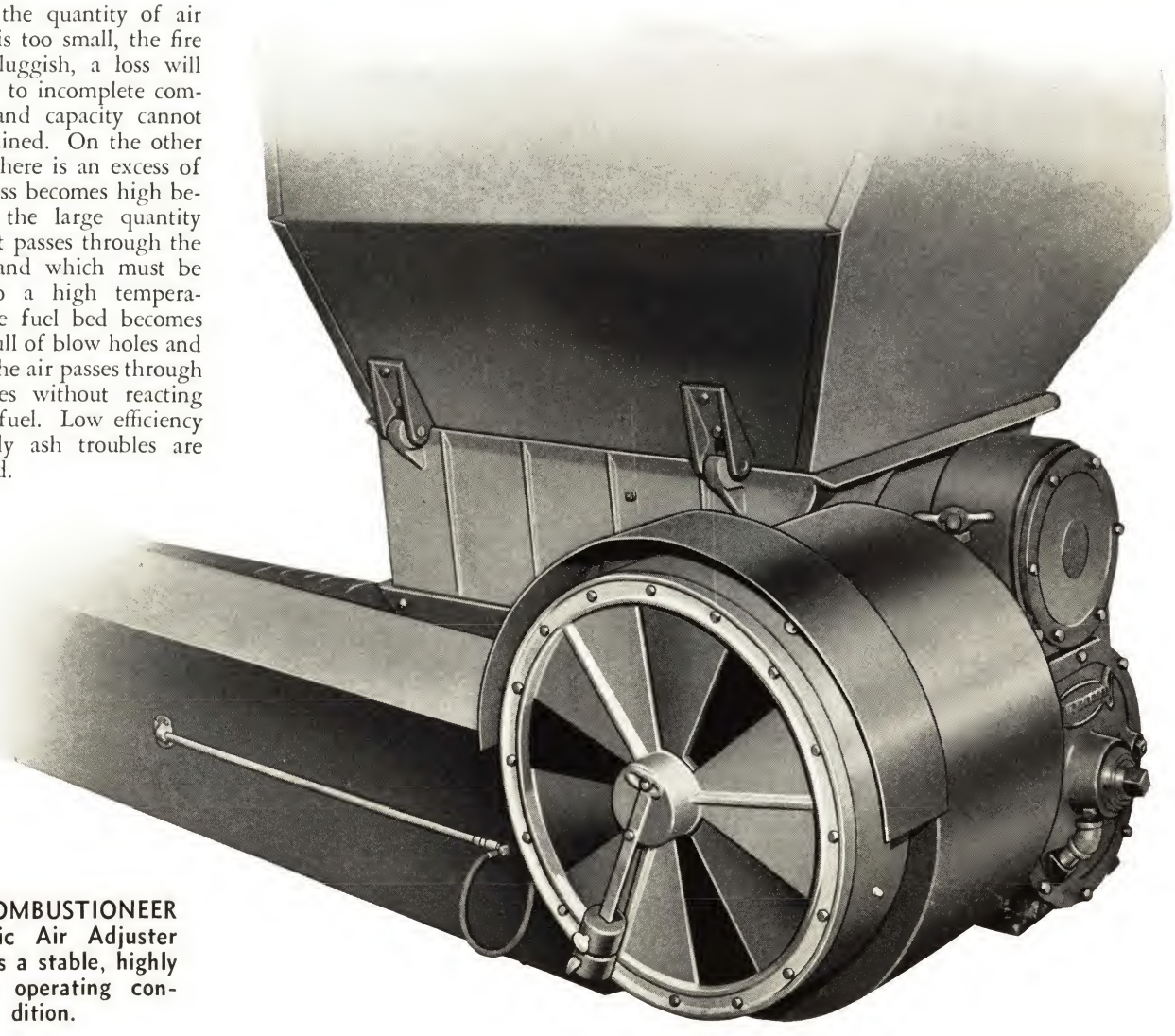
When the quantity of air supplied is too small, the fire will be sluggish, a loss will occur due to incomplete combustion, and capacity cannot be maintained. On the other hand, if there is an excess of air, the loss becomes high because of the large quantity of air that passes through the furnace, and which must be heated to a high temperature. The fuel bed becomes thin; is full of blow holes and much of the air passes through these holes without reacting with the fuel. Low efficiency results; fly ash troubles are aggravated.

A fuel bed offers resistance to the passage of air. This resistance varies with the thickness and density of the fuel bed.

If the fan is run with a wide open damper, the air supply will be too great for a thin fire bed, so we close the damper. If we close it even a little too much, we reduce the rate of combustion below the rate of coal feed and the fuel bed builds up, increases the resistance and reduces the air supplied.

It is practically impossible to manually regulate the air supply to conform to the always changing fuel bed conditions.

The purpose of the COMBUSTIONEER Automatic Air Adjuster is to compensate for variations in fuel bed resistance as rapidly as they occur. The damper opening being corrected automatically to the proper position for maintaining the pre-determined air supply, any tendency for change in fuel bed conditions is counteracted immediately by this amazingly simple device.



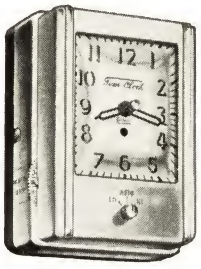
The COMBUSTIONEER Automatic Air Adjuster maintains a stable, highly efficient operating condition.

Combustioneer AUTOMATIC CONTROLS

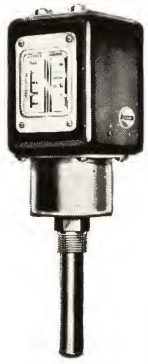
Successful automatic firing demands correct, automatic, dependable controls. The controls used with COMBUSTIONEER stokers have been designed to accomplish specific results. They are carefully checked for accuracy of operation and can be depended upon implicitly.

Any predetermined degree of temperature or pressure is maintained automatically. Firing is controlled as required. Electrical control instruments for any type or condition of installation are provided. They have been carefully selected. They are essential to successful COMBUSTIONEER operation.

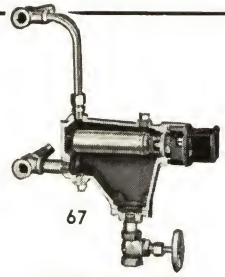
Some of these controls are shown below.



ELECTRIC CLOCK

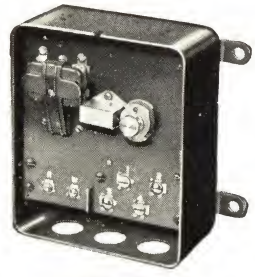


HOT WATER CONTROL



67

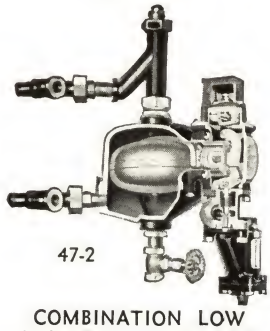
LOW WATER CUT OFF



TIME RELAY



RELAY



47-2

COMBINATION LOW WATER CUT OFF AND FEEDER



THERMOSTAT



PRESSURE CONTROL

Combustioneer WORM FEED COMMERCIAL MODELS

In the modern boiler room there is a new standard of boiler firing efficiency and control. Improved methods of burning coal have brought about this new standard. Controlled firing and burning of coal is today an essential in the profitable production of steam heat or power.

COMBUSTIONEER is a pioneer in the stoker industry. Its practical value has been proved in thousands of installations over a period of many years. Near you is a COMBUSTIONEER installation. It may be in an apartment building—in a factory—laundry—greenhouse—dairy—school building—hospital or similar boiler plant. Wherever it is, it is working tirelessly, automatically making and maintaining steam pressure or heat. It is responding instantly to every fluctuating demand for heat or steam—transforming every dollar's worth of coal into useful heat or energy.

Coal, always the preferred fuel, is given a new value by the installation of COMBUSTIONEER—a new value in economy and efficiency.

For commercial installations COMBUSTIONEER has designed a complete line that will meet every requirement. On the following pages are illustrated and described all COMBUSTIONEER models except our No. 120. Data for this particular model will be furnished on request.

COMBUSTIONEER utilizes the most modern developments of efficient fuel burning. Coal is fed automatically, as required, into the retort and to the fire from below. The air supply is automatically regulated to meet the varying conditions of the fuel bed and load.

With COMBUSTIONEER coal is burned correctly, thus securing the greatest amount of heat, hot water or steam per pound of fuel. Its operation costs less because less expensive sizes of coal may be used. It further reduces fuel bills, burning all the combustible in the fuel. Volatile gases, so often wasted in the form of smoke, are turned into useful, efficient heat. Highest boiler efficiency is secured because COMBUSTIONEER keeps an evenly distributed bed of progressively burning coal in the fire box—scientifically fired and fed.

Due to COMBUSTIONEER'S highly efficient combustion and the resultant clean, sootless condition of the boiler tubes, it is possible to greatly increase the output and rating of a hand-fired boiler. Increased boiler capacities of from 30 to 50 per cent may be secured. Loads can be pushed more rapidly. Constant, uniform temperature or pressure is secured even under wide fluctuations because it burns coal only as needed and in direct proportion to load requirements.

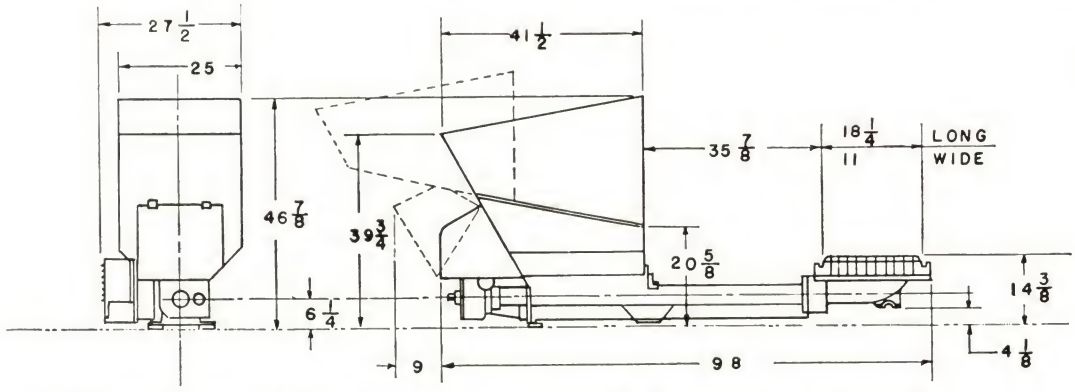
SMALL COMMERCIAL MODEL

COAL BURNING CAPACITY—
25, 50, 75 lbs. per hr.
HOPPER CAPACITY—700 lbs.
SIZE OF MOTOR—⅓ hp.

Patented, intermittent feed gear box, affording the Breathing Fuel Bed. SAFETY CLUTCH—no shear pins. Steel hopper and base—LARGE sliding hopper—rubber mounted motor—belt driven. Sirocco type fan with patented Automatic Respirator. Air controlled at intake. Patented access plate. Sectional tuyeres and dead plates. COMBUSTIONEER automatic controls. Furnished with closed hopper and longer feed worm on special order.



TYPICAL MODEL NOS. 7½ AND 10



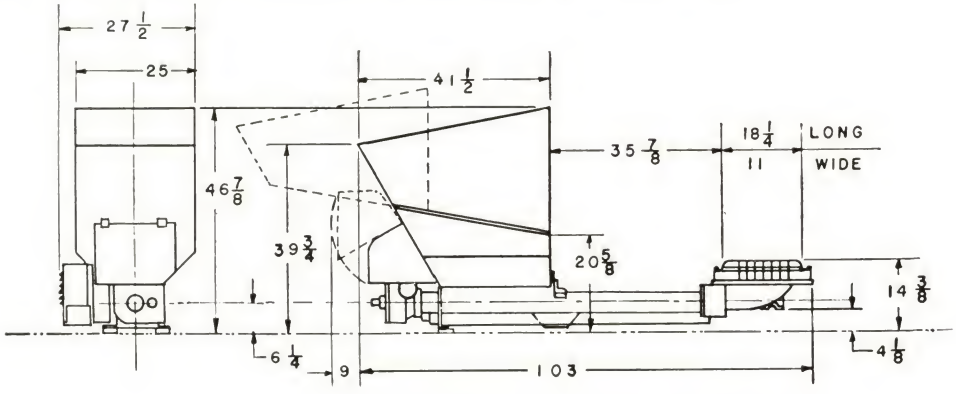
CAPACITIES AND RATINGS

	Coal Burning Cap. Lbs. per hr.		Approx. Cap. Hopper		Motor Drive
Model 7½	Max.	Min.	Cu. ft.	Lbs.	Horsepower
	75	25	8 or 14	400 or 700	1/3

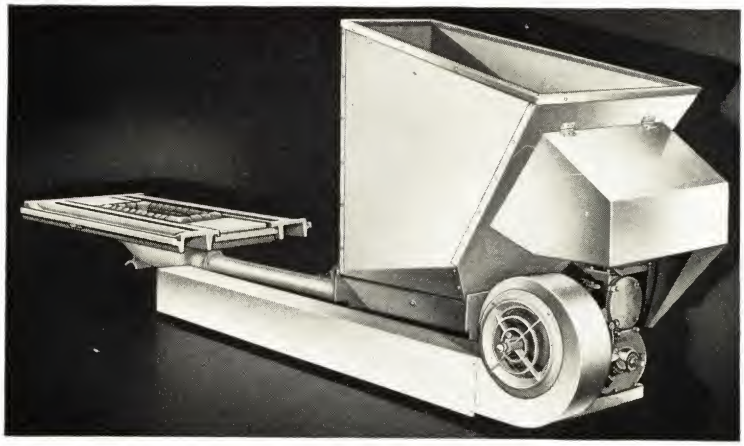
	Coal Burning Cap. Lbs. per hr.		Approx. Cap. Hopper		Motor Drive
Model 10	Max.	Min.	Cu. ft.	Lbs.	Horsepower
	100	35	8 or 14	400 or 700	½

COAL BURNING CAPACITY—
35, 70, 100 lbs. per hr.
HOPPER CAPACITY—700 lbs.
SIZE OF MOTOR—½ hp.

The patented intermittent feed gear box affords the Breathing Fuel Bed. Gears protected by safety clutch—no shear pin. Hopper and base of steel. Large sliding hopper. The motor is mounted on rubber. Belt driven. Air controlled at the intake of the Sirocco type fan by means of the patented Automatic Respirator. Patented access plate. Sectional tuyeres and dead plates. COMBUSTIONEER Automatic controls used. Furnished with closed hopper and longer feed worm if desired.



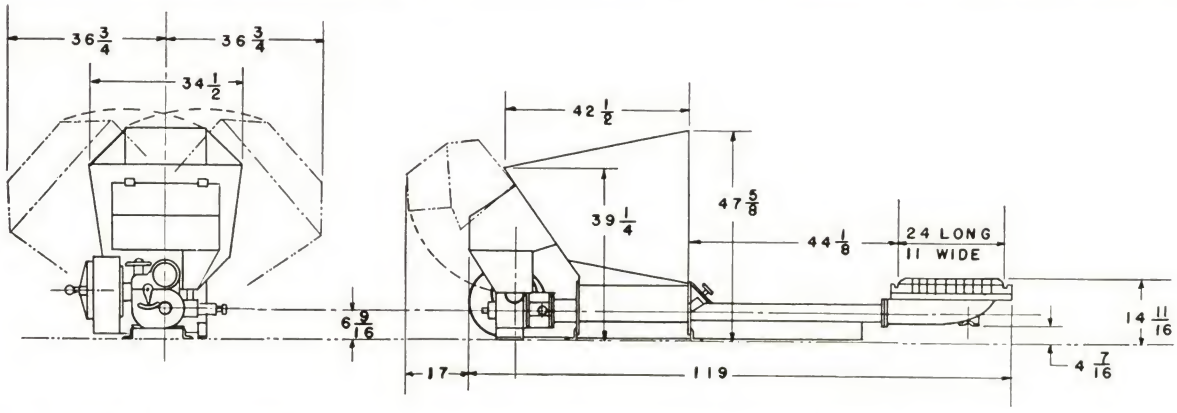
HEAVY DUTY MODEL



TYPICAL MODEL NOS. 15 AND 20

COAL BURNING CAPACITY—
20 to 150 lbs. per hr.
HOPPER CAPACITY—700 lbs.
SIZE OF MOTOR—1 hp.

This is the smallest of the HEAVY DUTY UNITS. Employs the patented intermittent feed gear box affording the Breathing Fuel Bed. Gear box protected by the safety clutch. Hopper base of steel. Hopper of steel and can be tipped to either side. The motor is belt connected to the gear box. Patented air control permits proper static pressure. Sirocco type fan. Sectional tuyeres and dead plates. Patented access plate. COMBUSTIONEER controls used. Furnished with longer feed worm if desired.

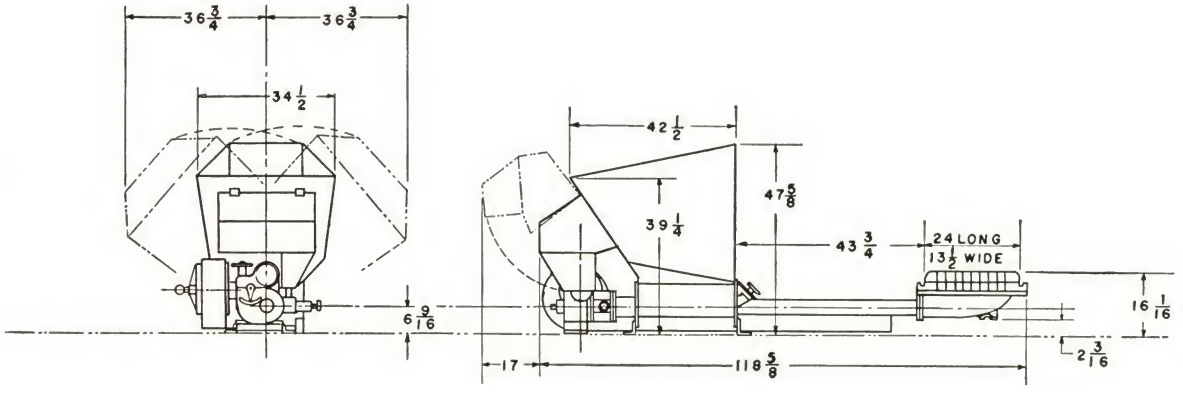


COAL BURNING CAPACITY—
40 to 200 lbs. per hr.
HOPPER CAPACITY—700 lbs.
SIZE OF MOTOR—1½ hp.

Employs the patented intermittent feed gear box affording the Breathing Fuel Bed. Gear box protected by the safety clutch. Hopper base of steel. Hopper of steel. Can be tipped to either side. Motor is belt connected to the gear box. Patented air control permits proper static pressure. Sirocco type fan. Sectional tuyeres and dead plates. Patented access plate. COMBUSTIONEER controls used. Furnished with longer feed worm if desired.

CAPACITIES AND RATINGS

	Coal Burning Cap. Lbs. per hr.		Approx. Cap. Hopper		Motor Drive
Model 15	Max.	Min.	Cu. ft.	Lbs.	Horsepower
	150	30	15	750	1
Model 20	Max.	Min.	Cu. ft.	Lbs.	Horsepower
	200	40	15	750	1½



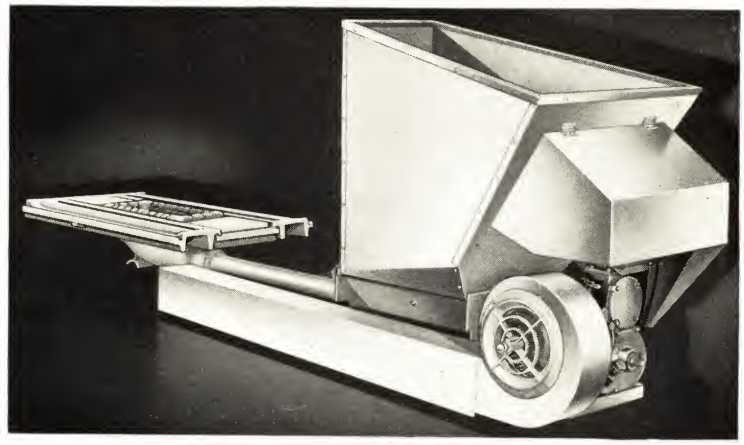
HEAVY DUTY MODEL

COAL BURNING CAPACITY—
40 to 250 lbs. per hr.

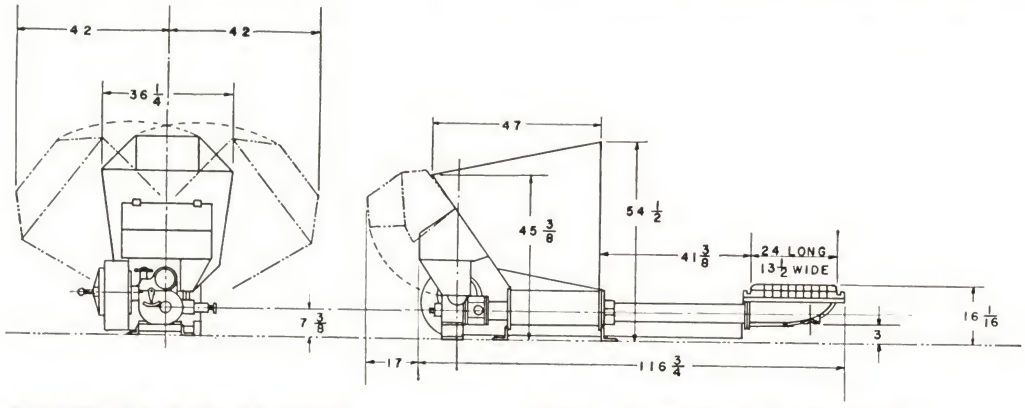
HOPPER CAPACITY—1000 lbs.

SIZE OF MOTOR—1½ hp.

Equipped with the patented intermittent feed gear box affording the Breathing Fuel Bed. Safety clutch protects the gear box. Steel hopper base. Steel hopper that can be tipped to either side. Hopper side nearest the boiler is ventilated. Motor belt connected to gear box. Patented air control Sirocco type fan. Patented access plate. Sectional tuyeres and dead plates. COMBUSTIONEER controls used. Longer feed worm supplied if required.



TYPICAL MODEL NOS. 25 AND 35



CAPACITIES AND RATINGS

	Coal Burning Cap. Lbs. per hr.		Approx. Cap. Hopper		Motor Drive
Model 25	Max.	Min.	Cu. ft.	Lbs.	Horsepower
	250	40	20	1000	1½

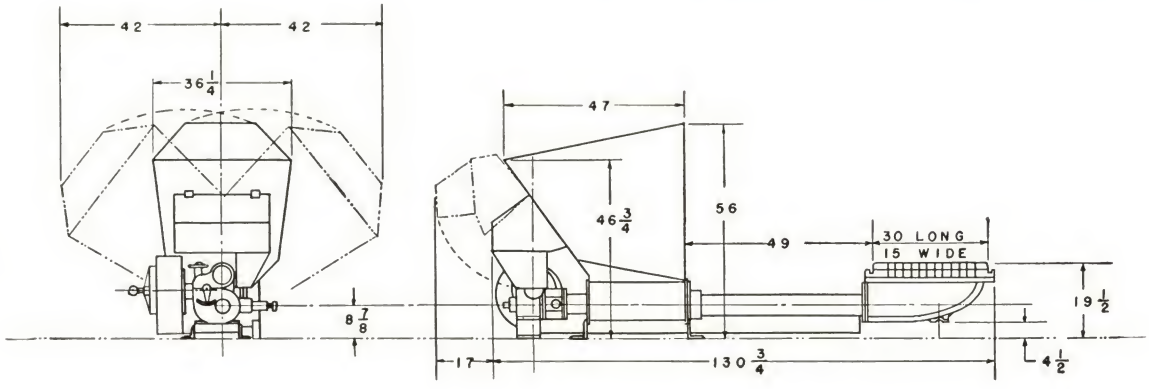
	Coal Burning Cap. Lbs. per hr.		Approx. Cap. Hopper		Motor Drive
Model 35	Max.	Min.	Cu. ft.	Lbs.	Horsepower
	375	70	20	1000	2

COAL BURNING CAPACITY—
40 to 375 lbs. per hr.

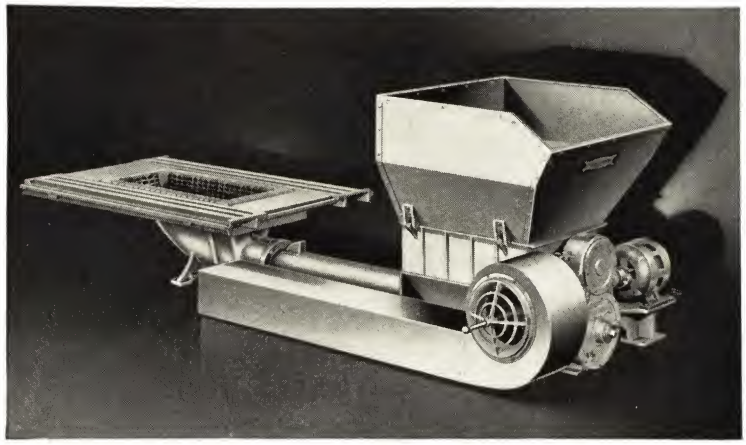
HOPPER CAPACITY—1000 lbs.

SIZE OF MOTOR—2 hp.

Equipped with the patented intermittent feed gear box affording the Breathing Fuel Bed. Safety clutch protects the gear box. Steel hopper base. Steel hopper that can be tipped to either side. Hopper side nearest the boiler is ventilated. Motor belt connected to gear box. Patented air control. Sirocco type fan. Patented access plate. Sectional tuyeres and dead plates. COMBUSTIONEER controls used. Longer feed worm supplied if required.



HEAVY DUTY MODEL



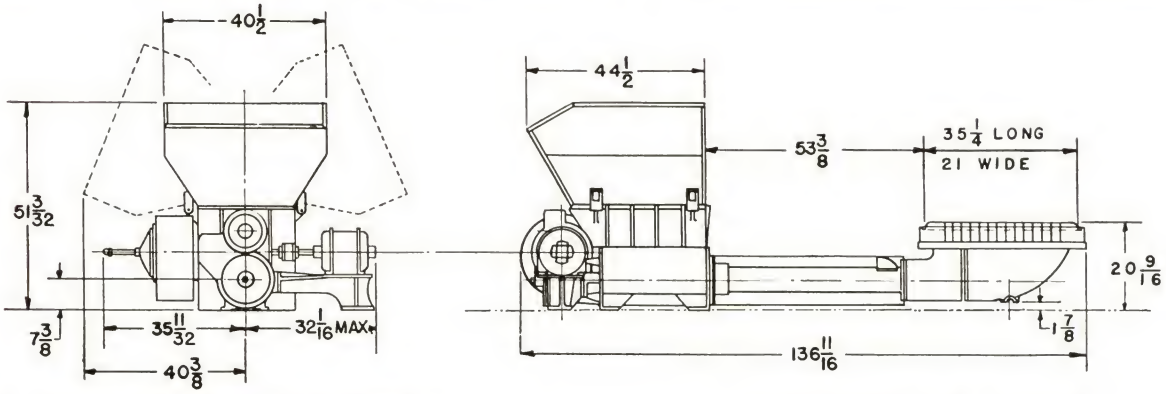
TYPICAL MODEL NOS. 50, 70, 90

COAL BURNING CAPACITY—
75 to 600 lbs. per hr.

HOPPER CAPACITY—1250 lbs.

SIZE OF MOTOR—3 hp.

Equipped with the patented intermittent feed gear box affording the Breathing Fuel Bed. Safety clutch protects the gear box. Steel hopper base. Steel hopper that can be tipped to either side. Hopper side nearest the boiler is ventilated. Motor direct connected to gear box. Patented air control. Sirocco type fan. Patented access plate. Sectional tuyeres and dead plates. COMBUSTIONEER controls used. Longer feed worm supplied if required.



No. 70, COAL BURNING CAPACITY—
85 to 700 lbs. per hr.

No. 90, COAL BURNING CAPACITY—
90 to 900 lbs. per hr.

HOPPER CAPACITY—1250 lbs.

No. 70, SIZE OF MOTOR—3 hp.

No. 90, SIZE OF MOTOR—5 hp.

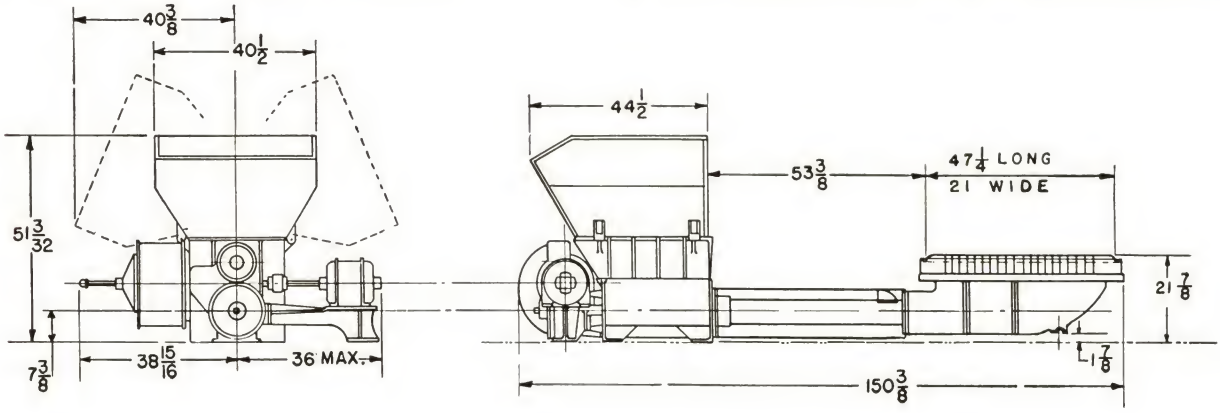
Equipped with the patented intermittent feed gear box affording the Breathing Fuel Bed. Safety clutch protects the gear box. Steel hopper base. Steel hopper that can be tipped to either side. Hopper side nearest the boiler is ventilated. Motor directed connected to gear box. Patented air control. Sirocco type fan. Patented access plate. Sectional tuyeres and dead plates. COMBUSTIONEER controls used. Longer feed worm supplied if required.

CAPACITIES AND RATINGS

	Coal Burning Cap. Lbs. per hr.		Approx. Cap. Hopper		Motor Drive
Model 50	Max.	Min.	Cu. ft.	Lbs.	Horsepower
	600	75	25	1250	3

	Coal Burning Cap. Lbs. per hr.		Approx. Cap. Hopper		Motor Drive
Model 70	Max.	Min.	Cu. ft.	Lbs.	Horsepower
	700	85	25	1250	3

	Coal Burning Cap. Lbs. per hr.		Approx. Cap. Hopper		Motor Drive
Model 90	Max.	Min.	Cu. ft.	Lbs.	Horsepower
	900	90	25	1250	5



BIN-FEED HEAVY DUTY MODELS

For HEAVY DUTY COMMERCIAL SERVICE

COMBUSTIONEER commercial models are also available in Bin Feed types. Coal is carried directly from the main coal bin to the boiler, eliminating the necessity of filling the hopper by hand. The fuel is carried by means of a powerful, quiet screw conveyor. These conveyors are available in varying lengths and may enter the boiler from the side, front or rear. Full details of standard or special applications will be furnished on request.



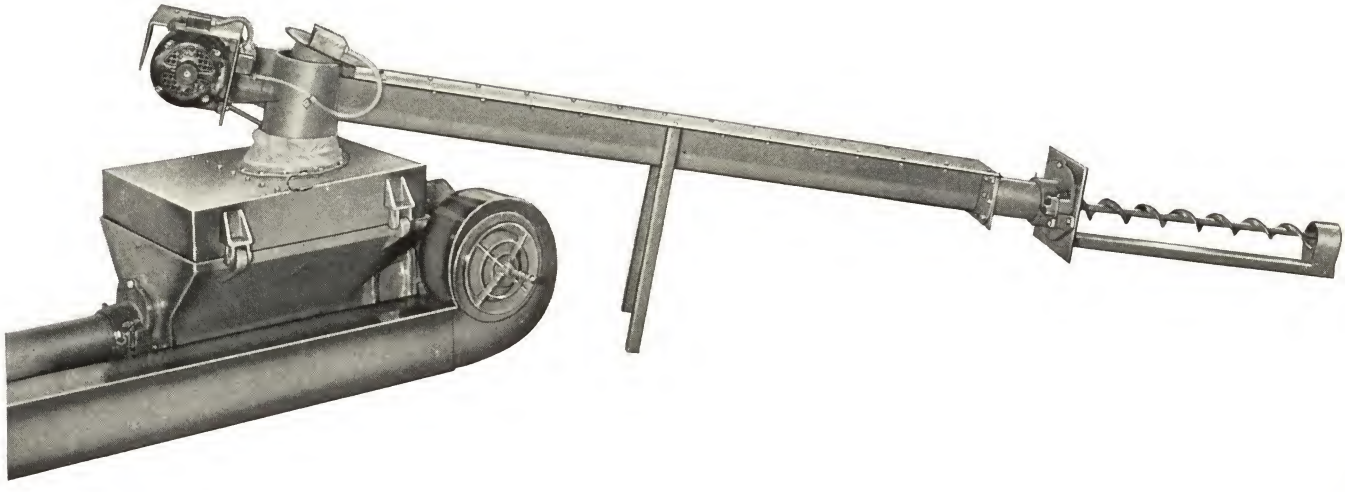
COMBUSTIONEER BIN FEEDER

Below is illustrated the COMBUSTIONEER Bin Feeder. To a standard COMBUSTIONEER Stoker this feeder is attached. Coal is carried by a powerful steel conveyor screw from the coal storage bin to the stoker hopper. The screw is designed to prevent packing of coal in the tube; is ruggedly built to insure long life and insures a continuous flow of coal to the hopper. It is designed for commercial models only.

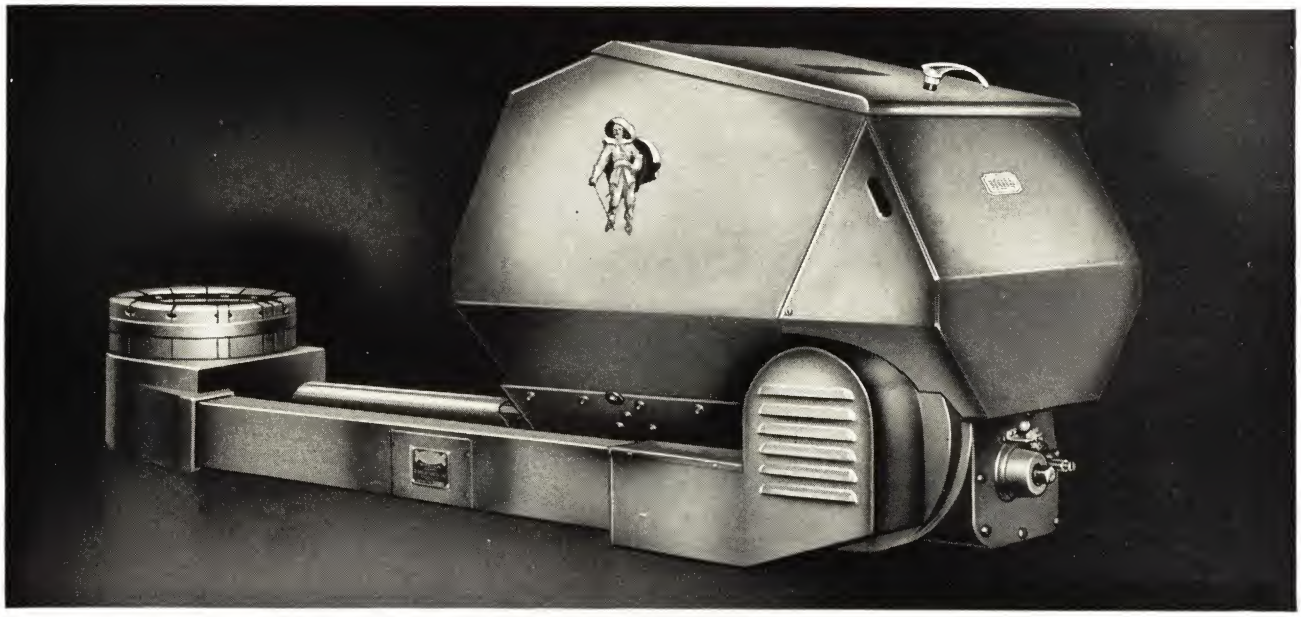
The bin-feeder conveyor is powered with a geared head motor and automatically controlled by means of an electric switch.

The switch automatically cuts off the flow of coal from the bin to the hopper when the hopper is filled to capacity. As the coal is fed from the hopper to the boiler and the coal level in the hopper lowers, the switch again automatically starts the flow of coal from the bin.

The bin-feeder can be swung at any desired angle.



Combustioneer DOMESTIC MODELS

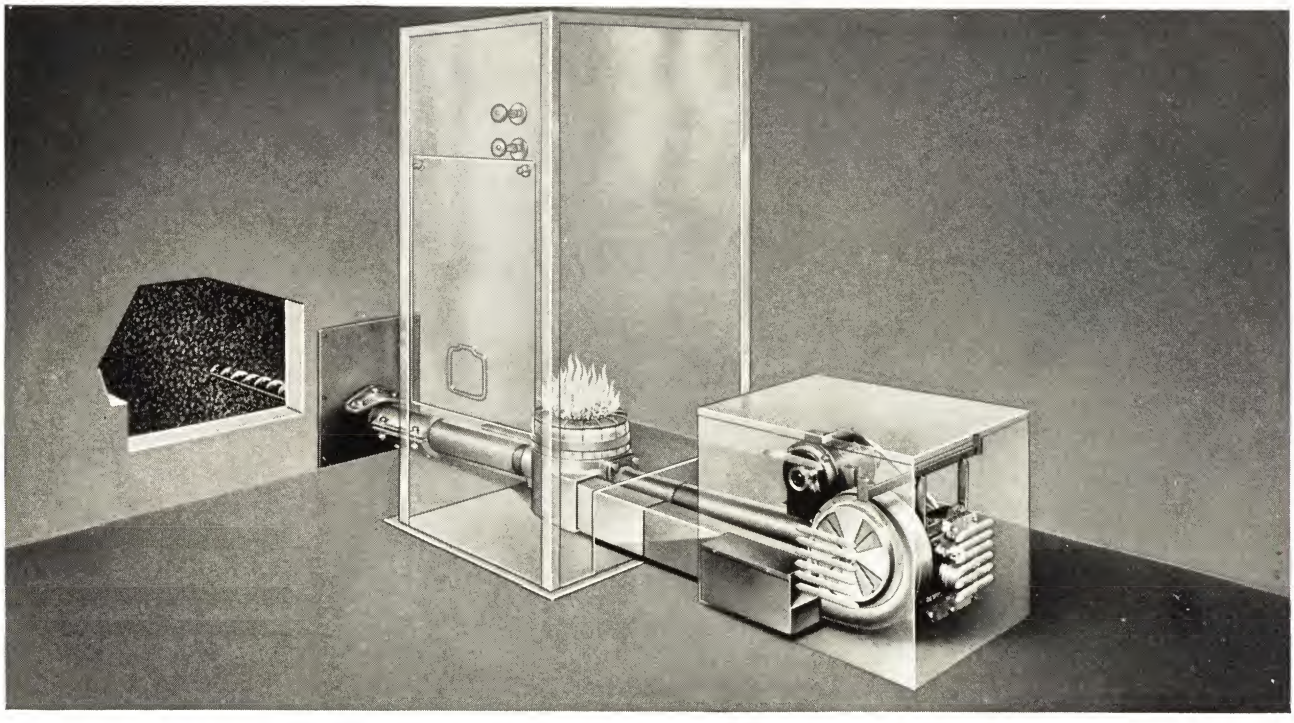


In addition to a complete line of models for commercial installations, there is also a model and size of COMBUSTIONEER for every domestic heating plant.

Domestic models are sturdily built, attractive in appearance and may be quickly and easily installed in hot water, steam, vapor or warm air residence plants. To conform to conditions in any basement, they may be installed from front, rear or side. They incorporate such outstanding COMBUSTIONEER features as the Breathing Fuel Bed, Automatic Respirator, Automatic Safety Clutch, extra large, dust-proof hopper and full opening lids.

They are available in either hopper or Bin Feed models.

Complete details will be furnished on request.



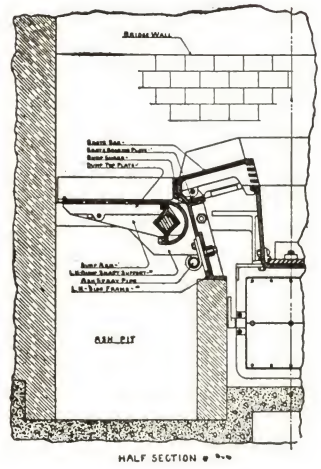
Combustioneer RAMFEED STOKERS

SINGLE RETORT UNDERFEED TYPE S

The COMBUSTIONEER stokers described and illustrated on this and following pages are of the ramfeed type. Brief description and illustrations of this line follows.

The COMBUSTIONEER Underfeed Stoker Type "S" is a truly heavy duty machine of the well-known central retort, side-dump type, designed to deliver efficient, dependable service, and to stand up under the most severe operating conditions. It is available in the popular unit arrangement with individual forced draft fans driven by either a well protected adjustable speed motor, or a two-stage steam turbine, and also in many variations of group drive from line shaft with common forced draft fan operated by steam engine, turbine, or motor. Motor driven unit stokers are equipped with a limit switch interlocked with the automatic control which always stops the ram in the "in" position with the throat opening sealed, which prevents fire burning back through hopper. Study of the illustrations and specifications on this page and the next will reveal that it offers many special features not ordinarily found in this class of equipment.

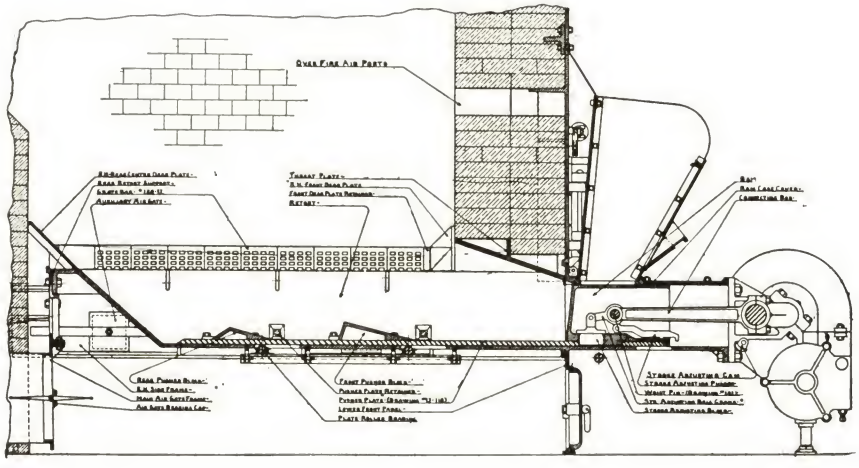
SPECIFICATIONS



HALF SECTION

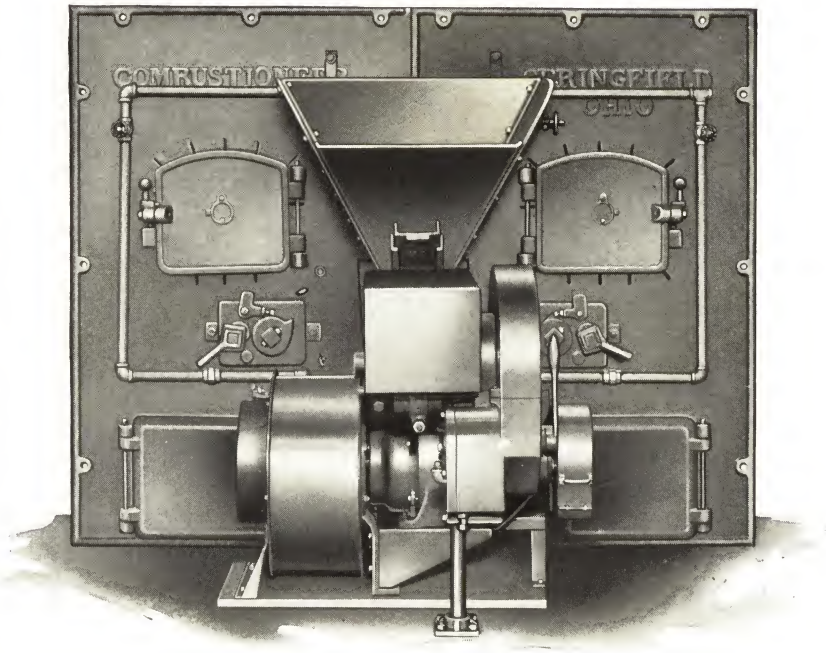
FRAME AND GRATE — The frame of the COMBUSTIONEER Underfeed Stoker is entirely of Cast Iron, and is completely self-contained and independent of the brickwork. Under each side frame a division wall or plate extends from the stoker front to the bridge-wall, and divides the space under the grate surface to form a central air chamber with an ash pit on either side to receive refuse dropped from the dump plates. The center section of the grate surface is composed of heavy, well air-cooled, combination grates and tuyeres extending from the edge of the retort to renewable grate bearing plates bolted on top the side frames, which are held in place by slip-through retaining rods. These rods also hold in place the heavily-ribbed front and rear dead plates used to complete the grate surface and to prevent clinker adhesion to the brickwork.

DUMP PLATES — The two dump sections of the grate are of unusually heavy design with fire bearing surface made up of heavy, non-warping top plates which are replaceable without disturbing the supporting arm and guard assembly. The dump shaft is made in two sections, of such length that the complete dump assembly may be removed without disturbing the brickwork. Dump shaft bearing supports extend into the brick side wall, bracing the side frame and maintaining dump clearance along the wall.



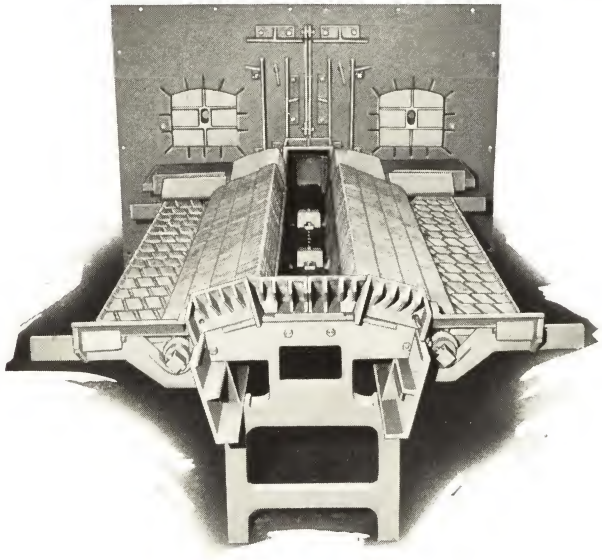
Dumps are manually operated through a 2 to 1 ratio enclosed gearing which, to raise the dump, requires only half the effort that would be needed with the wrench applied directly to the dump shaft, and also raises the dump with a downward movement of the wrench. Dumps are held level by an adjustable pawl and ratchet located on the dump operating gear box.

Combustioneer RAMFEED STOKERS TYPE S



DOORS, FRONT AND HOPPER — All access and inspection doors have safety latches and are carefully fitted to the heavy sectional cast iron stoker front. Inspection doors are extra large and have an indestructible "Cast-in" fire-brick lining, also small peep holes in the center of the door. Sectional cast iron coal hopper with a steel extension is standard equipment.

FEEDING MECHANISM — A reciprocating ram and Roller-Bearing plate operate in the bottom of the retort, receiving charges of fuel from the hopper and distributing it uniformly over the entire grate surface. Different rates of coal delivery are obtained by changing the stroke of the plate in relation to that of the ram. Plate stroke adjustments are made while the stoker is in operation by changing the position of a small weight arm on the crank shaft bearing. The plate is the only moving part of the stoker inside the furnace, and is at all times well protected by green fuel. The ram and plate are mechanically operated by a steel connecting rod and crank shaft through an all-steel Spur-gear-type speed transformer of neat and compact design, equipped with roller bearings and using heat-treated alloy steel gears operating in an oil bath. The gearing is fully enclosed and protected from damage (due to accidental blocking of the ram) by a built-in safety device which eliminates shearing pins, and also serves as a clutch to make service stops and starts of the stoker. All bearings not flooded with oil are lubricated by Alemite-Zerk high pressure oilers.



AIR CONTROL — Slightly preheated air is supplied over the front part of the fire to shorten the flame length where combustion space is restricted. The air is regulated by a Vortex damper controlled from the front of the stoker. Auxiliary air gates are provided through which air under pressure may be supplied under the dump sections to burn out fixed carbon before cleaning fires.

GENERAL — The Type "S" Stoker is made in two grate lengths and four grate widths, giving six different grate areas, with coal burning capacities up to 2,000 lbs. per hour. If the stoker is installed with remotely located forced draft equipment, it is chain driven from a line shaft mounted on the stoker front or in a trench below floor level. All chain drives are enclosed in substantial dust-tight guards. Individual unit-type stokers have a drive direct from the motor which is built-in as part of the stoker.

The value of the COMBUSTIONEER Type "S" Stokers has been proved over many years in all sorts of installations. Built completely in our own modern plant, of carefully selected materials, they can be depended upon to give a long life of economical, highly satisfactory service.

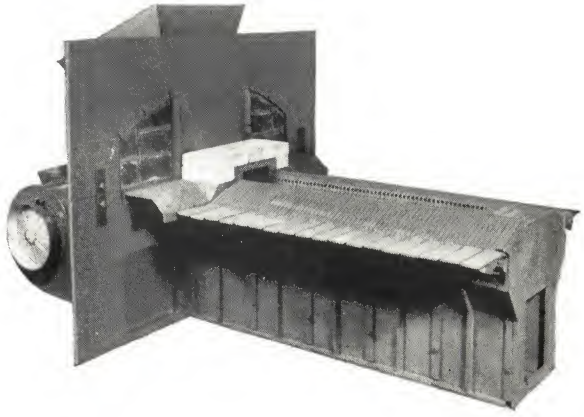
Combustioneer RAMFEED STOKERS TYPE J

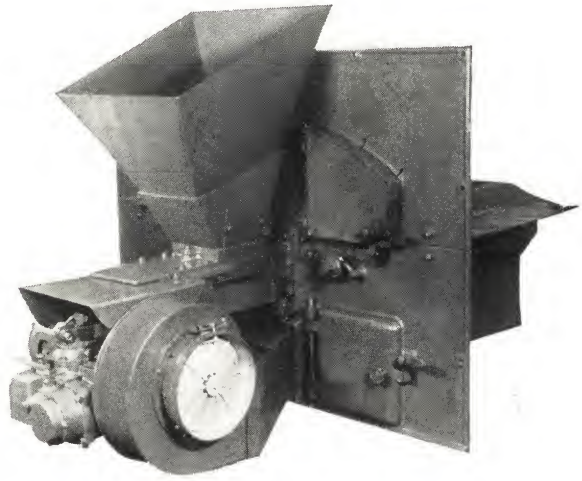
A compact plunger-fed unit with or without side-dump feature, which fills the long-felt need of a high quality automatic stoker for the small and medium size boiler and heating plants. The Type "J" Ramfeed stoker is designed so that if desired it can be applied to boilers where the waterleg is only 17 in. above the floor line.

In offering the COMBUSTIONEER Type "J" Stoker we feel the just pride of the precision manufacturer. From the tip of the totally enclosed gear unit to the toe of the last furnace casting, the design of each and every individual part is the result of many years' experience in the building of automatic stoker equipment.

Such features as cast-iron hopper base, refractory-lined fire doors, air-cooled front wall support, plunger feed with push-rod for secondary fuel distribution, quick-detachable side dump plates, and air tight division plates between the air chamber and ash pits. Auxiliary air grates are provided through which air under pressure may be supplied under the dump grate sections to burn out fixed carbon before cleaning fires. Ash sprays can be furnished if desired.

Only in stokers costing hundreds of dollars more is it possible to duplicate the details of construction, the fuel control, the fuel-bed action, and the general all-around performance of this Type "J" Stoker.





Auxiliary equipment is of the best.

Whatever your plant conditions may be, if there is a "stoker answer" to your problem, COMBUSTIONEER has it.

The type "J" is for application to small and medium-size plants of from 40 to 150 Hp. capacity, or supplying steam to from 4,000 to 15,000 square feet of steam radiation.

Manufactured in several different lengths and widths, practically any desired grate area can be obtained.

H.R.T. boilers, fire box boilers, cast iron boilers, welded boilers, riveted boilers, all kinds of steam and heat generating equipment, with fire boxes long and narrow or short and wide, can be served successfully by COMBUSTIONEER Type "J" Stoker.

COMBUSTIONEER DIVISION

THE STEEL PRODUCTS ENGINEERING COMPANY

SPRINGFIELD, OHIO


Combustion
FOR APARTMENTS AND FACTORIES • HOMES • SCHOOLS
AUTOMATIC
COAL HEAT AND POWER

DETROIT STOKER COMPANY

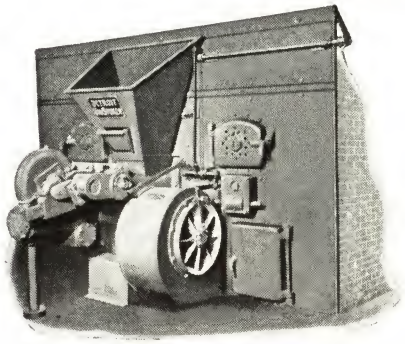
GENERAL SALES AND ENGINEERING OFFICES
General Motors Building, DETROIT, MICH.
DISTRICT OFFICES IN PRINCIPAL CITIES
MAIN OFFICE AND WORKS: MONROE, MICH.
Built in Canada at London, Ontario

Products and Service

DETROIT STOKERS: Built in various types and sizes to serve heating and power boilers from approximately 30 hp. upwards. They are also used for special industrial process heating. Bituminous coals, obtainable in all sections are successfully burned. Savings varying from 20% to 40% over other firing methods are not uncommon with Detroit Stokers. Less expensive smaller sizes of coal are used. Our engineers will study your requirements. District offices, located in principal cities, will furnish catalogs of any Detroit Stoker, or write DETROIT STOKER COMPANY, Detroit, Mich.

Since 1898

BETTER HEATING AT LOWER COST



Detroit UniStoker
With Detroit Adjustable Feed. (Provides a Wide Range of Coal Feed Control)

Detroit Single Retort and Detroit UniStoker

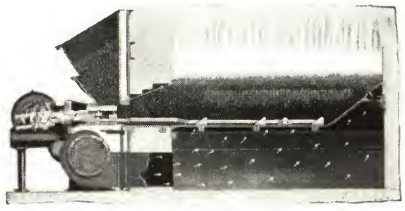
For boilers from 100 to 300 hp., Detroit UniStokers are mechanically driven, adjustable plunger feed, side cleaning Stokers. They provide a large active grate area with independent control of fuel feed and distribution. Built in many sizes and capacities to suit the boiler, kind of coal, and load.

Heavily built for many years of continual hard service. Highly efficient, thousands in daily operation.

Write for Bulletin 660.



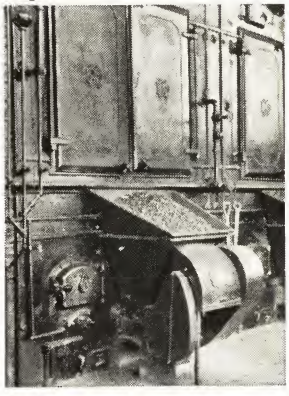
Detroit UniStokers with Horizontal Tubular Boilers in a Hospital Heating Plant



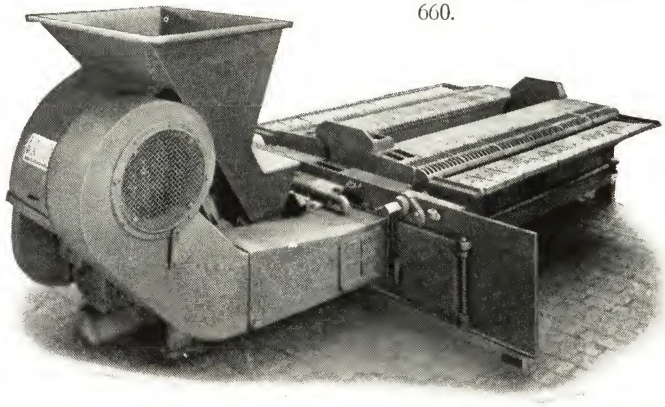
Detroit UniStoker (Side View)
(Adjustable Plunger Feed, Motor or Steam Turbine Driven)

Detroit LoStoker

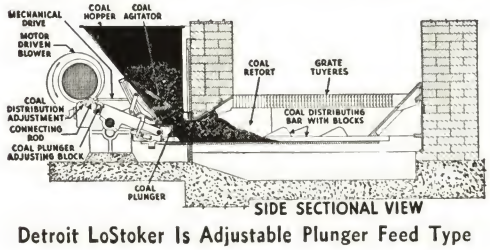
For steel firebox, tubular or cast iron boilers and small water tube boilers. Built in many sizes and capacities to suit the size and type of boiler, the kind of coal, and the load to be carried. Adjustable plunger feed, side cleaning, air is admitted to all parts of the large active fuel bed including the dumping grates located at the side of the furnace. Ashes are periodically dumped into pits and removed through doors provided at the front. May be driven by electric motor or steam turbine. Automatically controlled from steam pressure, water temperature or room thermostat. A great coal saver. Write for Bulletin 360.



Detroit LoStoker
With Horizontal Tubular Boiler

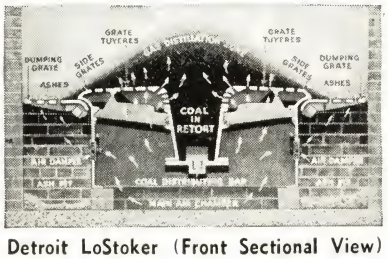


Detroit LoStoker, Built for Firebox Boiler, Stoker Front Designed to Fit Boiler Base, Has Ash Removable Doors. Coal Hopper with Agitator Designed to Clear Boiler Doors. Motor and Blower Conveniently Located at Stoker Front



SIDE SECTIONAL VIEW

Detroit LoStoker Is Adjustable Plunger Feed Type



Detroit LoStoker (Front Sectional View)



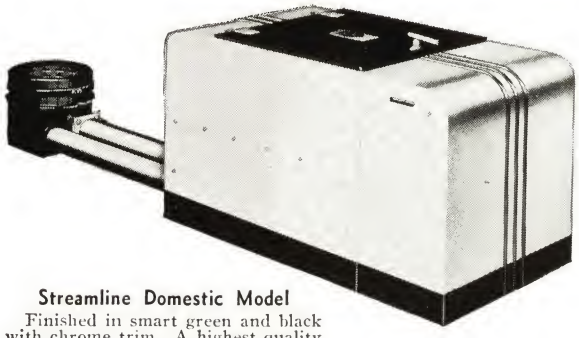
Detroit LoStoker with a High Firebox Heating Boiler

ECON-O-COL STOKER DIVISION

OF COTTA TRANSMISSION CORPORATION

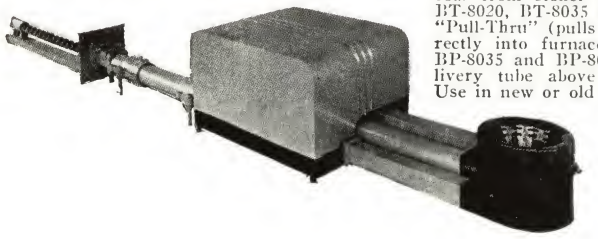
MAIN OFFICE AND PLANT
ROCKFORD, ILLINOIS

DEALERS IN PRINCIPAL CITIES THROUGHOUT AMERICA



Streamline Domestic Model

Finished in smart green and black with chrome trim. A highest quality product, now giving complete satisfaction in thousands of homes throughout America. These sizes, Nos. S-8020, S-8035 and S-8055



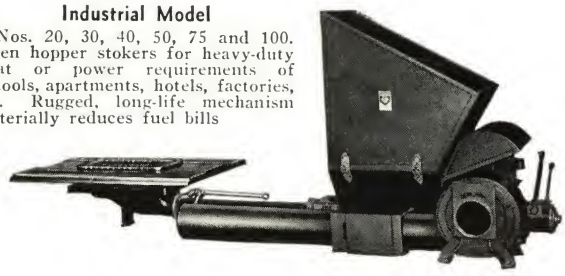
Bin-Feed Model

Two styles: "Transfer" (pulls coal from bin to stoker, then transfers coal from stoker to furnace, Nos. BT-8020, BT-8035 and BT-8055), or "Pull-Thru" (pulls coal from bin directly into furnace, Nos. BP-8020, BP-8035 and BP-8055). Install delivery tube above or below floor. Use in new or old homes

ECONOCOL Automatic COAL BURNER

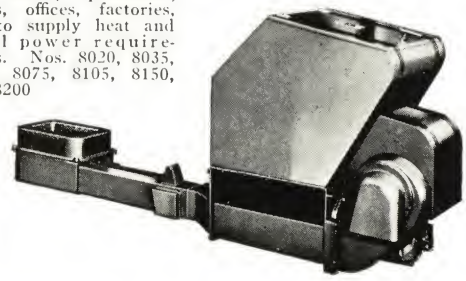
Industrial Model

Nos. 20, 30, 40, 50, 75 and 100. Open hopper stokers for heavy-duty heat or power requirements of schools, apartments, hotels, factories, etc. Rugged, long-life mechanism materially reduces fuel bills



Domestic and Commercial Models

Six sizes ranging from 18 to 200 lbs. per hour. For homes, apartments, stores, offices, factories, etc. to supply heat and small power requirements. Nos. 8020, 8035, 8055, 8075, 8105, 8150, and 8200



A PIONEER LINE—22 DIFFERENT MODELS DELIVERING 10 to 1250 LBS. COAL PER HOUR

Developed by Cotta Transmission Corp.—long and favorably known for "precision" transmissions in the heavy automotive and oil industries—Econ-O-Col Stokers are designed and made to give exceptional performance over a long period of years with little or no upkeep costs. The line is complete—a model for every purpose from the heating requirements of a bungalow up to heavy-duty power requirements of a modern factory. Equipped with nationally-known motor and controls. Adaptable to steam, vacuum, water, or warm air systems. If you wish to specify a stoker that gives much more for a little more, rather than much less for a little less, Econ-O-Col is the stoker for you.

NO OTHER STOKER HAS ALL THESE FEATURES

Free-rolling Automotive-type Transmission—Made to exacting tolerances from long-wearing materials, fitted with ball and roller bearings.

Motor—Cradled in rubber or mounted on springs for quiet operation.

Aero-Dynamic Fan—Delivers double required capacity. No whine.

Copper-Bearing Steel—Used in all parts contacting coal to resist corrosion. Electrically welded.

Straight Flight Feed Screw—Requires less power, saves electricity.

"Marvel" Air Volume Control—Really works—not just a damper.

Retort—Thick, strong walls. Designed to keep coal out of air chamber and scientifically distribute air.

Electric Safety "Shear Pin" Switch—Shuts off motor and fan when obstruction stops flow of coal.

(Data below include maximum ratings conservatively based on suitable stoker coal having a heat value of 12,000 B.t.u. per pound, as received.)

Model No.	Boiler h.p.	E.D.R. sq. ft.		Maximum B.t.u. output per hour	Over-all dimension center of retort to extreme end of stoker, in.
		Steam	Hot water		
8020*	4	600	950	144,000	78½
8035x	7	1050	1700	250,000	78½
8055†	12	1650	2600	395,000	79¼
8075	16	2250	3600	540,000	90¼
8105	22	3100	5000	750,000	93½
8150	32	4500	7200	1,080,000	93½
8200	43	6000	9600	1,440,000	114½

* Same ratings apply to Nos. S-8020, BT-8020, and BP-8020.
x Same ratings apply to Nos. S-8035, BT-8035, and BP-8035.
† Same ratings apply to Nos. S-8055, BT-8055, and BP-8055.

Model No.	E.D.R. sq. ft.		Maximum B.t.u. output per hour	Center line of retort to extreme end of hoppers, in.
	Boiler h.p.	Steam		
20	65	9,000	2,160,000	127
30	87	12,000	2,880,000	127
40	105	15,000	3,600,000	130
50	140	19,500	4,680,000	142
75	200	27,500	6,600,000	146
100	270	37,500	9,000,000	146

Write for Special Bulletins Giving Complete Specifications on Each Model

FAIRBANKS, MORSE & CO.

MANUFACTURERS

GENERAL OFFICES
600 So. Michigan Avenue, CHICAGO, ILL.

For F-M Air Conditioning Systems, see File Index

FAIRBANKS-MORSE AUTOMATIC COAL BURNERS

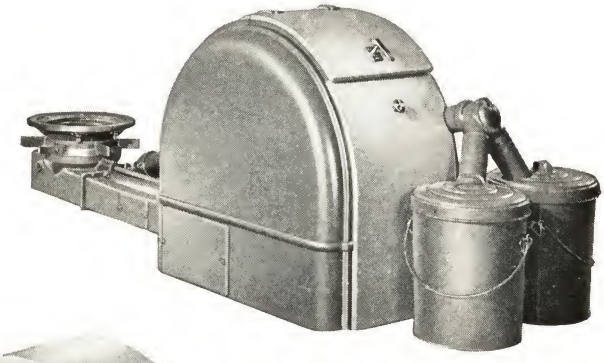
The Fairbanks-Morse complete line of Automatic Coal Burners includes models for burning anthracite as well as bituminous coal. From the smaller home requiring only 20 lbs. of coal per hour to the larger commercial installation requiring as much as 1200 lbs. of coal per hour, there is an efficient Fairbanks-Morse Coal Burner to take over the job of tending the furnace or boiler.

The F-M Coal Burner is backed by a record of successful engineering and manufacturing experience dating from 1830. It is sturdy yet simple in design and is carefully engineered to give economical service. Beautifully finished, the F-M Automatic Coal Burner has extremely reliable automatic controls and simple adjustment features.

The exclusive, patented Fire-Trol is only one of the many distinguished features in the F-M Stoker. Fire-Trol is not simply a constant air volume regulator. It automatically regulates the amount of air supplied to the fuel bed in exact accordance with the amount of air needed for maximum combustion efficiency.

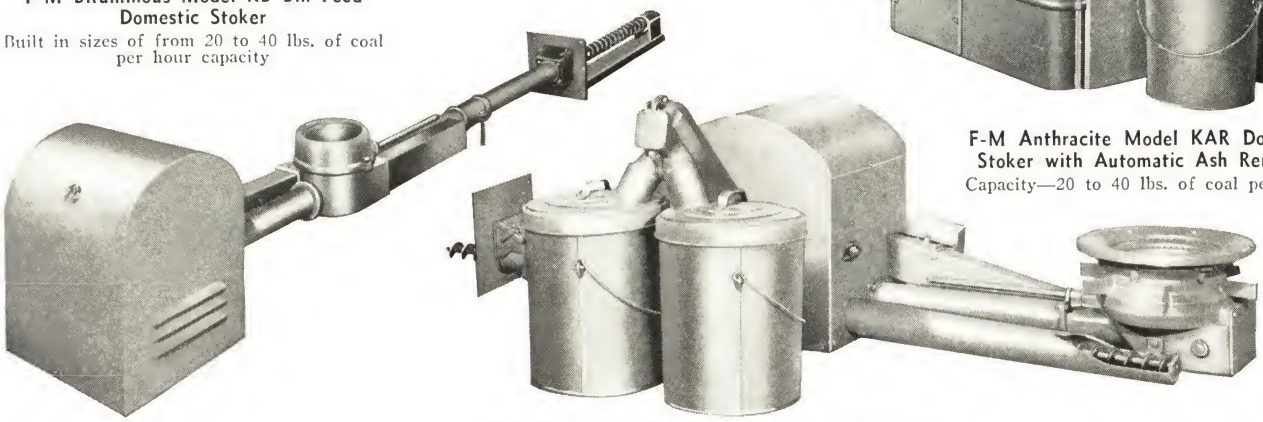


F-M Bituminous Model K Domestic Stoker
Built in sizes of from 20 to 40 lbs. of coal per hour capacity

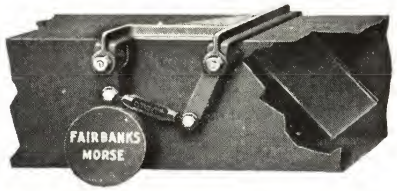


F-M Anthracite Model KAR Domestic Stoker with Automatic Ash Remover
Capacity—20 to 40 lbs. of coal per hour

F-M Bituminous Model KB Bin Feed Domestic Stoker
Built in sizes of from 20 to 40 lbs. of coal per hour capacity



F-M Anthracite Model KABR Bin Feed Domestic Stoker with Automatic Ash Remover
Capacity—20 to 40 lbs. of coal per hour



Fire-Trol, the Exclusive, Patented Fairbanks-Morse Feature Which Insures Maximum Combustion Efficiency

F-M Bituminous Commercial Stoker
Built in sizes of from 100 to 1200 lbs. of coal per hour capacity



MEMORANDA

THE FREDERICK IRON & STEEL COMPANY

FREDERICK, MARYLAND

DOMESTIC STOKERS

For Anthracite Coal

This Stoker is a bin feed burner of the underfeed type, with automatic ash removal. Coal is automatically conveyed in straight line from bin into the retort. Ash is removed mechanically to airtight receptacles or to an external dust-sealed ash pit. Shoveling of coal or ash is entirely eliminated.

Controls are completely automatic and the stoker is perfectly safe in operation. Has motor overload protection breaker cut-out; shear pin is simple and easy to replace.

Design is extremely simple, rugged, compact and very neat in appearance. Metal casing covers all moving parts.

Operation is quiet and without radio interference.

It is adaptable readily to round or rectangular boiler —to steam, vapor, hot water or warm air heating systems. Is approved by the Anthracite Industries Laboratory.

RATINGS AND SPECIFICATIONS

Model	Diam. of retort	Max. coal feed per hr.	B.t.u.	Steam, sq. ft.	Hot water, sq. ft.	Warm air, sq. ft.
14-15	14	14	100,000	400	650	550
20-17	17	20	150,000	625	1000	800
32-20	20	30	225,000	950	1500	1200
45-24	24	45	337,000	1400	2250	2000
65-28	28	65	485,000	2000	3200	....

For Bituminous Coal

The Frederick Bituminous Stoker is made in both hopper feed and bin feed models. New feature is constant speed drive. Two changes of speeds in coal feed can be made by changing the belt on a two-speed pulley. Motor is mounted on a hinged base plate to allow for belt take-up.

Fan is mounted directly on the motor shaft so that only about 20-25% of power required is transmitted through the belt to carry the coal feed load. This gives longer belt life.

The transmission is mounted above the coal feed screw so that the coal screw can be removed, for easier servicing, without disturbing the transmission motor fan wheel or fan housing.

Safety is certain. The safety shear pin is located on the driving sprocket shaft and is of simple design and very accessible.

Design is sturdy, compact, and, in appearance, very attractive. (Former De-Luxe hopper is now standard on all 30, 50, 75, 100 and 150-lb. hopper feed models—at no extra cost.)

BITUMINOUS STOKER MODELS

"Frederick 30"— 30 lbs. per hr. cap.—hopper or bin feed
"Frederick 50"— 50 lbs. per hr. cap.—hopper or bin feed
"Frederick 75"— 75 lbs. per hr. cap.—hopper or bin feed
"Frederick 100"—100 lbs. per hr. cap.—hopper or bin feed
"Frederick 150"—150 lbs. per hr. cap.—hopper or bin feed

COMMERCIAL AND INDUSTRIAL STOKERS

The Frederick Industrial Stoker is of the screw underfeed type and is highly recommended for heating and pressure installations which require from 20 hp. to 150 hp.

It burns bituminous coal of either the coking or non-coking grades and distributes the coal over the entire grate surface—which permits the gases to pass through an incandescent bed of coke, eliminates smoke and gives as near perfect combustion as possible.

RATINGS AND SPECIFICATIONS

Model	Size burner head	Coal feeds per hr.	Approx. hp. cap.	Steam, sq. ft.	Hot water, sq. ft.
D-20	20" x 27"	60-100-150	20-25	3700	5900
F-45	26" x 40"	110-190-280	45-50	6800	10500
H-65	32" x 48"	150-270-400	65-70	10000	15000
K-100	38" x 62"	250-450-675	100-110	16000	25000
M-150	44" x 72"	375-650-1000	150-165	25000	38000

FREDERICK CENTRIFUGAL PUMPS

Frederick Centrifugal Pumps are available in horizontal or vertical types: Single Suction, Single Stage; Double Suction, Single Stage—Single Suction, Multi-stage.

They are designed especially for the exact operating conditions which they will encounter and are guaranteed to perform the service for which they are sold, when installed and operated according to instructions.

Materials and workmanship are guaranteed, without reservation, against defects.

Drive may be *direct-connected to motor,* with flexible coupling; mounted on a common base plate . . . *belt drive or chain or gear drive,* furnished with proper bearings and mounted on common base plate.

Special feature (on double suction pumps) are the patented *renewable wearing rings* which allow the replacement of any part that is subject to wear.

All pumps are hydrostatically tested 50% in excess of normal operating pressure, before shipment,

IRON FIREMAN MANUFACTURING COMPANY

PORTLAND, ORE.
FACTORIES
CLEVELAND, OHIO
TORONTO, CANADA
CHICAGO MILWAUKEE
RETAIL BRANCHES OR SUBSIDIARIES
ST. LOUIS NEW YORK BROOKLYN MONTREAL
Dealers in Principal Cities and Towns in United States and Canada—Representation in Numerous Foreign Countries

AUTOMATIC COAL BURNERS FOR RESIDENTIAL HEATING PLANTS AND FOR COMMERCIAL BOILERS DEVELOPING UP TO 800 B.Hp.

Domestic Stokers (Bituminous)

Iron Fireman is quickly installed in residental hot water, steam, vacuum, or warm air heating plants. Installation can be made from the front, side or rear, thus making for flexibility in setting to conform to floor plans.

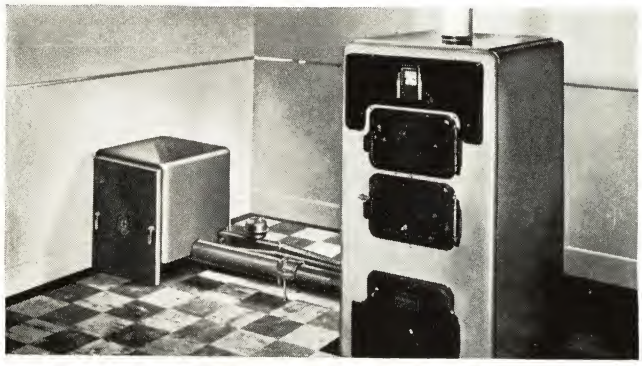
There are two general types of burners: Bin-Feed and Hopper-Feed.

Bin-Feed or *Coal Flow* models convey coal direct from bin to fire by means of a simple, quiet screw conveyor that is available in various lengths, and that can be installed above or below floor level.

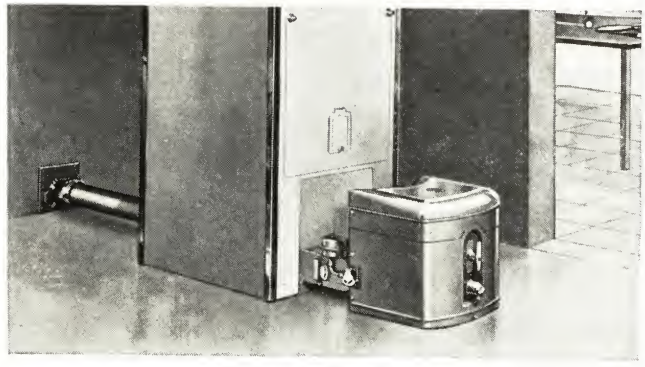
Hopper-Feed or *De Luxe Heatmaker* models are available in various sizes and are widely used. The hopper of the smallest burner contains 500 lbs. of coal. All operating mechanism is completely enclosed, yet easily accessible by removal of a door on the hopper front.

These machines burn the smaller sizes of bituminous coal which are generally cheaper than the larger sizes used in hand-firing. A bituminous coal known in the trade as "washed pea" is recommended.

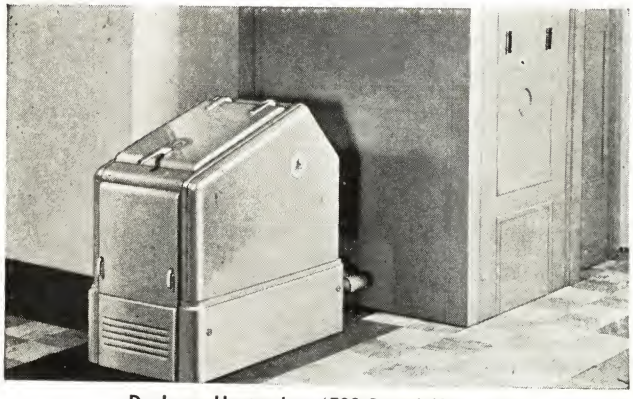
Detailed information is given in the tables below. If further facts are desired regarding any particular model or its application to a specific heating case, your Iron Fireman dealer will gladly work with you.



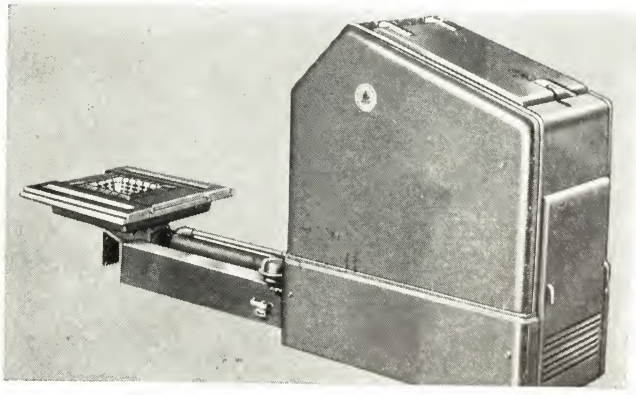
Coal Flow (Front Drive)
Automatic coal feed from bin to boiler. Available in various lengths up to 20 ft. Models RL 20, RL 30, RL 40, RL 60



Coal Flow (Rear Drive)
Automatic coal feed from bin to boiler. Available in various lengths up to 20 ft. Models RF 20, RF 30, RF 40, RF 60



De Luxe Heatmaker (500-Pound Hopper)
Models DL 30, DL 50, DL 75



De Luxe Heatmaker (900-Pound Hopper)
Models DL 100, DL 150

Size	RADIATION CAPACITY			OVER-ALL STOKER DIMENSIONS		
	Warm Air Leader Pipe Area	E.D.R. Steam	E.D.R. Hot Water	Center line of retort to extreme front	Hopper Height	Maximum stoker width
DL 30	1725	1150	1840	76″ reg., 88″ long	38¾″	23¼″
DL 50	2850	1900	3040	76″ reg., 88″ long	38¾″	23¼″
DL 75	4100	2720	4350	78½″ reg., 90½″ long	38¾″	23¼″
DL 100	5500	3670	5900	83½″ reg., 101½″ long	52¼″	26½″
DL 150	7800	5200	8340	85¼″ reg., 103¼″ long	52¼″	26½″

Maximum ratings shown are conservatively based on suitable stoker coal having a heat value of 12,500 b.t.u. per lb., as received.

Domestic Stokers—Anthracite

IRON FIREMAN automatic anthracite burners are made in two types—automatic ash-removing and gravity ash removal. Both types are available in Bin-Feed and Hopper-Feed models.

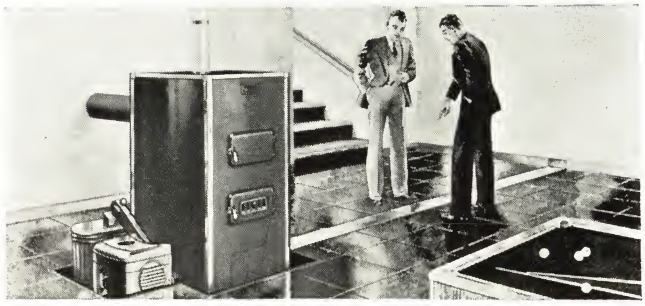
Installation can be quickly made in residential hot water, steam, vacuum, or warm air heating plants. Installation may be front, side, rear or at an angle.

They are designed for efficient burning of those grades of anthracite coal known as Buckwheat and Rice.

In the automatic ash-removing models, ashes are removed from the furnace and deposited in dust-tight receptacles.

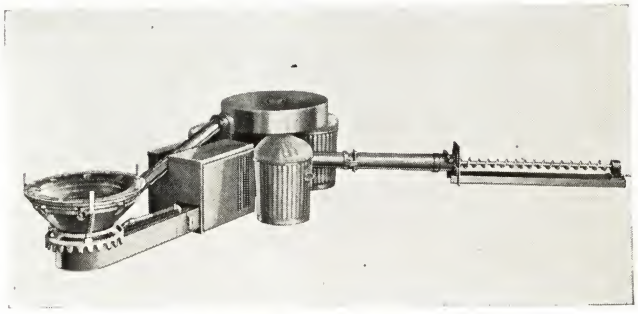
In the gravity ash removal models, ashes drop into a pit beneath the boiler and are removed periodically through an air-tight ash pit door in the floor adjacent to the boiler.

Detailed information on both models is given in the tables below. If additional facts are desired, please consult your Iron Fireman dealer.



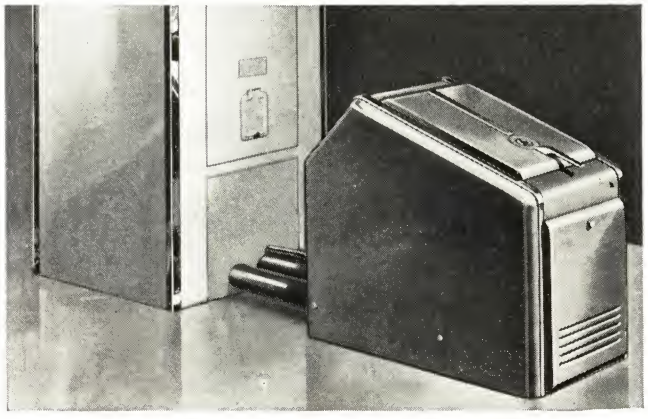
Coal Flow (Rear Drive)

Straight line carry of coal from fuel bin to fire. Automatic ash removal. Available in various lengths up to 15 ft. Models RFAA 20, RFAA 35, RFAA 50

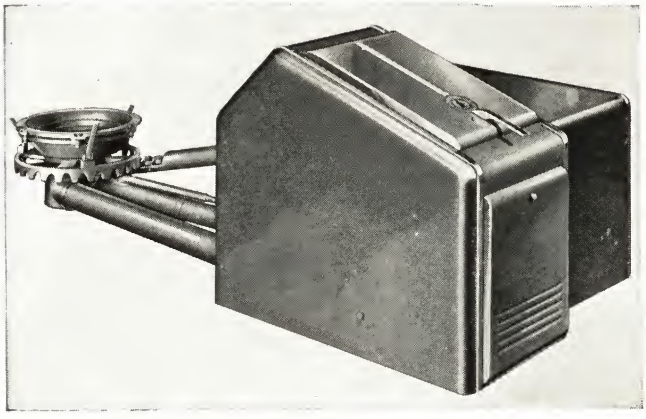


Coal Flow (Front Drive)

Coal conveyor tube can be set at any point within a half circle to accommodate location of bin and boiler. Automatic ash removal. Models FDAA 20, FDAA 35, FDAA 50, FDAA 75



De Luxe Heatmaker—Gravity Ash Removal Type
Models DLA 20, DLA 35, DLA 50



De Luxe Heatmaker—Automatic Ash Removal
Models DLAA 20, DLAA 35, DLAA 50

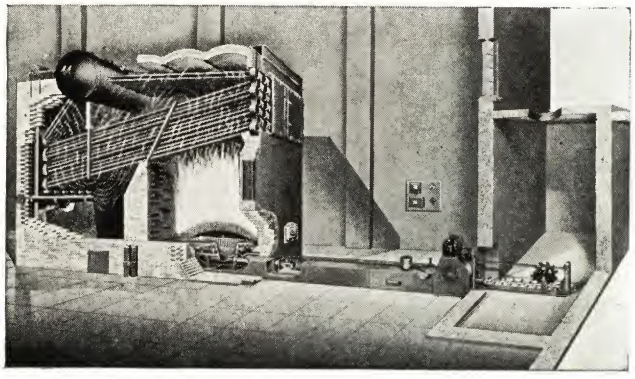
Size	RADIATION CAPACITY			OVER-ALL STOKER DIMENSIONS		
	Warm Air Leader Pipe Area	E.D.R. Steam	E.D.R Hot Water	Center line of retort to extreme front	Hopper Height	Maximum Stoker width
DLA 20	980	650	1040	78¾″	38¾″	21½″
DLA 35	1710	1140	1820	78¾″	38¾″	21½″
DLA 50	2440	1625	2600	78¾″	38¾″	21½″
DLAA 20	980	650	1040	78¾″	38¾″	37¼″ including ash cans
DLAA 35	1710	1140	1820	78¾″	38¾″	37¼″ including ash cans
DLAA 50	2440	1625	2600	78¾″	38¾″	37¼″ including ash cans

Maximum ratings shown are conservatively based on suitable stoker coal having a heat value of 12,500 b.t.u. per lb., as received.

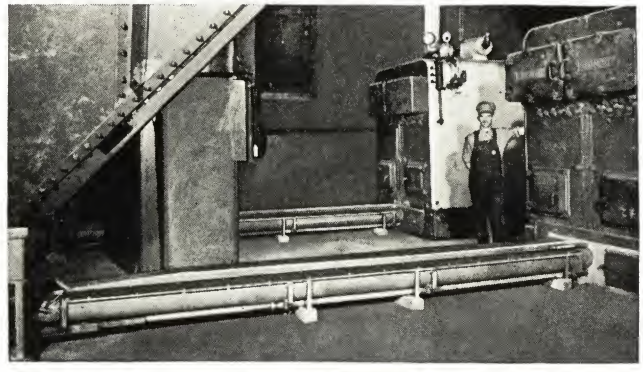
Stokers for Heating or Power Boilers Developing up to 300 B.Hp.

IRON FIREMAN'S line of commercial and industrial burners are made in two types—Regular models with screw feed, and Poweram models, the latter with screw feed to the retort, and ram distribution in the retort to break up coke formations in coking types of coal and to provide the thorough aeration needed for free burning.

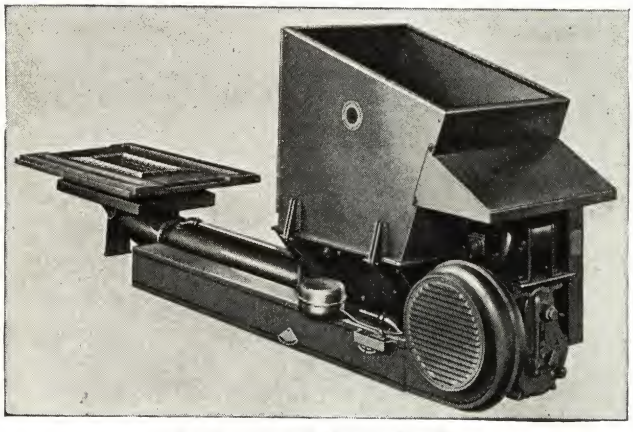
Regular models and Poweram models are available in both Bin-Feed and Hopper machines. They are designed to burn efficiently the bituminous grades of coal known as Mine Run, Nut and Slack. Installation can be quickly made. See chart below for detailed information on models. If further facts and figures are desired, consult your Iron Fireman dealer.



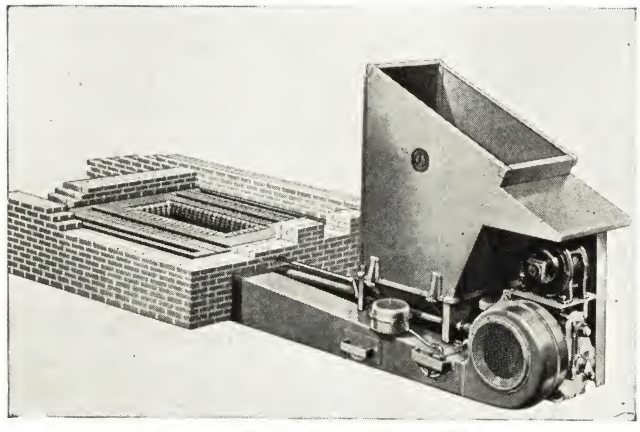
Commercial-Industrial Bin-Feed
Available in various lengths up to 20 ft. For Regular models Nos. 2, 3, 4, 4A, 5, 5A



Poweram Bin-Feed
Available in various lengths up to 20 ft. For Poweram models Nos. 3D, 4D, 4ACD, 5CD, 5ACD



Regular Hopper Model (No. 3)



Poweram Hopper Model (No. 5CD)

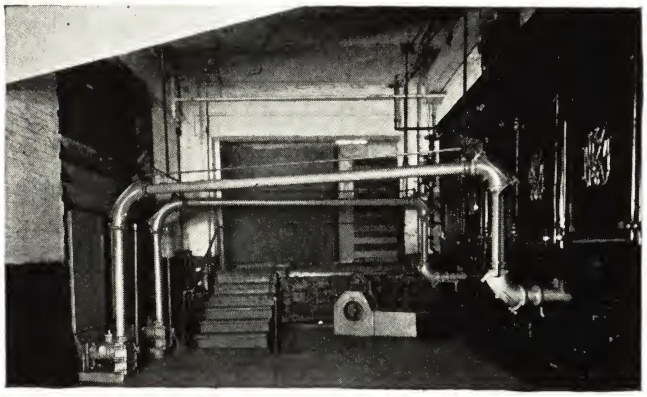
Size	Heating Available at Boiler Outlet				Over-all Stoker Dimensions		
	B.T.U. Per hour	Boiler h.p.	Heating Load in sq. ft. E.D.R. Steam	Heating Load in sq. ft. E.D.R. Hot Water	Center line of retort to extreme front	Hopper Height	Maximum stoker width
No. 2A	1,400,000	41	5,750	9,000	84¾" short; 102¾" long	48½"	30¾"
No. 3 and No. 3D	1,900,000	58	8,000	13,000	86¾" short; 104¾" long	48½"	30¾"
No. 4 and No. 4D	2,700,000	81	11,250	18,000	106¾" short; 118¾" long	48½"	30¾"
No. 4A	4,200,000	125	17,500	28,000	122¾" short; 134¾" long	66¾"	34"
No. 4ACD	4,200,000	125	17,500	28,000	126⅜" short; 138⅜" long	66¾"	34¼"
No. 5	6,300,000	187	26,250	42,000	125¾" short; 137¾" long	66¾"	36"
No. 5CD	6,300,000	187	26,250	42,000	128⅜" short; 140⅜" long	66¾"	35¾"
No. 5A	8,400,000	250	35,000	56,000	125¾" short; 137¾" long	66¾"	40"
No. 5 ACD	10,000,000	300	42,000	67,000	135⅜" short; 147⅜" long	66¾"	40"

Maximum ratings shown are conservatively based on suitable stoker coal having a heat value of 12,500 b.t.u. per lb., as received.

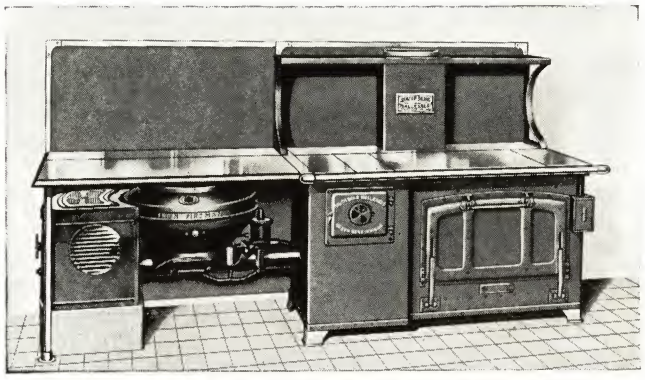
Iron Fireman Stokers for Special Applications

AN IRON FIREMAN stoker can be easily adapted to special applications in addition to the orthodox heating or power job in buildings, institutions, and manufacturing plants. Because of its decade of experience in making and installing thousands of stokers under varying conditions and for all types of firing jobs, Iron Fireman has met and mastered the problem of special applications. For information in regard to special applications, consult your Iron Fireman dealer, or write to the Iron Fireman Engineering Department.

A partial list of Iron Fireman special applications includes: Bake ovens (food), foundry core ovens, restaurant ranges, processing pots, kilns, dryers, annealing ovens, metal pots, etc.



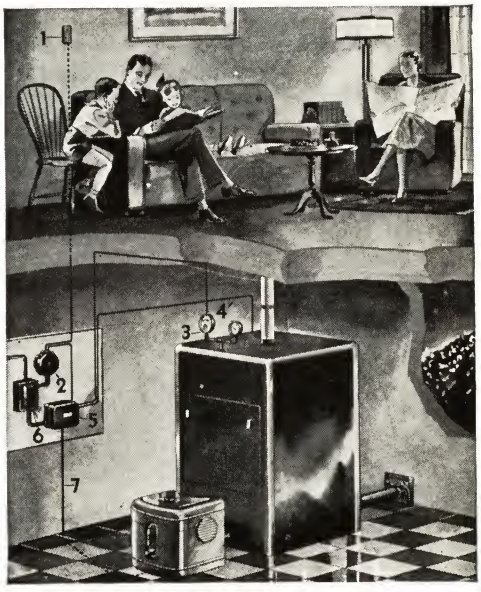
Iron Fireman Air Spreader Stoker for Boilers Developing Up to 800 Hp.



Restaurant—Iron Fireman Installation in a Cooking Range

Exclusive Control Instruments

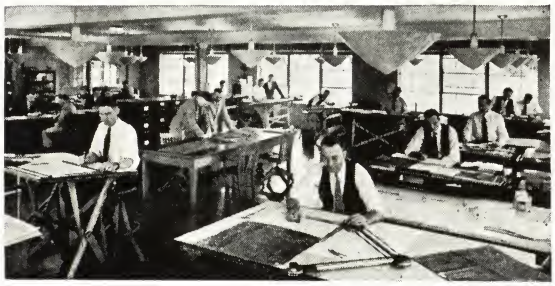
An Iron Fireman installation is a complete automatic firing system, consisting of stoker unit and specialized controls which are carefully selected and installed in accordance with the exact requirements of each particular firing job. Temperature and steam pressure may be held at just the degree wanted—hour after hour, day after day. When the required temperature is reached, Iron Fireman banks the fire—the fire is not completely extinguished as is the case in most oil or gas burner installations. Instead, the banked, glowing coals retain heat and maintain unvarying temperature. When additional fuel is needed, controls flash the signal to the positive feed mechanism which replenishes the fire steadily and evenly. Iron Fireman heat is completely controlled heat. Iron Fireman controls are made for every type of plant.



(1) *Duplex Thermostat (day and night);* (2) *Time Switch (day and night);* (3) *Pressure Regulator;* (4) *To Fire Detector on smoke pipe;* (5) *Pyrometric Controller;* (6) *Entrance Switch;* (7) *To Stoker Motor under hood.*

Control System, Residential Heating Plant

Iron Fireman Engineering Service



View of Factory Engineering Service Department

This service is nationwide in scope and is available through the hundreds of factory-trained dealers who are located in all principal cities in the country. This service is at your disposal. It represents the experience and practical heating information gained through servicing thousands of boiler rooms and heating plants in all parts of the country.

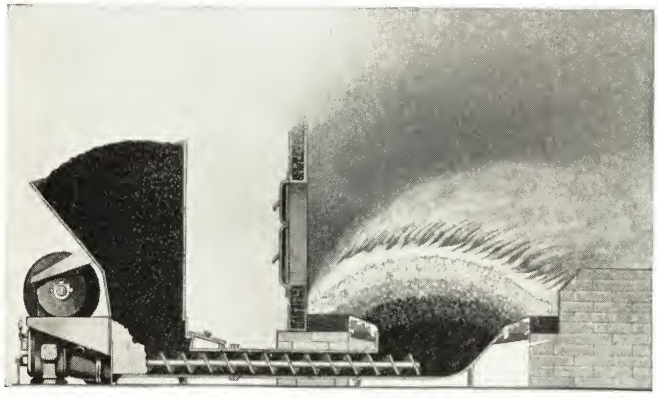
In addition to the field engineering organization of Iron Fireman dealers, the services of specially trained factory engineers are available. They are equipped to furnish you counsel and detailed information that will result in your securing an installation that will give maximum performance and years of trouble-free service. The services of these men can be secured without cost or obligation. Address the nearest Iron Fireman factory. IRON FIREMAN MANUFACTURING COMPANY, Cleveland, Ohio; Portland, Oregon; Toronto, Canada.

LINK-BELT COMPANY

Manufacturers of a Complete Line of Underfeed Automatic Stokers

CHICAGO, ILL., 2410 W. 18th Street
PHILADELPHIA, PA., Lycoming at Broad Street
DETROIT, MICH., 5938 Linsdale Avenue
In Canada: JAMES ROBERTSON CO., LTD., Toronto, Montreal, Winnipeg, St. John

"POWER-FLEX" INDUSTRIAL & COMM. STOKERS



Cross-section of Power-Flex Stoker

Whether used for process steam or heating installations, Link-Belt Power-Flex stoker firing will make possible fuel savings up to 45% over hand firing, and up to 75% over other automatic fuels . . . plus other important operating advantages.

"Power-Flex" stokers are so named because the design insures considerably greater active coal burning area than conventional burners, and because the tuyere design is flexible and can be accommodated to combustion conditions which are different with practically every boiler installation.

The Power-Flex burning head has no dead plates, the laminated tuyeres extending clear to the sides of the boiler. This places three to four times as much tuyere area in contact with air, with elimination of warping and excessive maintenance cost. Secondary air improves combustion over the entire fuel bed. Fire box parts made of special chrome alloy.

Other Link-Belt features: Long narrow retort, with raised tuyeres, insures efficient fuel distribution and slag drainage. Variable Intermittent Drive transmission, with only three moving units. Universal joint that prevents binding of the worm screw in the tube. Easily accessible cleanouts. AIR-METER automatic air control. Motor and fan insulated against noise and vibration. LOAD-SIGNAL automatic alarm and cutout. Highest grade automatic electric controls; RADIOSTAT electronic control for commercial heating installations.



Power-Flex Burning Head

All Sizes

Power-Flex Stokers are available in all sizes up to 300 b.h.p. They will efficiently burn both free-burning low-melting-ash coals or caking and coking coals. Installed in most existing boilers without extensive alteration.

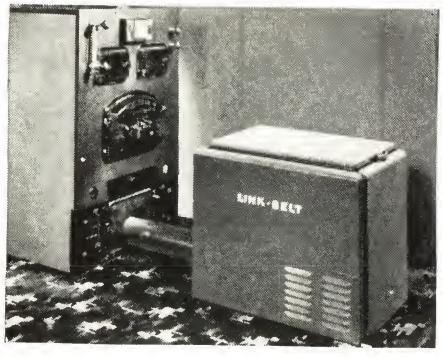
RESIDENTIAL STOKERS

FOR BITUMINOUS—Automatic heat with coal stokers has been increasing for several years at a faster rate than other automatic fuels, for both large and small homes, because of its economy and greater comfort. Stoker heat is uniform—no "layer-cake" heating, with cold floors, as with burners that pop on and off; there is no vapor smudge, no smoke, no dust; fire and explosion danger is done away with. And the cost of improved automatic heat with Link-Belt stokers is a fraction of that with other automatic fuels.

Link-Belt stokers for bituminous are available in both HOPPER and BIN-FED types. They have the AIR-METER automatic air control . . . Variable Intermittent Drive . . . LOAD-SIGNAL automatic cutout and buzzer . . . sectional retort . . . chrome iron firebox parts . . . air-duct integral with coal tube . . . easily accessible cleanouts . . . highest quality electric automatic controls.

All Domestic Sizes

Available in all sizes for domestic and small commercial installations. Installed in present heating plants without extensive alterations. No pipes or tanks. Can be set into boiler or furnace from any angle.

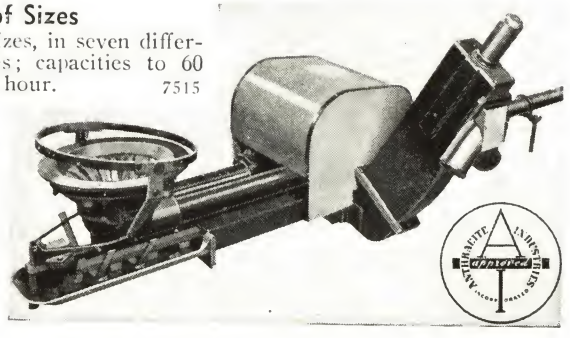


FOR ANTHRACITE—Both Bin-Fed and Hopper Models. Fully approved by the Anthracite Institute, Link-Belt anthracite stokers represent the highest development in automatic home heating. In addition to the economy and other features of bituminous stokers, the anthracite models are designed to remove ashes into pits that may be large enough to hold a season's supply or into ash cans.

Link-Belt anthracite stokers have the patented reciprocating ash ring, with highest active fuel bed area . . . plunger type coal feed and ash removal . . . bucket type elevator . . . segmental, overlapping tuyeres, with tangential self-cleaning parts . . . simple, rugged mechanism.

Range of Sizes

Ten sizes, in seven different types; capacities to 60 lbs. per hour. 7515



SCHWITZER-CUMMINS . . .

and its Products

Coal Stokers... STOKOL AND STOKOL-TRIPLEX FOR BITUMINOUS AND ANTHRACITE COALS... RETORT AGITATOR MODELS FOR HIGH COKING COAL

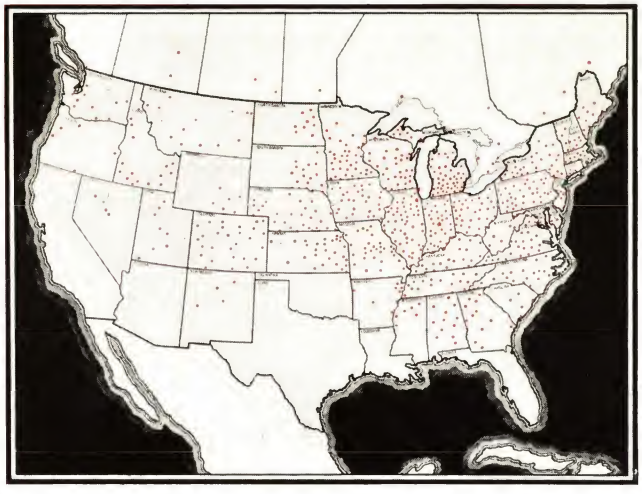
Stoker Fired Furnaces...
AUTOMATIC WARM AIR HEATING PLANTS AND WINTER AIR CONDITIONERS

Blowers... BLOWER-FILTER UNITS...
BLOWER-FILTER HUMIDIFIERS . . . GENERAL VENTILATION

Attic Ventilators... PROPELLER FAN TYPE... BLOWER FAN TYPE



Automatic Heat at Its Very Best



Sales and servicing are carried on by a nation-wide organization of distributors and dealers. There are over fifteen hundred equipped to give engineering services for the selection, installation and servicing of our products. The accompanying map shows the extent of the important key distributors and dealers.

The trade names STOKOL, STOKOL-HEAT and STOKOL-TRIPLEX stand for "Automatic Heat At Its Very Best." Over 60,000 are in satisfactory use in apartments, schools, theatres, hospitals, buildings, greenhouses, dairies, factories, in industry generally and in thousands of homes.

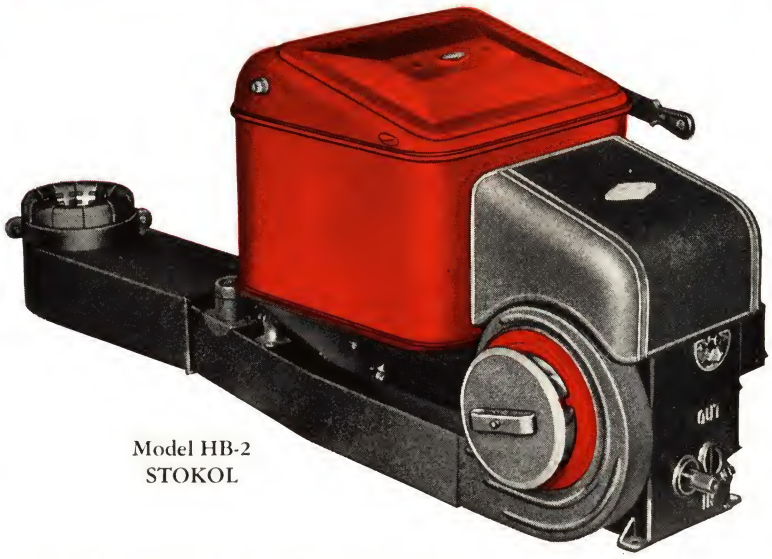
This universal acceptance on the part of the public reflects the sound engineering and rugged construction typical of all Schwitzer-Cummins products. The STOKOL line is produced by an organization experienced for over twenty years in the manufacture of high-grade engineering products for all the basic industries. Our engineers have done an immense amount of research and engineering development in the field of automatic heat. We have pioneered in a number of basic improvements of the utmost importance to the success of the stoker industry as a whole. Our manufacturing facilities are unsurpassed for the production of high-grade stokers at low cost. Schwitzer-Cummins is strongly financed to carry on the manufacture and national distribution of stokers.

Such a background supports the STOKOL two-year guarantee and insures the permanency of the product.

STOKOL—Hydraulic Drive Stoker

There are sixty-one STOKOL models for burning bituminous and anthracite coal. Capacities range from 12 pounds per hour on domestic sizes to 600 pounds per hour on commercial models. Both bituminous and anthracite models are made in hopper and bin feed types. All STOKOLS employ the underfeeding principle of feeding coal.

STOKOL has many superior features—hydraulic transmission; STOKOL automatic air control for metering the correct supply of air required by the fire; universal bin feed; air-tight hopper with low door for convenient filling; HY-DUTY multiblade blower fan; automatic ash remover for anthracite models; Stokolarm, an automatic device for signalling notice of any obstruction in the feed screw; Stokostat, hydraulically operated hold-fire control. Sound engineering and the finest workmanship and materials make STOKOL the World's Greatest Stoker.



Model HB-2
STOKOL

STOKOL HYDRAULIC TRANSMISSION

The service imposed on stoker transmissions is inherently different from any other customary speed reducer requirement. Tremendous turning effort at extremely slow speed is expected from a stoker transmission and there is no other generally used device on which a similar service is imposed. To meet this condition Schwitzer-Cummins engineers developed a hydraulic transmission which is excellently adapted for stoker purposes. Oil is the medium of transmitting the power. The transmission runs in a bath of oil so there is no problem of lubrication. Perfect lubrication is inevitable, so there is no wear-out to a STOKOL transmission. Our hydraulic transmission will exert continuously and without damaging effect a higher turning effort on the feed screw for a given motor size than is possible with any other type. The Schwitzer-Cummins transmission is provided with an overload device which positively avoids breakage or motor overloading should the screw become locked. It is the only overload device available which automatically resumes normal operation when the obstruction is removed.



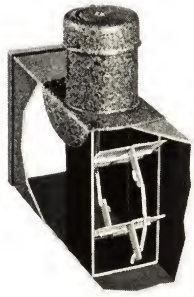
An oil pump located on the inner end of the shaft which carries the fan and drive pulley, draws the oil from the reservoir in the bottom of the case and forces it into the hydraulic cylinder. The pressure of the oil moves the piston forward and with it a lever which is in contact with the piston. This lever turns a ratchet wheel attached to a main shaft which drives the coal feed screw.

Change in rate of coal feed is easily accomplished by turning a simple valve which varies the rate of oil flow from the cylinder. An unlimited number of coal feeds are thus obtainable. A neutral position where the coal feed is stopped and the fan is kept running is obtained by just turning a knob. The oil which is used to operate the piston is diverted to flood every moving part of the mechanism with a bath of cool, clean oil assuring perfect lubrication and long-lived operation.



HOPPER FEATURES

STOKOL HOPPERS are designed for the utmost cleanliness and convenience. Doors are large and fit down dust-tight on rubber seals. A by-pass from the blower permits carrying air pressure in the hopper, effectively preventing the leakage of gas or fumes into the basement. Hoppers are of extremely rigid construction, drawn from heavy gauge steel, are low and can be filled with little effort.



AUTOMATIC AIR CONTROL

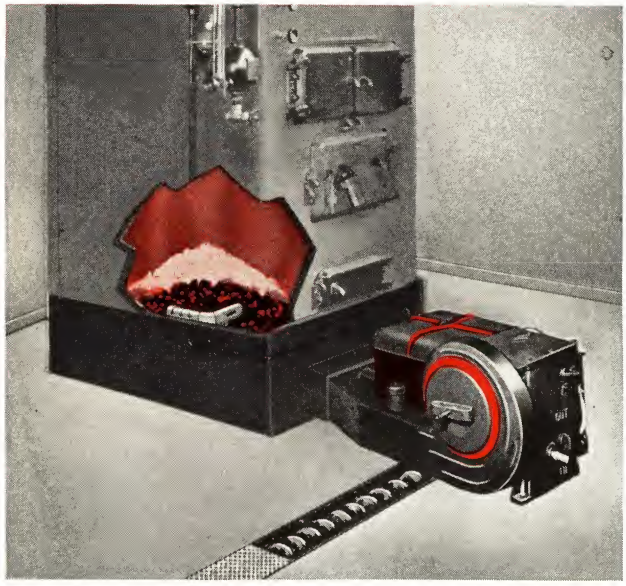
Underfeed stokers require forced draft to maintain efficient combustion. Due to varying conditions of the fire the correct volume of air must be supplied to obtain maximum efficiency. The Schwitzer-Cummins automatic air control acts quickly and positively to supply the correct volume of air required by the fire to meet all changing conditions.

METAL SPRAYED RETORT OR BURNER

STOKOL retorts are of improved sectional construction designed for burning the coal with maximum economy. They are of heavy construction, made from heat resisting alloy iron and in addition are sprayed with an aluminum alloy which greatly increases their resistance to heat and prolongs their life.

FOR COAL BURNING AND RADIATION CAPACITIES SEE NEXT PAGE

STOKOL STOKERS
Domestic Bituminous



STOKOL BIN FEED MODELS do away with all coal handling by feeding the coal direct from the coal bin to the fire. They add the last word in convenience to automatic heat with coal because your hands need never touch the coal. An extension of the stoker feed screw runs to the coal bin and is driven by the same motor that drives the stoker feed screw. The same controls govern it. There is nothing to watch or require attention. So long as there is fuel in the coal bin you may be sure that the fire is all right.



STOKOL CABINET MODELS, styled differently to meet the preference of some users.

COAL BURNING AND RADIATION CAPACITIES

MODEL HB (Hopper Type) and MODEL HBC (Cabinet Type)

	Maximum Coal Feed*** Pounds Per Hour	Square Feet of Steam Radiation*
No. 2	20 to 24	560 to 675
No. 3	30 to 36	850 to 1020
No. 5	50 to 60	1430 to 1715

MODEL HBU (Universal Bin Feed Type)

	Maximum Coal Feed*** Pounds Per Hour	Square Feet of Steam Radiation*
No. 2	20 to 24	560 to 675
No. 3	30 to 36	850 to 1020

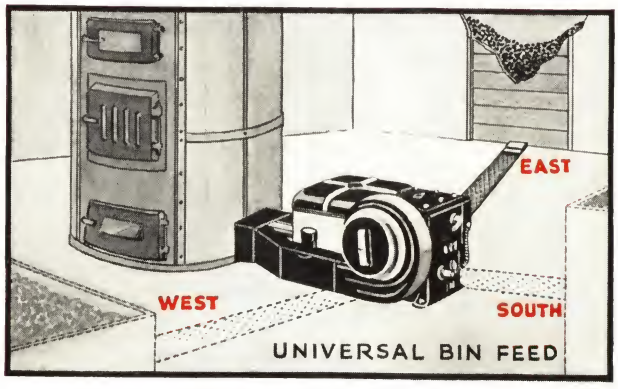
*Ratings represent square feet of standing direct steam radiation based on 14,000 BTU coal in conformance with S.M.A. stoker ratings.

***Depending on size, weight and condition of coal.

STOKOL CONTROLS

STOKOL controls are complete and accurate. Room temperatures and the amount of coal burned are accurately regulated as is the air supply for complete combustion. The Thermostat is the master control. Set it for the temperature wanted and it will regulate the fire and hold that temperature constantly. It controls by automatically stopping the coal feed when the heat tends to rise above the temperature selected and starts the feeding of coal again when the temperature tends to drop below that point. The Thermostat puts a stop to opening and closing drafts and checks, opening and closing windows, watching the fire and the many other things necessary to keep comfortable when you fire by hand.

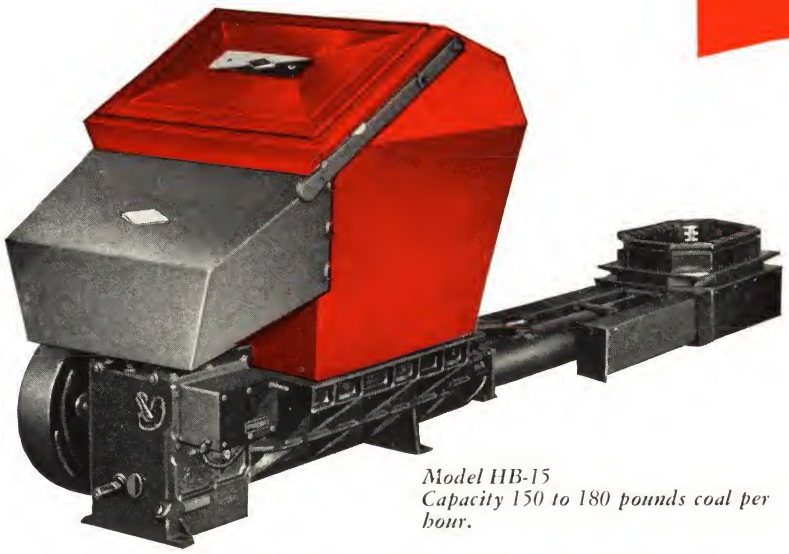
An automatic safety device—the Limit Control—insures against overheating the furnace or boiler. The Stokostat prevents the fire from going out in mild weather. The Pressure Control regulates the operation of STOKOL according to desired steam pressures.



UNIVERSAL APPLICATION

The coal bin conveyor screw on bin feed models is constructed so that the section which extends to the coal bin can be run in any direction, at any angle, or for any distance, no matter where the coal bin may be located. This feature is particularly valuable for installations under existing heating plants and established basement arrangements.

STOKOL STOKERS
Commercial



Model HB-15
Capacity 150 to 180 pounds coal per hour.

Model HB-56. Capacity 500 to 600 pounds coal per hour. Available open or closed hopper.





METAL SPRAYED RETORT

Designed for maximum economy and heavily constructed of heat resisting alloy iron, sprayed with an aluminum alloy which greatly increases resistance to heat and lengthens the life of the retort. Individual tuyeres securely fastened to burner base.

Hundreds of commercial and industrial STOKOLS have paid for themselves in two years or less in apartments, hotels, hospitals, stores, clubs, theaters, factories, laundries, dairies, bakeries, etc. STOKOL burns the smaller, less expensive sizes of coal by the Schwitzer-Cummins under-feeding principle, without smoke or soot or ashes, and gets every dollar's worth of heat out of the coal. It eliminates the waste of unburned coal going out in the ashes, or unburned gases or smoke going out the stack.

STOKOL'S record in apartments, hotels, theaters, clubs and churches is that it saves surprising amounts on the fuel bill and at the same time provides a quality of heat that makes and holds tenants, guests and members. In industry and business STOKOL works wonders in improving working conditions that affect production and costs by supplying an abundance of uniform heat and automatically regulating steam pressures for processing operations.

STOKOL holds the heat uniform without ups and downs. It is clean heat, there is plenty of it and it is healthful. There are many ways that STOKOL is a benefit to owners, employees, tenants and customers —ways that may mean the difference between profits and red ink.

•

Stokolarm, an exclusive STOKOL feature, is indispensable in installations where it is profitable or necessary to leave the heating plant for long periods of time, day or night, without observation from an attendant. Stokolarm cuts out the motor, stops the STOKOL and signals a warning, by bell, light or otherwise, of any undue interruption in operation.

COMMERCIAL BIN FEED MODELS

All commercial and industrial sizes are adaptable to installations where it is economical to unload coal directly into a storage bin which becomes a part of the STOKOL and then feed the coal automatically from bin to fire. Extensions to stokers are provided for any reasonable location for unloading coal away from boiler. STOKOL Commercial Bin Feeds are highly profitable investments, saving large amounts on fuel and labor.

Engineering surveys and installation plans furnished on request.



COAL BURNING AND RADIATION CAPACITIES

MODEL HB (Hopper Type) and MODEL HBS (Bin Feed Type)

	Max. Coal Feed*** Pounds Per Hour	Square Feet of Steam Radiation*
No. 7	75 to 90	2125 to 2550
No. 10	100 to 120	3000 to 3600
No. 15	150 to 180	4600 to 5520
No. 20	200 to 240	6100 to 7320
No. 30	300 to 360	9150 to 10980
No. 40	400 to 480	12200 to 14640
No. 56	500 to 600	15300 to 18500

*Rating represents square feet of standing direct steam radiation based on 14,000 BTU coal in conformance with S. M. A. stoker ratings.

***Depending on size, weight and condition of coal.

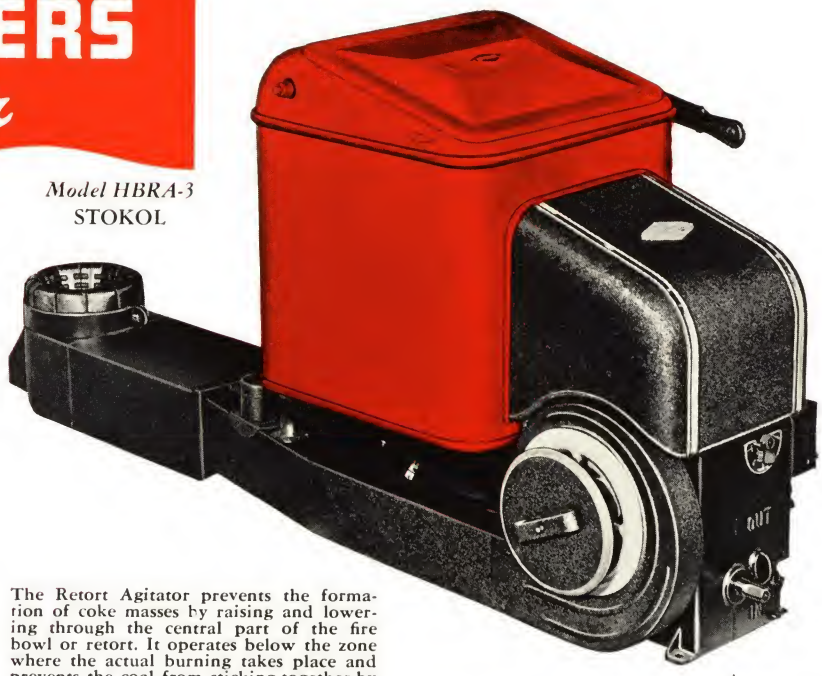
COMPLETE ENGINEERING DATA ON REQUEST.

SCHWITZER-CUMMINS COMPANY .. Indianapolis, U.S.A.

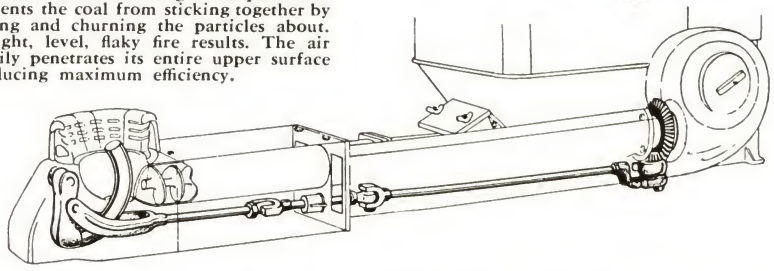
STOKOL STOKERS
Retort Agitator

Schwitzer-Cummins Retort Agitator models were developed for the purpose of burning coals native to many districts which were unsuited for stoker purposes by reason of their strongly coking qualities. Many of these coals are inexpensive and of high heat value. STOKOL and STOKOL-TRIPLEX Retort Agitators combine all the excellent features of both models with a mechanism which agitates the burning coal and prevents coal masses, maintaining a level fire that burns freely and evenly because the agitation makes it possible to get a well-balanced flow of air through all parts of the fire. Retort Agitators come in hopper, bin feed and cabinet models. Also adaptable to low coking coals, and are highly economical on all classes of stoker fuel.

Model HBRA-3
STOKOL



The Retort Agitator prevents the formation of coke masses by raising and lowering through the central part of the fire bowl or retort. It operates below the zone where the actual burning takes place and prevents the coal from sticking together by rolling and churning the particles about. A light, level, flaky fire results. The air readily penetrates its entire upper surface producing maximum efficiency.



COAL BURNING AND RADIATION CAPACITIES

STOKOL MODEL HBRA (Hopper Type) and STOKOL MODEL HBCRA (Cabinet Type)		
	Max. Coal Feed*** Pounds Per Hour	Square Feet of Steam Radiation*
No. 2	20 to 24	660 to 795
No. 3	30 to 36	990 to 1190
No. 5	50 to 60	1650 to 1980
No. 7	75 to 90	2450 to 2940
STOKOL MODEL HBURA (Universal Bin Feed Type)		
No. 2	20 to 24	660 to 795
No. 3	30 to 36	990 to 1190

STOKOL-TRIPLEX MODEL XBRA (Hopper Type) and MODEL XBCRA (Cabinet Type)		
	Max. Coal Feed*** Pounds Per Hour	Square Feet of Steam Radiation*
No. 2	20 to 24	660 to 795
No. 3	30 to 36	990 to 1190
No. 5	50 to 60	1650 to 1980
STOKOL-TRIPLEX MODEL XBURA (Universal Bin Feed Type)		
No. 2	20 to 24	660 to 795
No. 3	30 to 36	990 to 1190

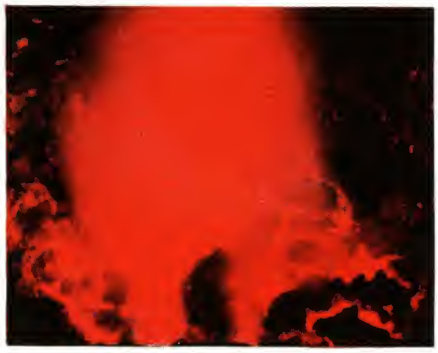
*Rating represents square feet of standing direct steam radiation based on 14,000 BTU coal in conformance with S. M. A. stoker ratings.
***Depending on size, weight and condition of coal.



Unretouched photograph of a typical coke tree. Note the massive pillar of unburned fuel and the lack of radiant heat. Photograph was taken 40 minutes after an "off" period and it will require considerably more time to bring this fire up to a state where it will properly heat the house—a condition common with strongly coking coals.



In all automatic heating systems the source of heat must turn off and on many times a day . . . maintaining at times only a small pilot fire. This fire should be capable of rapid acceleration when turned on. This unretouched photograph of a STOKOL RETORT AGITATOR fire was taken *one minute* after the start from an "off" period. Note level . . . loose fuel bed.



Unretouched photograph of same STOKOL RETORT AGITATOR fire two minutes later. Note the quick, even acceleration.

The slow rising and lowering of retort agitator below the combustion zone prevents solid coke formations and allows air to penetrate evenly throughout the fuel bed (the identical fuel particles can be traced in both views.)

STOKOL-TRIPLEX
Domestic Bituminous Stokers



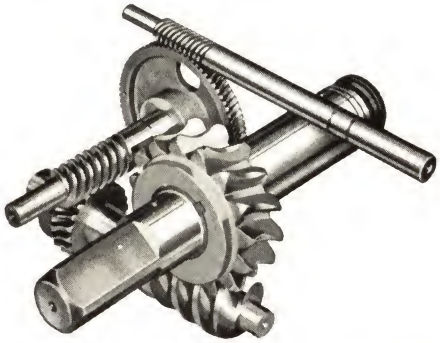
Model XB-2
STOKOL-TRIPLEX

STOKOL-TRIPLEX was produced to answer the requirement for a really fine automatic coal burner priced to compete with stokers in the non-hydraulic class. It is built with the same fine materials and to the same high standards of workmanship as STOKOL. It combines an advanced type triple reduction worm transmission with many proven STOKOL features. The STOKOL-TRIPLEX drive is the most efficient non-hydraulic drive on the market today. Covered by the STOKOL 2-year guarantee.

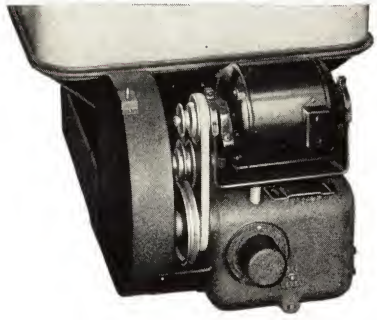
STOKOL-TRIPLEX embodies these superior STOKOL features—automatic air control, air-tight hopper, improved sectional metal sprayed retort, universal bin feed, automatic ash remover on anthracite models.

Available in Hopper Type, Bin Feed, and Cabinet Models.





DRIVE—designed for simplicity, reliability, efficiency, and the use of a minimum number of parts. The three-step reduction permits the use of such angles between the worms that high efficiency is possible which can not be obtained with a single worm reduction or gears. The TRIPLEX reduction also permits sizes of the final worm and worm wheel drive that will insure long life and the absence of mechanical failures. Every precaution is taken for silent operation. Worms are hardened and ground to give perfect finish and are mounted on double row ball bearings.



MOTOR MOUNTING AND DRIVE—Unusually compact and simple—three-point V-belt drive to permit the desired combination of blower and transmission speeds. The coil spring under motor bracket automatically keeps the belt tightened.



STOKOL-TRIPLEX
Universal Bin Feed

Coal bin conveyor screw can be run to coal bin in any direction to facilitate universal application.

COAL BURNING AND RADIATION CAPACITIES

MODEL XB (Hopper Type)
MODEL XBC (Cabinet Type)
MODEL XBU (Universal Bin Feed Type)

	Maximum Coal Feed*** Pounds Per Hour	Square Feet of Steam Radiation*
No. 2	20 to 24	560 to 675
No. 3	30 to 36	850 to 1020
No. 5 (Hopper & Cab. Models Only)	50 to 60	1430 to 1715

*Rating represents square feet of standing direct steam radiation based on 14,000 BTU coal in conformance with S. M. A. stoker ratings.

***Depending on size, weight and condition of coal.

SCHWITZER-CUMMINS COMPANY .. Indianapolis, U.S.A.

ANTHRACITE STOKERS
STOKOL-TRIPLEX

STOKOL-TRIPLEX was developed to meet the demand for a better anthracite coal stoker of the non-hydraulic drive type at a competitive price. Its triple worm reduction drive, an exclusive TRIPLEX feature, is designed for greater economy with simplicity and reliability—a greater turning effort is exerted on the feed screw with less current consumption than with any other transmission of the non-hydraulic class. STOKOL-TRIPLEX is built to the same high standard of quality as STOKOL and embodies many proven STOKOL features. It is built in our own modern plants by up-to-date quantity production methods which permits offering the greatest possible value in the non-hydraulic stoker class at the lowest possible price. Covered by the Schwitzer-Cummins two-year stoker guarantee.

Illustration and description of transmission on Bituminous STOKOL-TRIPLEX page.



STOKOL-TRIPLEX Anthracite Stokers are available in Hopper, Cabinet and Bin Feed types—with or without Automatic Ash Remover.

STOKOL and STOKOL-TRIPLEX Bin Feed models with automatic ash removers are the last word in convenience in automatic heat with anthracite. The coal is fed directly from the coal bin to the fire. Your hands never need touch it and the work and unpleasantness of handling ashes are done away with. The coal feed screw on Universal Bin Feed models can be run to the coal bin in any direction, at any angle, and for any distance, no matter where the coal bin may be located.

ANTHRACITE INDUSTRIES INCORPORATED approved

COAL BURNING AND RADIATION CAPACITIES

MODEL XA (Non-Ash-Removing Hopper Type)
MODEL XAC (Non-Ash-Removing Cabinet Type)
MODEL XAU (Non-Ash-Removing Bin Feed Type)
MODEL XAAR (Ash-Removing Hopper Type)
MODEL XACAR (Ash-Removing Cabinet Type)
MODEL XAUAR (Ash-Removing Bin Feed Type)

	Max. Coal Feed*** Pounds Per Hour	Square Feet of Steam Radiation*
No. 15	15 to 18	400 to 480
No. 25	25 to 30	650 to 780
No. 35	35 to 42	925 to 1110
No. 50	50 to 60	1325 to 1590

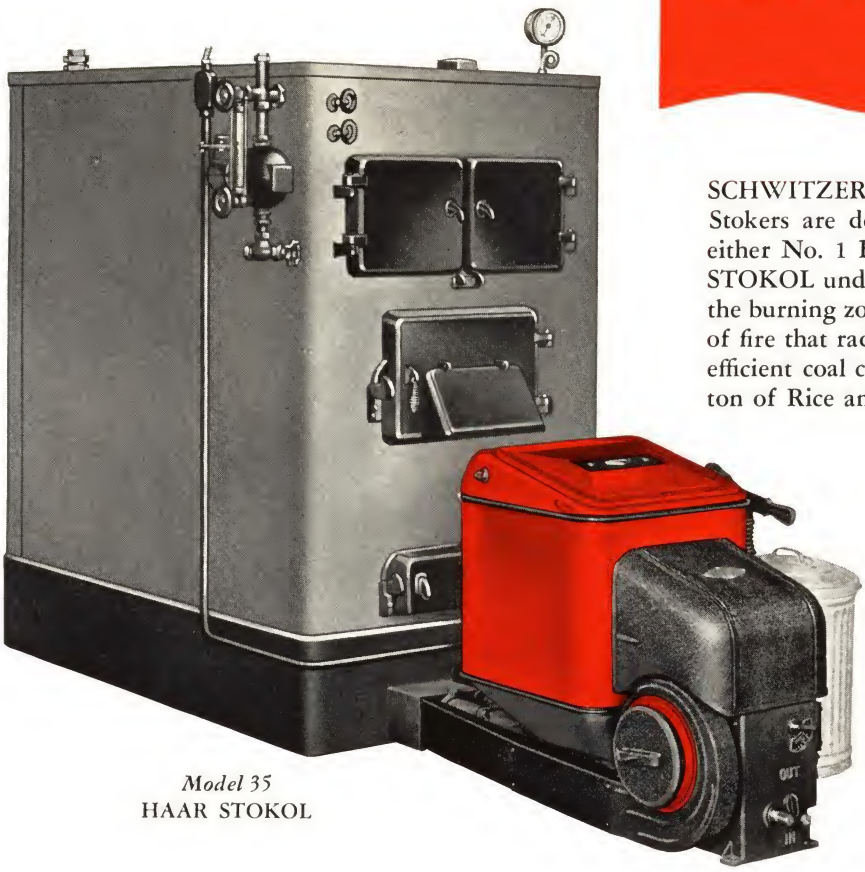
*Anthracite rating represents square feet of standing direct steam radiation based on 13,000 BTU anthracite in conformance with S. M. A. stoker ratings.

***Depending on size, weight and condition of coal.

CONTROLS

Every function important for comfort, convenience, economy and safety in the operation of the heating plant is automatically controlled in SCHWITZER-CUMMINS Anthracite Stokers. The Thermostat regulates the fire and the feeding of coal and holds uniform temperatures—a Limit Control insures against overheating furnace or boiler—a Pressure Control regulates the operation of stoker according to steam pressure desired—a Hold-Fire Control prevents the fire from going out in mild weather and there are automatic devices for signaling a warning of any interruption in the operation.

ANTHRACITE STOKERS
STOKOL



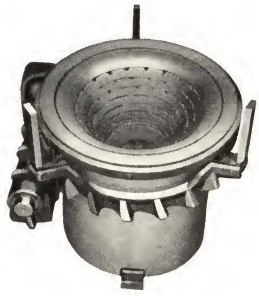
Model 35
HAAR STOKOL

SCHWITZER-CUMMINS Anthracite Automatic Coal Stokers are designed for burning anthracite coal only, either No. 1 Buckwheat or Rice. Combustion is by the STOKOL underfeeding principle. The coal ignites below the burning zone, producing a constantly glowing mound of fire that radiates all of its heat to the furnace. Highly efficient coal consumption, coupled with the low cost per ton of Rice and Buckwheat sizes, results in a substantial saving in fuel costs as compared to hand firing stove, egg or nut, and numerous owners report savings in excess of 50% as compared to gas and oil. STOKOL is electrically operated and automatically controlled—its heat is uniform at all times, healthful and convenient.

Capacities from 15 pounds to 84 pounds of coal per hour . . . Superior features are: STOKOL Hydraulic Transmission . . . Stokostat hold-fire control . . . dust tight hopper . . . Universal Bin Feed . . . Automatic ash remover . . . Stokolarm automatic signaling device.

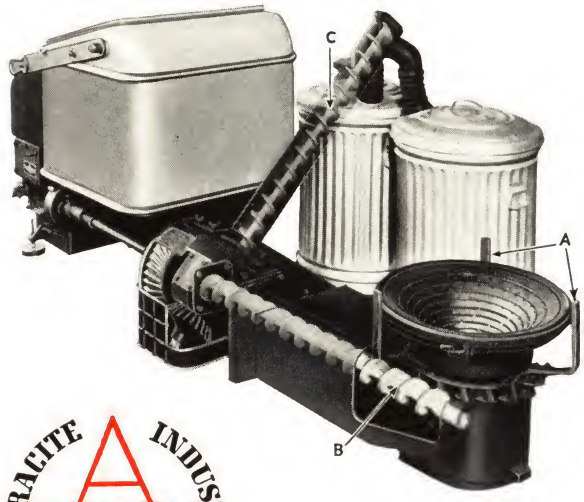
Illustration and description of Hydraulic transmission on STOKOL Bituminous page.

All* STOKOL *Anthracite models are available in Hopper, Cabinet and Bin Feed types—with or without automatic ash remover.



METAL SPRAYED RETORT

Cast from special heat-resisting iron and sprayed with an aluminum alloy which greatly increases resistance to heat and adds to the life of the retort. Scientifically designed to get the most heat out of the coal. Openings between the rings permit air from blower to be evently distributed throughout the fire and give perfect combustion.



SCHWITZER-CUMMINS AUTOMATIC ASH REMOVER

As the coal is consumed, the ashes are forced to the outside of the retort by the fresh coal coming in from below and are collected in the ash pit. The exposed portion of the ash screw (B) collects the ashes and delivers them to the elevator screw (C) which deposits them in air-tight ash cans. The entire system is dust-tight. The screws are enclosed in metal pipes connected to tight fitting ash can covers by specially moulded flexible rubber connections. The ash remover can be installed on either side of the stoker facilitating a convenient, accessible installation. The utmost precaution has been taken for cleanliness, quietness and dependability. The simple ash can screws are a great improvement over the old-fashioned chain and bucket elevator.

COAL BURNING AND RADIATION CAPACITIES

MODEL HA
(Non-Ash-Removing Hopper Type)
MODEL HAC
(Non-Ash-Removing Cabinet Type)
MODEL HAU
(Non-Ash-Removing Bin Feed Type)
MODEL HAAR
(Ash-Removing Hopper Type)
MODEL HACAR
(Ash-Removing Cabinet Type)
MODEL HAUAR
(Ash-Removing Bin Feed Type)

	Max. Coal Feed*** Pounds Per Hour	Square Feet of Steam Radiation*
No. 15...	15 to 18	400 to 480
No. 25...	25 to 30	650 to 780
No. 35...	35 to 42	925 to 1110
No. 50...	50 to 60	1325 to 1590
No. 70...	70 to 84	1850 to 2220

*Anthracite rating represents square feet of standing direct steam radiation based on 13,000 BTU anthracite in conformance with S. M. A. stoker ratings.

***Depending on size, weight and condition of coal.

ANTHRACITE INDUSTRIES INCORP ORATED approved

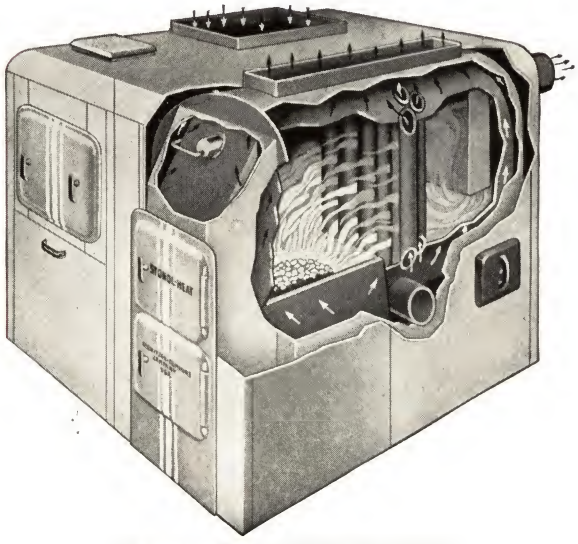
SCHWITZER-CUMMINS COMPANY .. Indianapolis, U.S.A.

STOKOL-HEAT
Winter Air Conditioner

The experience gained from 60,000 satisfactory STOKOL installations gives us a competent understanding of what the average American family desires in comfortable, reliable heat without drudgery and what they can afford to pay. Starting without any obligations to old designs it was possible for us to depart boldly from outmoded ideas of furnace construction. STOKOL-HEAT is the most modern and economical of any of the new winter air conditioners. It has many unique features that accomplish unusual economy in heat utilization and the entire unit is arranged for the utmost comfort and convenience and for the very minimum of attention. Cabinets are modernistic in design and proportioned to save space in the basement. The dimensions of the largest size, Model 300, are only 64″ x 64″ x 63″.



STOKOL-HEAT combines everything necessary for ideal winter heat... a new and advanced design of warm air furnace, surprisingly economical and a wonderful heater . . . automatic heat provided by a Schwitzer-Cummins automatic coal stoker . . . forced warm air heating by means of a blower assuring a uniform distribution of heat throughout all the home . . . no more cold corners or cold floors or rooms that cannot be comfortably heated . . . clean, filtered air with a complete change of air in every room several times an hour . . . proper humidification so essential to personal health and comfort.



Cutaway view of STOKOL-HEAT
showing cabinet, furnace and stoker retort.

STOKOL-HEAT has been aptly called a "warm air boiler." Note the vertical tubes located in the flame travel which quicken the heating of the air and add greatly to the economy. STOKOL-HEAT has every convenience for servicing and cleaning. Cleaning the furnace is no longer a problem. Two large, easily accessible "fly ash" traps are placed (one on either side of the heat exchanger tubes) in a manner not to reduce the stack draft. A liberal size clinker compartment is conveniently located just inside the firing door permitting hot clinkers to cool within the furnace and preventing objectionable gas odors from entering the basement. The door for filling the hopper at a convenient height from the floor is large, and equipped with a chute to facilitate filling. Fire doors are insulated with refractory material.

The circulating blower is of the Schwitzer-Cummins HY-DUTY silent slow speed improved performance design.

Model No. 100
STOKOL-HEAT
available with stoker set on either side or at front—also with cabinet type stoker.



COAL BURNING AND RADIATION CAPACITIES

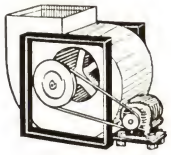
MODEL FXB (Hopper Type) MODEL FXBU (Universal Bin Feed Type)	Max. Coal Feed*** Pounds Per Hour	BTU/Hr. at Bonnet**
	MODEL FXBRA (Retort Agitator Hopper Type) MODEL FXBURA (Retort Agitator Bin Feed Type)	
No. 100	12 to 15	75,000 to 120,000
No. 200	20 to 24	133,000 to 200,000
No. 300	30 to 36	200,000 to 300,000

***Depending on size, weight and condition of coal.

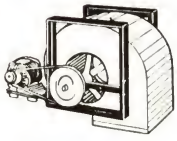
**Furnace ratings based on 14,000 BTU coal in conformance with S. M. A. stoker ratings.

BLOWERS

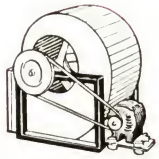




Top Vertical Discharge



Bottom Vertical Discharge



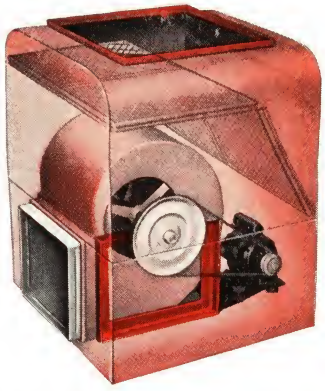
Bottom Horizontal Discharge

For twenty years HY-DUTY FANS and BLOWERS have been leaders in industrial and domestic fields. They excel in advanced engineering—efficient performance and low operating costs. All sizes are available in four different outlet positions—Top Horizontal, Bottom Horizontal—Top Vertical and Bottom Vertical, an important feature for convenient and inexpensive installation.

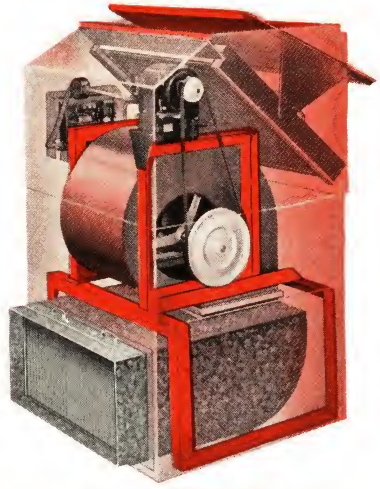
Capacities range from 400 CFM to 15,000 CFM.

HY-DUTY BLOWERS possess many features of great merit—high delivery at low operating speeds . . . self-oiling, self-aligning pillow blocks . . . full floating rubber insulated motor mounting . . . variable speed drive . . . perfect balance, etc.

Specifications and performance data on request.



HY-DUTY BLOWER-FILTER UNITS are made in five models—two with 12″ blowers and 1/6 and 1/4 HP motors, and three with 14″ blowers and 1/4, 1/3 and 1/2 HP motors, all liberally sized for furnaces from 18″ to 32″ grate diameters. All models are designed for efficient delivery and silent operation at slow speeds and with a maximum of filter area. HY-DUTY BLOWER-FILTERS have a fine reputation for satisfactory service. They are of high quality and are reasonably priced.



STOKOLAIR-HUMIDIFIER

A high grade model combining a Blower-Filter Unit and a Humidifier.

SUPERIOR FEATURES . . . All-metal indestructible air filter—lint arrester—swinging access door which makes the unit easily convertible to summer cooling by utilizing the cooler basement air—non-corroding non-clogging spray nozzles—dual system of humidity control.

The air enters the cabinet from the cold air return or from the basement, according to the position of the access door. It passes through the lint arrester which effectively stops all lint, hair and like material from clogging the filter, thence through the filter for purification from dirt. The filtered air is circulated by the blower to the galvanized iron humidifier chamber where it is moistened by two sprays under automatic control of both a Humidistat and a Windowstat. An eliminator at the outlet opening extracts any moisture not thoroughly absorbed by the air stream. The Windowstat acts as a limit switch for the Humidistat and prevents excess condensation in case of sudden drops in temperature outdoors and high humidity indoors.

Capacities up to 34″ grate area furnaces.



HY-DUTY ATTIC VENTILATORS are made in five fan diameters. Capacities range from 4,200 CFM to 16,000 CFM. They are built with HY-DUTY fans specially designed for high air delivery at slow speed, insuring quiet operation and low current consumption.

For complicated room arrangements, we offer HY-DUTY HOME VENTILATORS built with our Blower type fans with Top Horizontal outlet. These Ventilators are particularly adapted for the positive handling of air against unusual restrictions—available with complete accessories including automatic time-clock and automatic shutters for protection against the weather.

WRITE FOR SPECIFICATIONS AND ENGINEERING DATA

SCHWITZER-CUMMINS COMPANY .. Indianapolis, U.S.A.

SCHWITZER-CUMMINS . . . and its Products

Coal Stokers..

STOKOL AND STOKOL-TRIPLEX FOR BITUMINOUS AND ANTHRACITE COALS.. RETORT AGITATOR MODELS FOR HIGH COKING COAL

Stoker Fired Furnaces..

AUTOMATIC WARM AIR HEATING PLANTS AND WINTER AIR CONDITIONERS

Blowers.. BLOWER-FILTER UNITS.. BLOWER-FILTER HUMIDIFIERS.. GENERAL VENTILATION

Attic Ventilators..

PROPELLER FAN TYPE.. BLOWER FAN TYPE





Our plants in Indianapolis are fully equipped for the building of fine Stokers, Stoker-fired Furnaces and Blowers in the manner required today for products built in large volume to precise standards of quality workmanship and material. All important parts—transmissions, blowers, hoppers, retorts, ash conveyors, castings, etc., are completely fabricated in our own factories. Much specially built equipment is employed and we have many departments for the building of Stoker and Furnace Units by mass production methods which insure a high quality product at low cost.

We and our distributors are equipped to offer engineering services for the selection and installation of our products. Write for Architects and Engineers Manual.

SCHWITZER-CUMMINS COMPANY
INDIANAPOLIS, U. S. A.

PRINTED IN U.S.A.

MOTORSTOKOR DIVISION

HERSHEY MACHINE & FOUNDRY COMPANY

MANHEIM, PA.

Installed and Serviced by Factory Trained Dealers in Principal Cities

Description

An underfeed, screw type stoker for buckwheat or rice anthracite. Models for small and large homes, as well as apartment houses, hotels, office and factory buildings. Attractive, modern, streamline design. Bin or hopper feed, ash-removal or pit type. Equipped with Minneapolis-Honeywell controls for start and stop operation. The standard set of controls can be used for supplying year-round domestic hot water.

MOTOR STOKOR

Application

Available in 8 models and in units from 5 to 60 tons per season. Adaptable to steam, vacuum, water or warm air systems. Many semi-commercial uses, apartment houses, factories, bakeries, etc. Can be installed in oil and gas boilers. Capacities for anthracite of almost double any other make approved by Anthracite Industries, Inc., Laboratories.

Features of Design

General
Complete, sturdy and rugged.
Oilless bearings throughout.

Bin-to-Burner Models
Feeder operates continuously while stoker is in operation.
Universal (except 5AF models)—fuel may be picked up from any direction.
No bearings in coal.
Provided with suction from air intake for dustless operation.

Hopper Models
Hoppers made of cast iron $\frac{3}{16}$ in. thick.
Suction to permit dustless filling.

Motor
Flexible mounting.
Fully enclosed.
Built-in overload protection.

Fan
Pressure type, self-compensating (eliminating necessity of special regulators).
Quiet.
Mounted on motor shaft—no couplings.

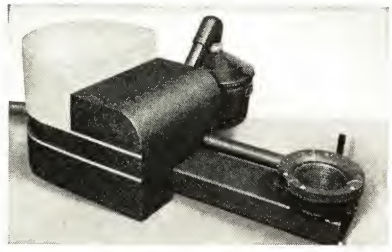
Coal Feed
Heavy fabricated screws.
Screws easily removed.
Floating screws.
Erosion-abrasion resistant and ventilated coal tube.
Jerkless, even feed.

Main Drive
V-belt drive with positive tension.
Automatic release clutch and current cut-off.
High speed gears and bearings submerged in oil.

Burner
Concentric dustless ring grate—no cleaning necessary.

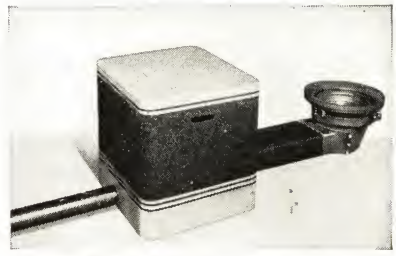
Ash System
Positive clinker breaker—revolving clinker bar.
Monel shafts.
Multi can discharge.

Controls
Intermittent thermostat operation.



Series 10AF. Universal Bin Feed with Ash Removal

Series 11AF—Universal Bin Feed Without Ash Removal.



Series 5AF. Straight Line Bin Feed without Ash Removal

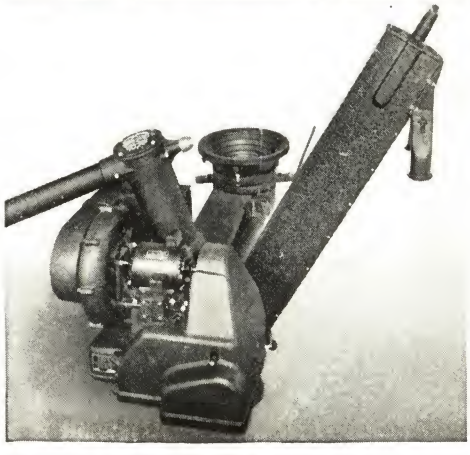


Coal is fed from the bottom up through the Motorstokor fire pot. Air is forced through the coal which provides perfect combustion and saves fuel.



Series 2AH. Hopper Feed with Ash Removal

Series 3AH—Hopper Feed Without Ash Removal.



Series 2AF. Universal Bin Feed with Ash Removal

Series 3AF—Universal Bin Feed Without Ash Removal.

MODEL SPECIFICATIONS

Model—last number indicates rating in pounds fuel burnable per hour	Max. rating sq. ft. E. D. R. steam or vapor (see note)	Max. rating sq. ft. E. D. R. water (see note)	Dia. of burner in.	Burner clearance req'd in.	Recommended clearance top of burner to crown sheet, in.	Height of burner in.	Motor H.P.	Max. length feeder center bin to center of boiler ft.-in.	Hopper holds lbs.	Ash capacity cans
2AF20	640	1020	13	15	20	11½	⅙	29	.....	2 to 7
30	850	1360	15	17	23	12½	⅙	29	.....	2 to 7
40	1100	1760	17	20	26	12½	⅙	29	.....	2 to 7
50	1450	2320	17	20	26	12½	¼	29	.....	2 to 7
65	1800	2880	20	25	30	15	¼	29	.....	2 to 7
85	2450	3920	24	29	36	16½	¾	29	.....	2 to 7
100	2800	4480	24	29	36	16½	¾	29	.....	2 to 7
2AH20	640	1020	13	15	20	11½	⅙	.....	450	2 to 7
30	850	1360	15	17	23	12½	⅙	.....	450	2 to 7
40	1100	1760	17	20	26	12½	⅙	.....	450	2 to 7
50	1450	2320	17	20	26	12½	¼	.....	450	2 to 7
65	1800	2880	20	25	30	15	¼	.....	450	2 to 7
85	2450	3920	24	29	36	16½	¾	.....	750	2 to 7
100	2800	4480	24	29	36	16½	¾	.....	750	2 to 7
3AF20	640	1020	13	20	20	11½	⅙	29	.....	PIT
30	850	1360	15	22	23	12½	⅙	29	.....	PIT
40	1100	1760	17	25	26	12½	⅙	29	.....	PIT
50	1450	2320	17	25	26	12½	¼	29	.....	PIT
65	1800	2880	20	28	30	15	¼	29	.....	PIT
85	2450	3920	24	36	36	16½	¾	29	.....	PIT
100	2800	4480	24	36	36	16½	¾	29	.....	PIT
3AH20	640	1020	13	20	20	11½	⅙	.....	450	PIT
30	850	1360	15	22	23	12½	⅙	.....	450	PIT
40	1100	1760	17	25	26	12½	⅙	.....	450	PIT
50	1450	2320	17	25	26	12½	¼	.....	450	PIT
65	1800	2880	20	28	30	15	¼	.....	450	PIT
85	2450	3920	24	36	36	16½	¾	.....	750	PIT
100	2800	4480	24	36	36	16½	¾	.....	750	PIT
5AF20	640	1020	13	20	20	11½	⅙	27-3	.....	PIT
30	850	1360	15	22	23	12½	⅙	27-3	.....	PIT
40	1100	1760	17	25	26	12½	⅙	27-3	.....	PIT
50	1450	2320	17	25	26	12½	¼	27-3	.....	PIT
65	1800	2880	20	28	30	15	¼	27-3	.....	PIT
10AF12	3 0	576	11	13	18	10	⅙	27-3	.....	1
20	640	1020	13	15	20	11	⅙	27-3	.....	1
30	850	1360	15	17	23	12½	⅙	27-3	.....	1
40	1100	1760	17	20	26	12	⅙	27-3	.....	1
11AF12	3 0	5 6	11	18	18	10	⅙	27-3	.....	PIT
20	640	1020	13	20	20	11	⅙	27-3	.....	PIT
30	850	1360	15	22	23	12½	⅙	27-3	.....	PIT
40	1100	1760	17	25	26	12	⅙	27-3	.....	PIT

Note: Choose next larger size when within 20% of rating. It is sound engineering to over-stoker.

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GRINNELL ADJUSTABLE PIPE HANGERS AND SUPPORTS

The large line of Grinnell Adjustable Pipe Hangers and Supports is the outgrowth of over half-a-century of experience in the industrial piping field. Its completeness assures no delay in obtaining special hangers for there is a type to meet practically every condition encountered in piping work.

Being *adjustable after erection,* Grinnell Hangers are easy to install and a few turns quickly lines up a piping equipment either during or years after installation. Increased safety and efficiency with decreased maintenance expense result from their use.

A few of these labor saving Hangers and Supports are shown below and on following page.

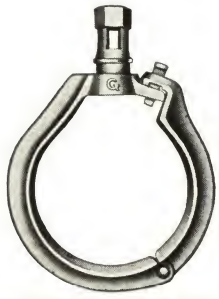
For a complete Catalogue, address GRINNELL COMPANY, INC., 277 West Exchange Street, Providence, R. I.



Adjustable Swivel Ring
Fig. 101



Adjustable Swivel Ring
with Boss—Fig. 101-B



Adjustable Swivel Ring
Split Ring Type—Fig. 104



Adjustable Wrought Ring
Hanger—Fig. 95



Adjustable Wrought Pipe Ring
Fig. 97



Split Pipe Ring With Socket
Pipe Thread—Fig. 107
Rod Thread—Fig. 107-R



Adjustable Wrought Clevis
Hanger—Fig. 260



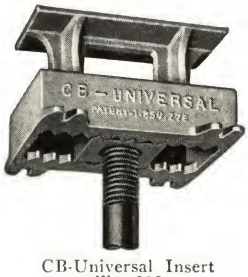
Adjustable Wrought U Pipe
Hanger—Fig. 252



Adjustable Swinging
Hanger Flange, Complete
Fig. 155



Adjustable Clip
Fig. 106



CB-Universal Insert
Fig. 282



Simplex Concrete Insert
Fig. 281



Pipe Hanger Flange
Fig. 153



Swivel Hanger Flange
Fig. 154



Side Beam Bracket
Fig. 202



Side Column Bracket
Fig. 203



Extension Pipe Clamp or Riser Clamp
Fig. 261

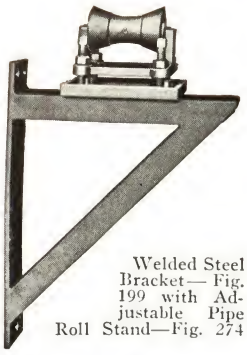


U Hook
Fig. 205

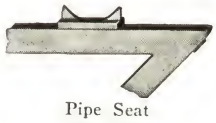


Adjustable Coach Screw Clip
(Sprinkler Line)—Fig. 100

GRINNELL ADJUSTABLE PIPE HANGERS AND SUPPORTS—Continued



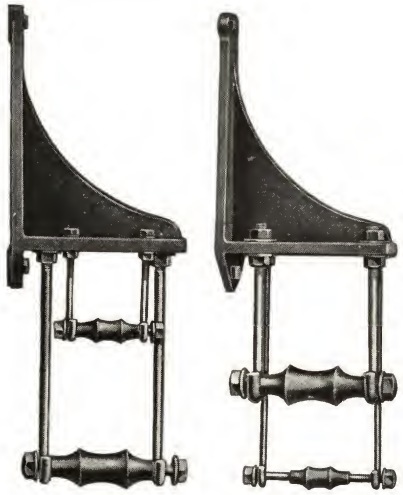
Welded Steel Bracket— Fig. 199 with Adjustable Pipe Roll Stand—Fig. 274



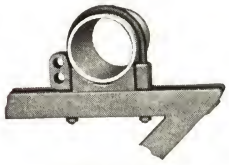
Pipe Seat
Fig. 198



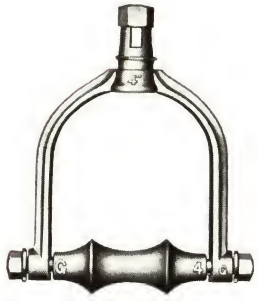
Single Pipe Roll (Complete)—Fig. 171
Pipe Roll Only—Fig. 173



Two-Pipe Adjustable Brackets
Small Pipe at Top — Fig. 175
Large Pipe at Top — Fig. 176



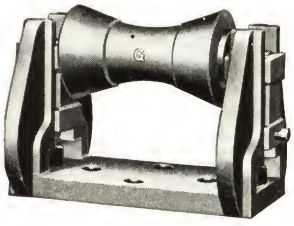
Anchor Chair
Fig. 197



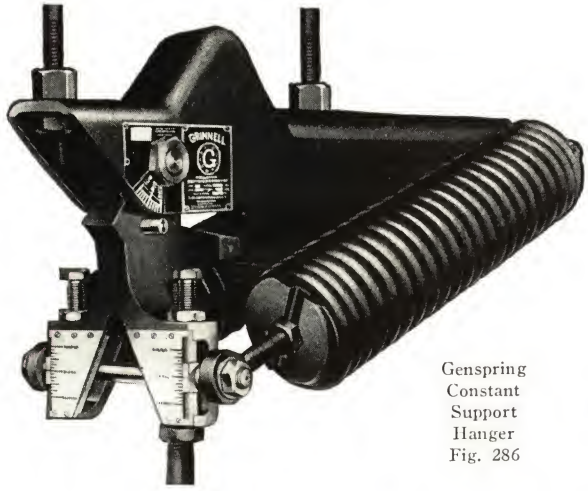
Adjustable Swivel Pipe Roll
Fig. 174



Pipe Roll Stand (Complete)—Fig. 271
Pipe Roll and Rod—Fig. 272
Pipe Roll Only—Fig. 273



Adjustable Pipe Roll Stand
Fig. 276



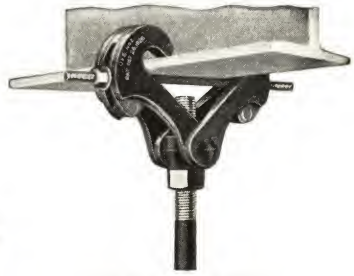
Genspring Constant Support Hanger
Fig. 286



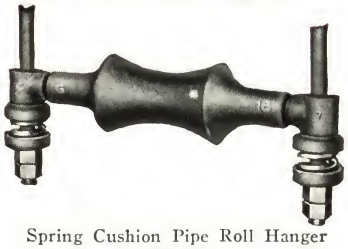
Pipe Covering Protection Saddles Figs. 186, 187, 188. Showing small points of contact which cut heat losses to a minimum.



Pipe Roll and Plate—Fig. 277



U.F.S. I-Beam Clamp
Fig. 228



Spring Cushion Pipe Roll Hanger
Fig. 256



Pipe Saddle Support
Fig. 258



Pipe Chair
Fig. 183



Spring Cushion Pipe Hanger
Fig. 255



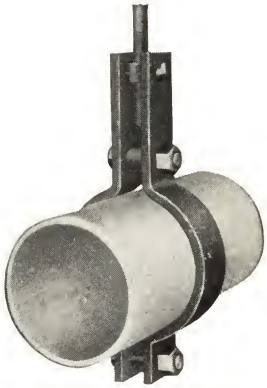
Wrought Pipe Clamp
Fig. 212



Adjustable Pipe Saddle Support
Fig. 264



Pipe Stanchion Saddle
Fig. 259



Adjustable Wrought Pipe Clamp
Fig. 251

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WATERBURY, CONNECTICUT

MANUFACTURING PLANTS

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IN CANADA: Anaconda American Brass, Limited, NEW TORONTO, ONT.

For Other Pages, see File Index

ANACONDA COPPER TUBES AND FITTINGS FOR HOT WATER AND LOW PRESSURE STEAM HEATING LINES

Since the introduction of relatively lightweight copper tubes connected with solder-type fittings, plumbing and heating contractors have been quick to take advantage of this type of piping for both plumbing and heating lines. They have found that a complete non-rust installation costs but little more than one of less durable pipe and fittings. This low cost is due to the fact that solder-type joints make it unnecessary to cut away part of the tube wall for threads. Consequently, the tube walls can be made thinner with less weight per foot, and a corresponding reduction in cost.

Mechanically, a piping system made up of copper tube and solder-type fittings provides more than ample strength where conditions of pressure and temperature are normal.

Old Methods of Pipe Sizing

Before copper tubes came into prominence in the domestic heating field, it was customary to use iron or steel in pipe sizes considerably larger than the copper tube sizes used today. This was particularly true of gravity type hot water systems because of the inherent low circulation head and velocity. Modern forced circulation systems employ permanently smooth wall copper tubes of small diameter and long radius elbows which retain their superior carrying capacity indefinitely.

ANACONDA
from mine to consumer
REG U.S. PAT. OFF.

Copper Lines Free from Rust

The absence of rust and scale formation in a copper tube system has the further advantage of eliminating the possibility of rust or corrosive sediment localizing in the fittings, valves or traps, and thereby reducing the effectiveness of the system.

Attractive Appearance

The neat appearance of a polished and lacquered copper tube installation, together with the small size of the tubes used, have a decided appeal, as is evidenced by the many hundreds of hot water copper tube systems installed in suburban homes where the basement is usually converted into a recreation room.



Annealed copper tubes can be bent by hand to eliminate several fittings, or to permit offsets around ordinary obstructions. This effects important economies.



Copper tubes can be assembled with solder fittings in tight corners. The flexibility of these tubes make it easy to compensate for minor inaccuracies

Copper Tube Installation Inexpensive

It is the consensus of opinion among heating contractors who have had considerable experience with copper tubes and solder fittings, that these materials afford installation economies not possible with thread type connections.

Entire cost of the copper tube installation, including both materials and labor, ordinarily is but slightly more than an iron pipe job of equal radiation capacity. The advantages made possible through use of copper tubes, plus their many years of trouble-free service, effectually offset any slight additional first cost.

Application

Hard drawn tubes are most frequently used for mains and risers, and often for branch runs, to radiators. In exposed installations, hard drawn tubes present a more attractive appearance. Offset bends can be made in hard drawn copper tubes by annealing locally with a torch to a dull red heat before the bend is made. *No bends should be attempted with hard tubes without first annealing, and sharp bends should be avoided.*

In replacing old installations and in remodeling, the smaller size soft tubes in 60-ft. coils can be run through the walls and partitions with a minimum of damage to the structure. Soft tubes can also be used to advantage for the branch runs between the mains or risers and the radiators. These soft tubes can be bent by hand to eliminate many fittings; to permit offsets around ordinary obstructions; or to compensate for slight inaccuracies encountered in practice. Soft tubes, joined with flared tube fittings, are also used for connecting oil burners with fuel tanks.

Gauges and Types

Anaconda Copper Tubes in all standard sizes are carried in stock by leading distributors in all sections of the country. They are furnished in three wall thicknesses which are identified as Types "K," "L" and M."

Type "K" Tubes—Type "K," the heaviest grade, is recommended for heating lines, conforming to Type "K" requirements of U. S. Government Specifications WW-T-799 and A.S.T.M. Specifications B-88-33. These tubes are stamped at frequent intervals *"Anaconda Type 'K'."*

Type "L" Tubes—Anaconda Type "L" Copper Tubes, somewhat lighter than Type "K," are suitable for interior plumbing and heating lines. These tubes are stamped *"Anaconda Type 'L'"* and meet the foregoing specifications for Type "L" Tubes.

Type "M" Tubes—Lighter than Type "L" and furnished in hard temper only, these tubes have nevertheless been used with apparent success for plumbing purposes. They are not, however, recommended for heating lines.

Fittings

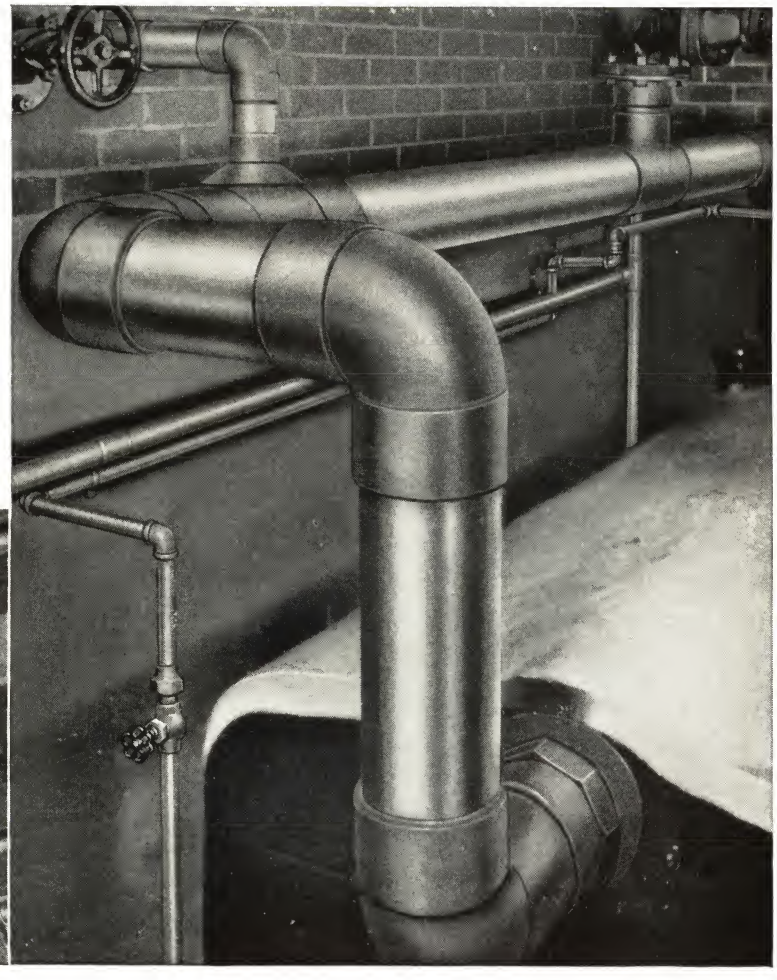
Anaconda Solder Fittings are available in both wrought copper and cast bronze. They are made to the exacting dimensions so essential for sound, leak-proof joints. Smooth inside surfaces permit quick, thorough cleaning which is necessary for satisfactory soldered connections. Deep cups provide a maximum area for the solder bond. All Anaconda Solder Fittings are tested to 90 lbs. air pressure under water, which is the equivalent of 400 to 450 lbs. water pressure. They are so designed as to offer a minimum of resistance to flow.

Note: *For further information regarding fittings, see File Index for our pages on Pipe, Tubes and Fittings for Plumbing.*



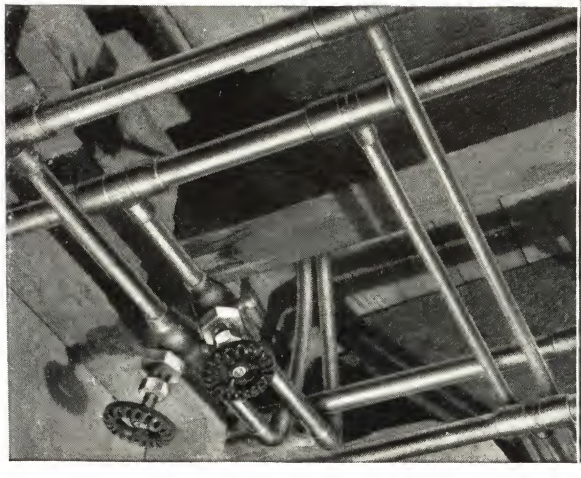
Literature

For detailed information regarding Anaconda Copper Tubes and Fittings for Heating Lines send for Anaconda Publication AC-2.



(Right) Large size Anaconda Copper Tubes are used for heating lines in office buildings, apartment houses, etc.

(Below) The compactness and attractive appearance of a copper tube installation is a decided advantage



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GRINNELL WELDING FITTINGS

Grinnell Welding Elbows, Returns and Tees are made from Seamless Steel Pipe or Tubing and are equivalent to the pipe itself—their Working Pressure-Temperature Ratings are equal to that of Seamless Steel Pipe.

Once the pipe for any condition has been determined it only remains to select Grinnell Welding Fittings to match. A simple rule to follow is this: "The Grinnell Welding Fittings should conform in minimum wall thickness, outside diameter at welding ends, inside diameter and tolerances to the dimensions of the adjoining pipe." This applies whether seamless pipe or butt or lap-welded pipe is to be used in the straight runs.

All Grinnell Welding Fittings have welding faces for all plain circumferential Butt Welds scarfed or beveled to the regulation 45° angle with $\frac{1}{16}$-inch square end on inside of fitting. Angles of bevel other than 45° can be furnished on special orders.

The Grinnell Welding Fittings Catalog containing complete descriptive and engineering data on these quality products will gladly be sent upon request to GRINNELL COMPANY, INC., 277 West Exchange Street, Providence, R. I.

Welding Elbows and Returns

(Manufacturing Process Patented)



90° Elbows



45° Elbows



180° Returns

Grinnell Welding Elbows and Returns are furnished in Long Turn (radius 1½ times nominal pipe size) and in Short Turn (radius approximately nominal pipe size) and in two weights. They have these distinctive features:

Made from seamless steel tubing.

One-piece fitting—no seams.

Uniform wall thickness at all points.

Smooth surfaces inside and outside—no flattening or buckling.

They are uniform and circular at all diametric angles.

Can be cut to any arc at diametric angles and will match up with pipe.

No need for tangents to make them circular.

Match up to standard weight, extra strong and o.d. pipe.

Working pressure and temperature ratings are same as for seamless pipe.

Welding Tees

(Manufacturing Processes Patented in United States and Canada)



Welding Tees

Grinnell Welding Tees are one-piece fittings made from seamless pipe or tubing; being of the same physical characteristics as standard, extra strong and o.d. steel pipe or seamless steel pipe of comparable pipe size, can be used under same conditions, pressures, and temperatures as the pipe itself.

Welding Outlets

(Patented)



Welding Outlets



Threaded Outlets

Grinnell Welding Outlets and Threaded Outlets are stock fittings properly designed for pipe welding and provide a simple and economical method of making welded branch connections.

Welding Outlets are for use in welded pipe installations and are suitable for practically all pressures and services.

Threaded Outlets are used principally for low pressure heating systems, for radiator outlets, branch lines, etc., but may be used for other services and pressures.

Concentric Welding Reducers



Concentric Welding Reducers

Concentric and Eccentric Reducers are made from seamless steel pipe and are furnished in either standard or extra heavy weights.

Welding Neck Flanges



Welding Neck Flanges

Welding Neck Flanges are of Forged Steel. They can be furnished for working steam pressures of 150, 300, 400, 600, 900 and 1500 pounds.

Lap Flanged Welding Necks



Lap Flanged Welding Necks

Grinnell Lap Flanged Welding Necks are regularly furnished for working steam pressures of 150, 300, 400 and 600 pounds. Furnished on order for higher pressures.

Each consists of forged steel flange and short piece of steel pipe or tubing with 100 per cent square lap. Opposite end scarfed for welding.

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PROVIDENCE, R. I.
OFFICES IN PRINCIPAL CITIES

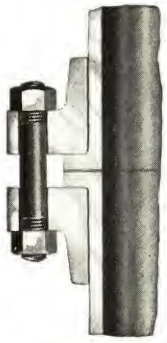
For Automatic Sprinkler Systems, Unit Heaters, Welding Fittings, Heating Specialties and Pipe Hangers, see File Index.

GRINNELL PREFABRICATED PIPING MATERIAL

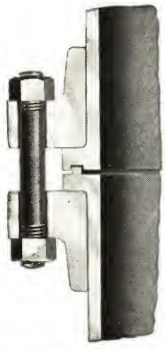
Whether your needs require the selection of a single piece of prefabricated piping material or the interpretation of a complete power piping specification, GRINNELL COMPANY, INC., places at your disposal, a service combining qualities of material and workmanship which shop and field experience have demonstrated to be conservative and dependable. This service includes the furnishing of all types of Welds, Pipe Bends, Lap Joints, etc., to cover every requirement.

At each of our sales offices will be found an Engineering Staff ready to aid in the solution of your piping problems.

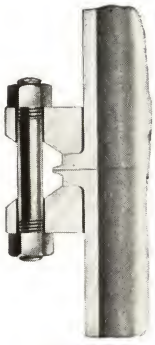
Address GRINNELL COMPANY, INC., 277 West Exchange Street, Providence, R. I.



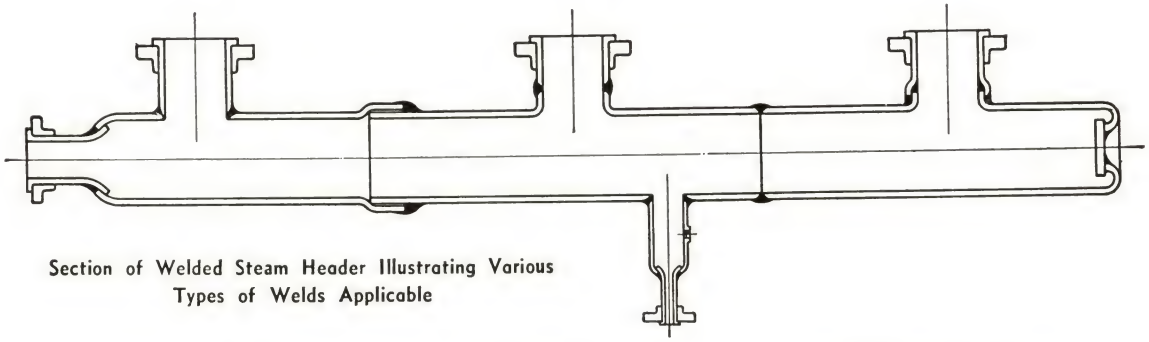
Square Lap



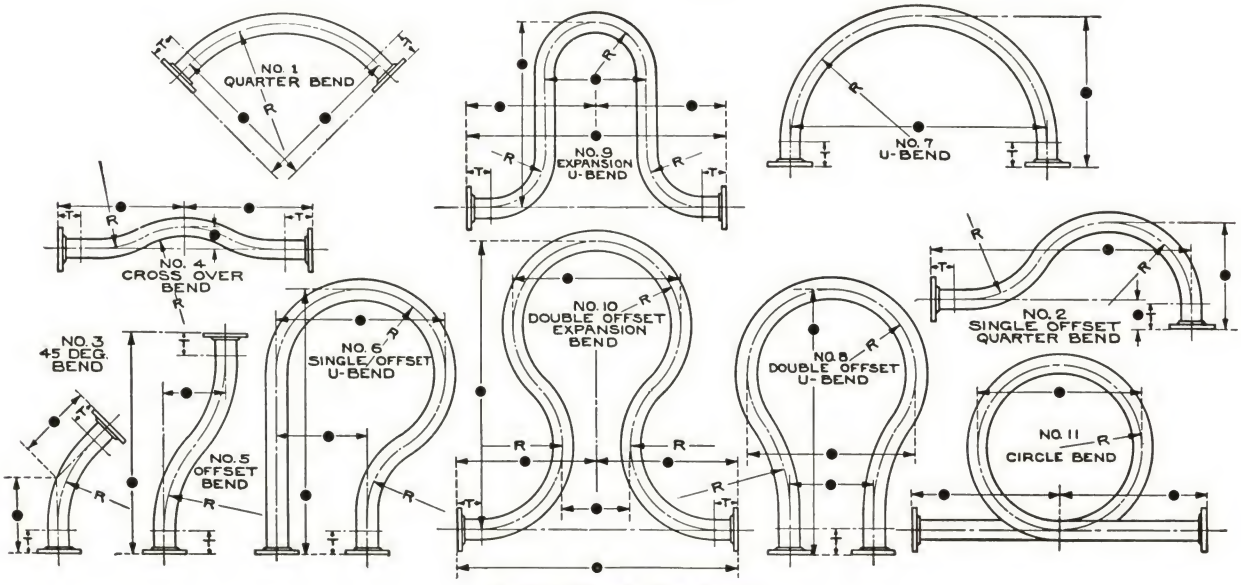
Small Tongue and Groove Lap



"Sarlun" Lap



Section of Welded Steam Header Illustrating Various Types of Welds Applicable



Typical Grinnell Pipe Bends

BENJAMIN RIESNER

Manufacturer of the Riesner Ventilating Brick

TELEPHONE
BUtterfield 8-8580

353 East 78th Street, NEW YORK, N. Y.

ARCHITECTURAL EXHIBITS IN PRINCIPAL CITIES

See File Index for Riesner Louvered Wall Ventilating Brick

FOR VENTING FUEL OIL AND VOLATILE OIL STORAGE TANKS

Description

A hollow cast metal brick, size of one standard brick with louvered face, finished with waterdrip at top and bottom with inside standard threading at back to connect to 1, 1½ or 2-in. diameter vent pipes.

Where Used

For venting Fuel Oil Storage Tanks and Volatile Inflammable Oil Storage Tanks outside of buildings.

Installation

The Ventilating Bricks are built in by the mason, as he bricks up the wall with the louvered face to the outer air and the threaded connection to the inside, ready for pipe connection.

Mason should provide chase in wall for vertical vent line.

Riesner Ventilating Bricks for ventilating fuel oil tanks should be placed according to local ordinance requirements generally "not less than 2 ft. from any building opening not less than 4 ft. or more than 12 ft. above the fuel pipe terminal."

Riesner Ventilating Bricks for ventilating volatile oil storage tanks *outside of buildings* should be placed according to local ordinance requirements generally at least 10 ft. from the nearest window of any adjoining building.

The Riesner Ventilating Bricks have been approved by the Board of Standards and Appeals for use in New York City, UNDER CAL. No. 15-36 S. A.

Construction Types and Sizes

Type "F" 2 In.—2¼ in. high, 8 in. wide, 4 in. deep with 2-in. diameter pipe connection at the back.

Type "F" 1½ In.—Same as "F" 2 in. with a double tapped G. I. bushing reducing the 2-in. thread to fit 1½-in. vent pipe.

Type "G" 1 In.—2¼ in. high, 8 in. wide, 4 in. deep with two 1-in. diameter pipe connections at back with a cast iron wall between openings, providing two separate vent openings and connections from one casting.

Screens—All types are furnished with removable screens of two thicknesses of 20-mesh brass wire gauze placed immediately in front of louvered casting and held in place with two brass screws.

Advantages

The Riesner Ventilating Brick Types "F" and "G" are made of cast iron galvanized, also of cast bronze.

The Riesner Ventilating Brick does not take up any space—it is bricked into the wall.

Ventilating Bricks can be built into brick walls, concrete forms, frame construction and pre-fabricated wall finishes.

They constantly ventilate, are always in view, have removable screens and present a pleasing appearance.

They *do not* project above or beyond the building. They "lose" themselves readily in the wall.

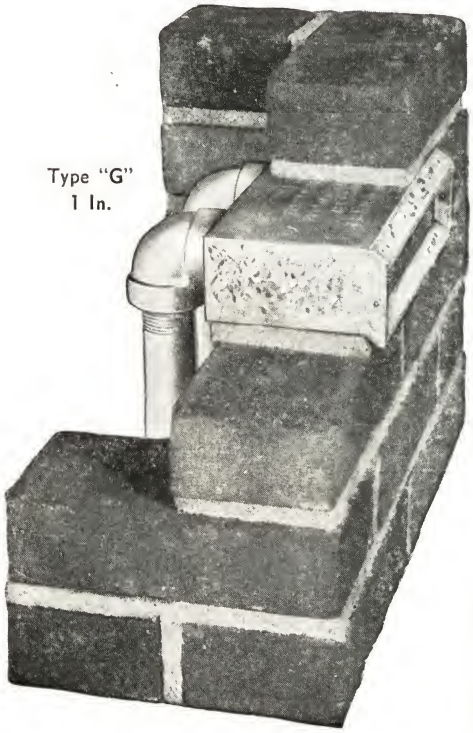
Specifications

Specify under Vent Pipe Heading (specify type, diameter of vent pipe and whether cast iron or bronze) as manufactured by Benjamin Riesner, 353 East 78th Street, New York, N. Y.

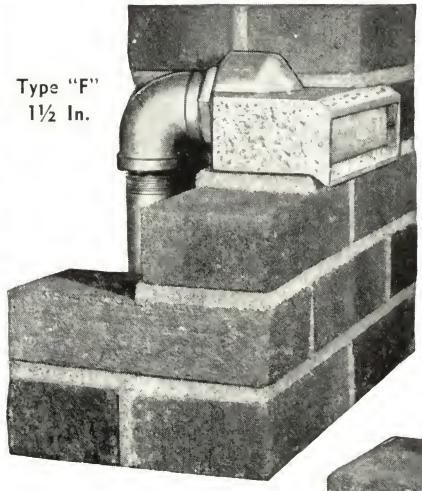
Prices

For all types in Galvanized Cast Iron ..... $7.50 each
For all types in Cast Bronze ..... 9.50 each

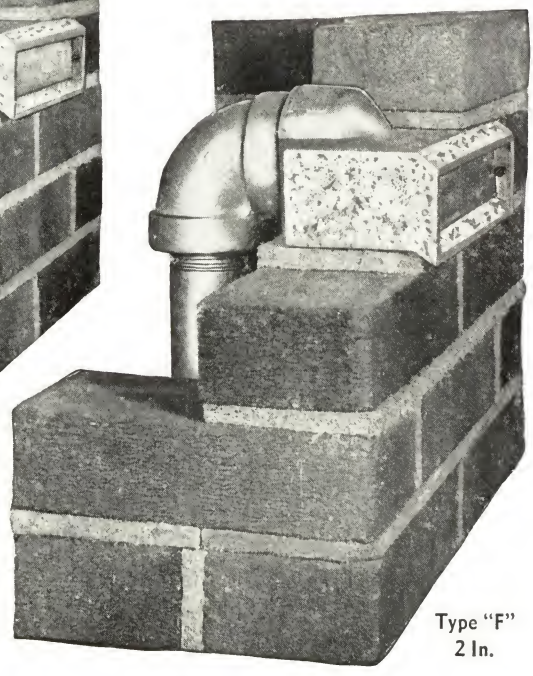
3% discount for cash with order, 2% discount c.o.d., 2% discount 10 days, net 30 days on approved credit rating.
The above prices are f.o.b. New York, N. Y.



Type "G"
1 In.



Type "F"
1½ In.



Type "F"
2 In.

Net Weights

Cast Iron

Type "F," 1½ in., 7 lbs. 7 oz.
Type "F," 2 in., 6 lbs. 13 oz.
Type "G," 1 in., 7 lbs. 10 oz.

Cast Bronze

Type "F," 1½ in., 8 lbs. 6 oz.
Type "F," 2 in., 7 lbs. 11 oz.
Type "G," 1 in., 8 lbs. 10 oz.

H. W. PORTER & CO., INC.

NEWARK, N. J.

BALTIMORE, MD. CHARLOTTE, N. C. RICHMOND, VA. WASHINGTON, D. C.

THERM-O-TILE, THE MODERN CONDUIT SYSTEM

Description—Therm-O-Tile is a complete conduit system for the permanent support, protection, and insulation of the underground mains of a central heating system.

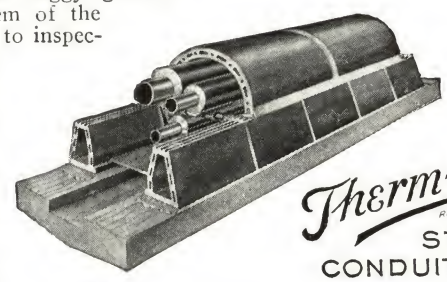
Foundation—The base of the system is a thick concrete slab poured directly in the trench bottom, reinforced with steel when installed over a filled or boggy ground.

Drainage—The drainage system of the conduit is entirely internal, open to inspection at manholes, and of ample capacity to keep the pipe space dry at all times without any possibility of becoming clogged with silt or vegetation.

Pipe Support—All pipes are supported on cast iron adjustable supports resting directly on the concrete base independent of the tile envelope.

Accessibility—All piping is installed before tile is placed, giving complete accessibility for welding, testing, and insulation, pipe fitters working on concrete slab walk-way.

Strength—Due to immovable concrete base and arch construction of extra heavy tile members, conduit will sustain any roadway traffic load usually encountered without extra reinforcement.



Therm-O-Tile
REG. U.S. PAT. OFF.
STEAM
CONDUIT SYSTEMS

Insulation—In this conduit, either sectional pipe covering or Therm-O-Bestos waterproof fibre filling may be used for insulation, as insulation space is kept dry at all times by the internal drain. For single or double pipe lines, sectional insulation of economical thickness is recommended; for multiple pipe lines, a filler type of insulation is usually more economical in first cost.

Waterproofing—Under normal soil conditions, this conduit is waterproof. If marshy ground or partially submerged conditions are encountered, the conduit may be made completely waterproof by the use of membrane waterproofing applied under the slab on a sub-base and carried completely over the tile envelope.

Efficiency—The degree of thermal efficiency secured depends upon the type and thickness of insulation used. This conduit, due to its sealed air chambers in the tile and dry insulation space, adds to the normal efficiency of the insulating material on the pipe lines.

SPECIFICATIONS

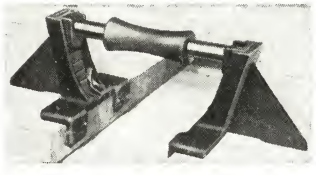
Scope—These specifications are intended to cover the complete installation of an underground steam conduit system, also including excavation, foundation, pipe supports, conduit, and insulation.

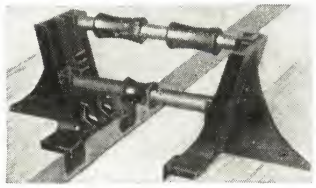
Excavation—All trenches for conduit lines shall be run as shown and excavated to proper levels, as indicated on drawings or by the Engineer.

Foundation—After trench bottom has been leveled to proper grade, contractor shall install a 4-in. thick concrete foundation slab of suitable width to support both piping and conduit envelope. This slab shall be composed of concrete mixed one part portland cement, two and one-half parts sand, and four parts ¾-in. broken stone poured between wood forms and finished to true grade and level. Wherever this slab passes over filled or marshy ground, it must be reinforced with steel as required by the Engineer.

Drainage—A complete drainage system shall be provided beneath pipe chamber of the conduit, of sufficient capacity to keep the pipe space free from water at all times. Drain shall be continuous under all conduit runs and carried around or through manholes in sealed pipe connections with connection at low points leading to sewers or other suitable outlets, as directed by the Engineer.

Pipe Supports—All piping located within conduit shall be supported on cast iron adjustable pipe supports furnished by conduit manufacturer, placed on 12-ft. centers and so designed that all pipe load is transmitted directly to foundation slab independently of the tile conduit envelope.



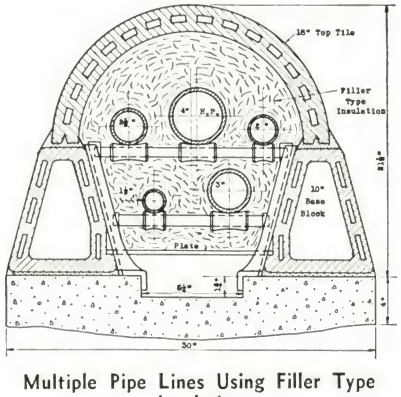


Pipe Supports

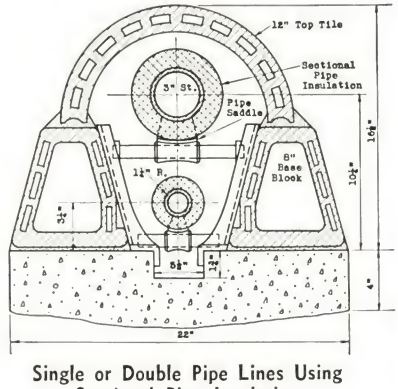
Pipe Insulation—After pipe lines have been installed and tested, they shall be insulated with asbestos sponge-felted sectional pipe covering 1½ in. thick for live steam and 1 in. thick for return or hot water lines. At each pipe support a cast iron pipe saddle furnished by conduit manufacturer, designed to allow full thickness of covering to extend between piping and the roller, may be used. All pipe covering shall be finished with asbestos roofing felt secured with No. 16 copper weld wire on 9-in. centers.

Tile Conduit—After pipes have been insulated, they shall be enclosed in a tile conduit. This conduit shall be a salt glazed semicircular air cell arch tile conduit supported on trapezoidal tile base blocks similar to Therm-O-Tile. The semicircular air cell arch tile shall consist of circular tile without bells and shall be scored longitudinally to allow for splitting and to form the arch sections which shall be mounted on the trapezoidal base blocks. All conduit arch tile and base blocks shall be provided with longitudinal air channels, and the arch tile shall also be scored at one end on the outer surface to permit the formation of an opening in the end of each tile into which cement mortar is placed to seal the butt joints. The conduit is to be installed in accordance with the manufacturer's instructions.

Alternate Insulation—Piping within conduit may be insulated with an asbestos fibre conduit filling treated to resist moisture, filling entire pipe space and packed to a density of not less than 7½ lbs. per cu. ft. A clearance of at least 2 in. shall be maintained between pipe line and tile.



Multiple Pipe Lines Using Filler Type Insulation



Single or Double Pipe Lines Using Sectional Pipe Insulation

Backfilling—After completion of conduit work, all trenches shall be properly backfilled, surface restored to its original condition, and lawns, walkways and roadways shall be replaced.

Efficiency Guarantee—Each contractor bidding shall state in his proposal that the conduit system will give a thermal efficiency of not less than 90% under an approved condensation test.

Therm-O-Tile is also sold and installed locally by Johns-Manville Construction Units

THE RIC-WIL COMPANY

Underground Conduit Systems for Heating and Power Pipes

Union Commerce Building, CLEVELAND, OHIO

BRANCH OFFICES: NEW YORK, CHICAGO, SAN FRANCISCO
AGENTS IN PRINCIPAL CITIES

RIC-WIL INTERLOCKING CONDUIT and BASE DRAIN FOUNDATION, TILE and CAST IRON; RIC-WIL UNIT STEAM MAIN; "DRY-PAC" WATERPROOF ASBESTOS CONDUIT INSULATION; ROLLER PIPE SUPPORTS; ALIGNMENT GUIDES; MANHOLE COVERS; ASPHALT IMPREGNATED FILTER TAPE.

REG. U. S. PAT. OFF.

RIC-WIL

Ric-wiL Interlocking Conduit

Ric-wiL Conduit is first quality, standard weight, vitrified glazed tile of the bell and spigot type.

It is shipped on the job in full round sections and split into top and bottom halves as used. Thickness of tile is reinforced to double strength at top and bottom. When installed, bell and special Loc-liP side joints are sealed with portland cement. Loc-liP joint (see illustrations) is shaped so that cement locks top and bottom halves permanently together in all directions, giving conduit extraordinary rigidity and strength. Leakage is practically impossible. Top and bottom halves are interchangeable (foolproof) and numbered in pairs so that companion pieces may be kept together.

Sections are all in 2-ft. lengths, sizes from 4 to 27-in. inside diameter. Every sixth section of conduit has an opening in the bottom half through which a pipe support of the roller type projects to carry the steam, hot water or oil pipes, thus making the pipe supports independent of the conduit itself, a desirable feature for this class of work.

Ric-wiL Interlocking Base Drain Foundation

Ric-wiL Base Drain Foundation is first quality vitrified glazed tile, so designed that it is both a base for supporting and lining up the conduit and drain for carrying away water which might otherwise accumulate around the conduit. Providing two points of support for the conduit, it adds 35% to the ground load conduit will carry safely, as compared to the same conduit placed on flat ground or broken stone. Top of base drain has slot into which the bell of conduit fits, making sections of conduit and base drain stagger with each other to form a strong interlocking construction. Pipe support saddles rest on the side shoulders, which insure perfect alignment of pipes. Wide flat bottom of base drain makes a solid foundation. Free drainage area of the base drain is large and ample for every practical condition. Made in three sizes to support properly all conduit sizes.

Cast Iron Ric-wiL Conduit

For extra heavy duty under railroads or where conduit is subject to very heavy loads, Ric-wiL is made of cast iron. Has Loc-liP Joint and "interlox" with tile Ric-wiL—made for all 5 types described in next column. A special heavy duty tile base drain or a cast iron base drain is provided for use with Ric-wiL Cast Iron Conduit.

Five Systems to Meet All Conditions

Type F System—For steam heating, power pipes and superheated steam. A conduit that assures super-efficiency when insulated with Dry-paC (description below), or Ric-wiL No. 11 Filler, packed around pipes in closed construction.

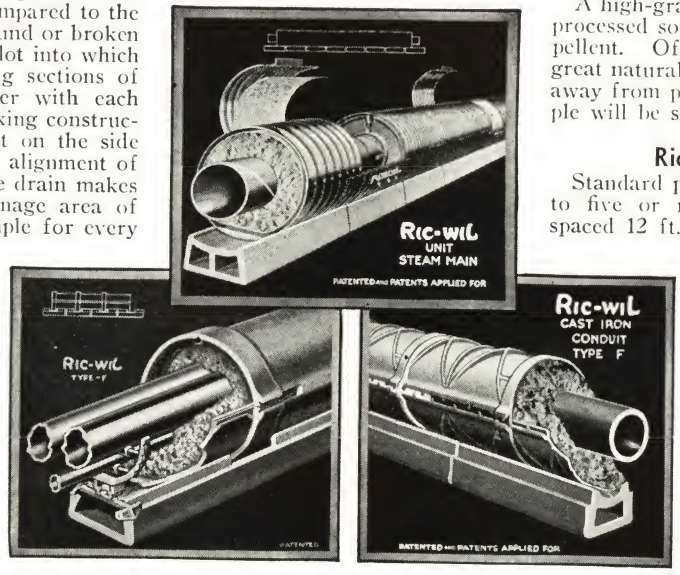
Type SPC System—For steam heating, power pipes and superheated steam. Insulation is any standard make of sectional pipe covering, kind and thickness depending upon service to be rendered. Double drainage is provided in this type.

Type DA System—For hot water, oil transmission and condensation returns. Tile and insulation in one, the latter, a diatomaceous earth mixture of high insulating quality, moulded inside the tile and keyed in. This type insulates the pipes from surrounding ground but not from each other, making it specially adapted to carry oil and steam pipes together for oil transmission. Exceptionally easy to install.

Type DF System—For steam heating, power pipes and superheated steam. This is Type DA with the addition of Ric-wiL Asbestos Conduit Filler to be packed around pipes at a density specified by manufacturer. Filler is a good non-conductor which will not corrode the pipes nor shrink. Dry-paC furnished when specified.

Super-Strength Tile Conduit—To support any average traffic load, is also available. Details on request.

Three Selected Ric-wiL Types



Dry-paC Waterproof Conduit Insulation

A high-grade long fibre asbestos insulation, processed so that it is permanently water repellent. Of unusually high efficiency and great natural strength, it will not slump down away from pipes and is non-corrosive. Sample will be sent gladly for testing.

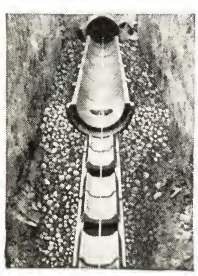
Ric-wiL Pipe Supports

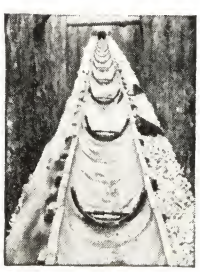
Standard pipe supports will carry from one to five or more pipes and are ordinarily spaced 12 ft. apart. They are strong, made of cast iron, rustproofed, and interlock with the base drain foundation, imposing no load on the conduit itself. No movement of pipes can disturb them. Special pipe supports available for different conditions. Information on request.

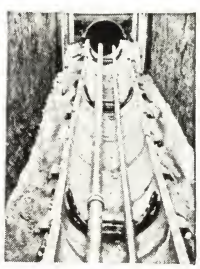
Engineering Service

Full co-operation with architects and engineers; complete service details and installation instructions; installation supervision where desired.

Catalogues, test reports, typical specifications, etc., promptly on request.









These Progressive Illustrations Show the Simplicity of a Ric-wiL Installation





ESTABLISHED 1889

TELEPHONE
Liberty 8333

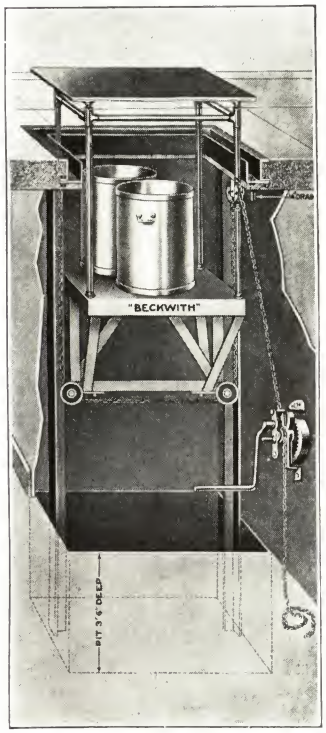
BECKWITH ELEVATOR CO., INC.

INCORPORATED 1917

113 Albany Street, BOSTON, MASS.

For our page on Dumbwaiters see File Index

SIDEWALK ELEVATORS, LIFTS AND HOISTS—HAND—ELECTRIC—HYDRAULIC



Hand Power Sidewalk Elevator A-3

Chain hoist automatic brake machine with removable crank. Car opens flat or hinged cover. Simple—safe to operate. Low cost installation and upkeep

A-3: Hand-operated Sidewalk Lift, Underslung Type; Chain Hoist Automatic Brake Machine, Crank-operated

The car moves up or down as crank is turned. Car stops instantly when crank pressure is released.

Capacity .... lbs. Car size ....

Car made of ash well braced with matched hard pine floor. Metal guide shoes. Lift pulleys and brackets under bottom of car. Machine to be chain hoist automatic brake type fastened securely on sidewall or post. To have removable crank handle. Steel hoist chain. Two steel guide rails for sidewalls. Minimum depth of pit 18 in. for car to come flush with basement floor. Steel sidewalk cover with watertight frame and pipe standards or bow opener for lifting cover are extra.

A-6: Hand-operated Lift, Indirect Hoist

Band brake machine placed at front side of car. Turning wheel operates car. Speed and stopping controlled by brake lever and catch on machine. Car stops 15 in. above floor or pit line.

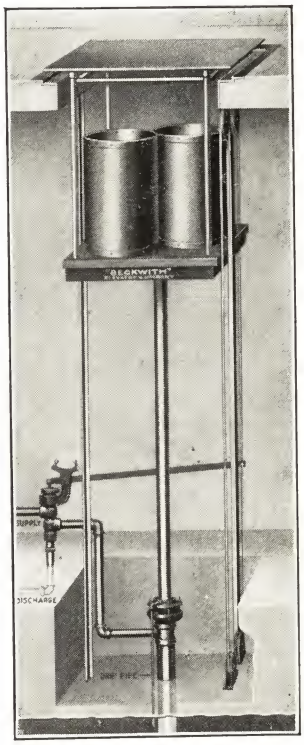
Capacity .... lbs. Car size ....

Car made of steel frame well-braced with matched hard pine floors. Metal guide shoes. Machine ball-bearing band brake type with hand-operated brake control lever and lock to hold car stationary. Machine to be located on floor at front side of car and connected to drum shaft by heavy sprocket chain. Two ⅜-in. steel hoist cables from drums to car platform. Two heavy steel guide rails to be fastened to side walls.

SIZES, CLEARANCES, CAPACITIES, ETC., OF PLATFORM LIFTS

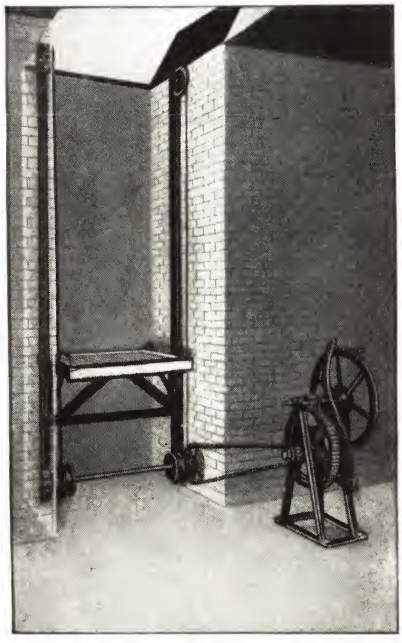
No.		Car size, feet	Opening and shaftway sizes	Car capacity, lbs.	Speed, f.p.m.
A-3.	1	3x3	3′-8″ w. x 3′-3″ d.	500	.....
	2	4x4	4′-8″ w. x 3′-3″ d.	1000	.....
	3	5x5	5′-8″ w. x 5′-3″ d.	1500	.....
A-6.	1	3x3	3′-9″ w. x 3′-3″ d.	500	.....
	2	4x4	4′-9″ w. x 4′-3″ d.	1000	.....
	3	5x5	5′-9″ w. x 5′-3″ d.	1500	.....
A-11.	1	3x3	3′-8″ w. x 3′-3″ d.	500	20–50
	2	4x4	4′-8″ w. x 4′-3″ d.	1000	20–50
	3	5x5	5′-8″ w. x 5′-3″ d.	1500	20–50
A-10.	1	3x3	3′-10″ w. x 3′-3″ d.	500	20–30
	2	4x4	4′-10″ w. x 4′-3″ d.	1000	20–30
	3	5x5	5′-10″ w. x 5′-3″ d.	1500	20–30

Sizes, capacities, speeds, etc., will be changed to suit requirements.



Hydraulic Sidewalk Lift A-11

Cable control; automatic stops top and bottom. Flat or hinged cover opened by car



Hand Power Elevator A-6

Machine located at front, either side of car

A-11: Hydraulic Lift

Used for all freight purposes either as shown, or inside building with standard freight type of car. Operates by slight pull on control cable. Automatic stops top and bottom. City water supply or pump pressure system of 40 lbs. or over is used for power. Cheap to operate and maintain, simple and very reliable.

Capacity .... lbs. Speed about 30 f.p.m. Water pressure .... lbs. Supply size .... Car size....

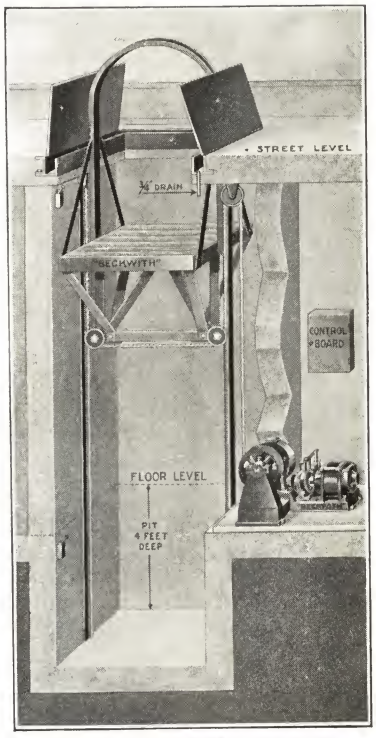
Standard steel car platform with maple floor, metal guide shoes. Steel or brass piston with 3-ring stuffing box, operating valve, cable, fastenings, sheaves, etc., including automatic terminal stops. Guide rails for car to be heavy planed steel. Supply and waste pipes to be galvanized or brass connected to valve and cylinder by plumber. Pipe standards for lifting cover (or bow opener for hinged cover as in A-10) extra. Checkered steel cover, one-piece or hinged, with watertight steel frame and ¾-in. drain pipe connection extra. Provide 3-ft. pit.

A-10: Electric Sidewalk Lift

Used for all freight purposes as shown, or inside of building with standard freight type of car. Operates by cable or push button in car or on wall. Full automatic or constant pressure control.

Advise electricity volts .... ph. .... cy .... Car size .... Capacity .... lbs. Speed .... f.p.m.

Car made of steel frame with maple floor underslung type, metal guide shoes. Machine to be drum type with high class elevator motor. Enclosed bronze gear, steel worm and ball-bearing thrusts, electric brake, machine limit and slack cable switch all mounted on a continuous bedplate and securely fastened to floor. Two steel hoist cables. Planed steel guide rails, hatchway car limit switches, push button stations, electric door contacts or gates to protect opening. Sheaves, hangers, dead-end for cables, etc. Bow opener on car (or pipe standards as in A-11) to open sidewalk doors, extra. Checkered steel cover hinged or one-piece with watertight steel frame and ¾-in. drain pipe connection, extra. Provide pit 3 ft. or more deep.



Electric Sidewalk Elevator A-10

Push button, constant pressure or automatic control. Automatic terminal stops

CAPITAL ELEVATOR & MANUFACTURING CO.

Manufacturers of Electric and Hand Operated Ash Handling Equipment

Town and Lucas Streets, COLUMBUS, OHIO

BRANCH OFFICES

AKRON, 864 Berghoff St. SANDUSKY, 109 W. Water St. ZANESVILLE, 134 Main St.

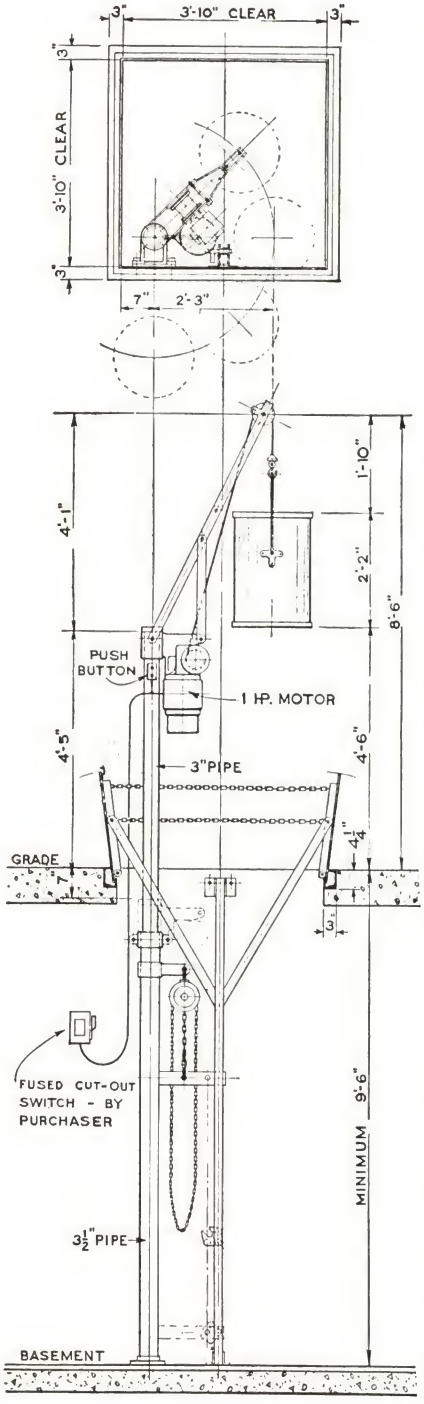
REPRESENTATIVES

CINCINNATI, OHIO, Central Building Products Co., 626 Broadway
DETROIT, MICH., Square Deal Elevator Co., 320 Beaubien St.
LANSING, MICH., Jas. E. Payne, 410 W. Saginaw St.
LOUISVILLE, KY., Champion Wire & Iron Works
NEW YORK, N. Y., A. W. Berghoefer, 122 E. 42nd St.
PORTSMOUTH, OHIO, Earl C. Hayes & Co., Box 908
ROCHESTER, N. Y., Alvin V. Light, 371 Hurstbourne Rd.
SUPERIOR, WIS., F. E. Johnson, 709 E. 8th St.

For our pages on Electrically and Hand Operated Elevators, Sidewalk Lifts and Dumbwaiters, see File Index

CAPITAL ELECTRIC ASH HOIST—MODEL 19C

Compact—Dependable—Durable



Doors open and close automatically with motion of hoist head.
Doors automatically locked when closed.
Automatic brake.
Roller bearing hoist head easily swung to position.
Capacity 300 lbs. at 50 f.p.m.
Crane for raising cans to truck height.

Note: *In ordering or for quotations, please give distance from sidewalk level to basement floor and nature of electric current available for power.*

Hoist—Motor is totally enclosed, high torque hoist motor, conservatively rated, designed for rugged service.

Gearing is of the worm gear type, hobbed in alloy steel, totally enclosed and runs in oil bath.

Drum is of deep flanged construction and so mounted in the frame as to give large clearance for rope.

Shafts and bearings—Steel shafts are of liberal size and are mounted in anti-friction bearings.

Brake—The automatic brake is of rugged construction, capable of holding full rated load in any desired position.

Control—The push button control is enclosed and protected. It has easily renewable finger tips, ample electrical clearance, complete accessibility and the hoist stops when the pressure on the button is released. A limit switch insures against overtravel in the up direction.

Hoist Head—Hoist head is an iron casting in one piece with machined spots for mounting hoist and revolves around the top of the mast on roller bearings, requiring very little effort to swing to the various positions.

Mast—The mast is in two parts, one telescoping into the other. It is of heavy steel tubing, straight and true and is easily raised and lowered by a standard spur geared, ball bearing, chain hoist. When in the up position, the upper section rests on a heavy steel pin through the lower section. This pin is attached to the mast by a chain so as to be always available.

A folding crane arm is provided for raising can to truck height, easily and quickly folded into position.

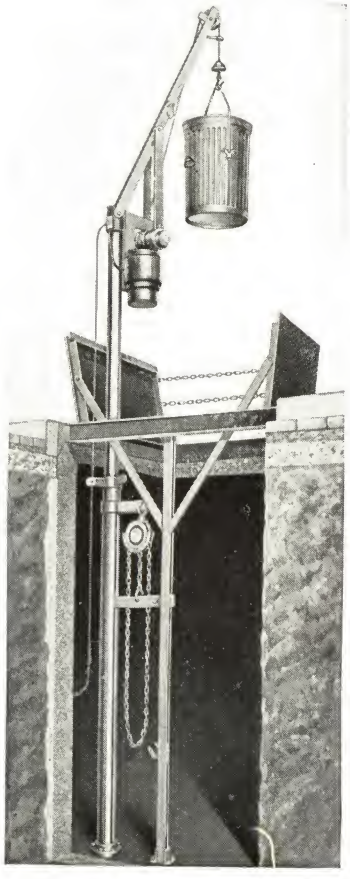
Doors—The cover doors are of the double leaf type, made of diamond steel plates, properly reinforced to withstand a load of 300 lbs. per sq. ft.

Frames are of heavy channel and angle construction with welded joints and provided with deep condensation gutter, tapped in two places for plumber's drain pipes.

Hinges are of the flush type with heavy bronze cast bases and steel pins, so mounted as to be easily renewable.

The operating arms are of flat steel bars, linked together, traveling in rigid guides, and are automatically locked in the down position.

Note: Standard size doors are 4x4 ft. over the plates, leaving a clear opening in the frame of 3 ft. 10 in. x 3 ft. 10 in. but may be made, for any reasonable opening at slight additional expense. Plumber's drain pipes are not furnished by us due to uncertainty as to location of basement drain.



HAND AND ELECTRIC POWER MAST TYPE CAN LIFTS

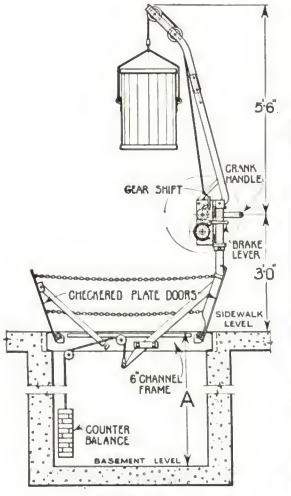
Model 18 Disappearing Folding Mast Can Lift (Hand Crank Operated)

Built as part of a flush type sidewalk door with hoist, frame and door shipped assembled, ready to cement in place. All erection expense is thus virtually eliminated.

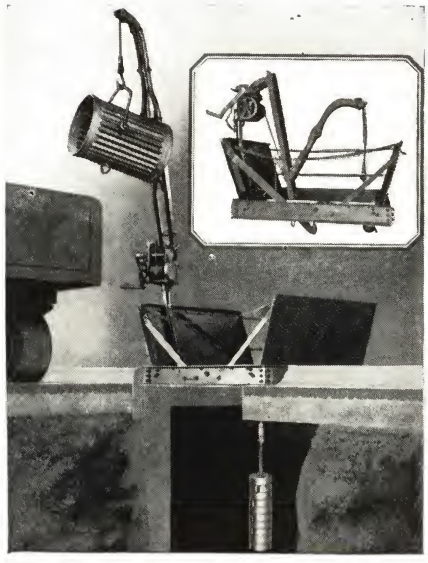
The operator opens balanced doors, unfolds the mast into place and readily raises our No. 2 heavy galvanized corrugated swing bail ash cans 18 in. in diam. by 26 in. high, filled.

Winch has ball bearings with cut gears, has ratchet for holding load and gear shift and brake for lowering empties. Rugged and easily operated.

Made in one size only. No engineering data required unless basement depth exceeds 15 ft. when extra cable will be furnished. Standard size sidewalk doors 3 ft. x 4 ft.



Side View



Model 18 Disappearing Folding Mast Can Lift

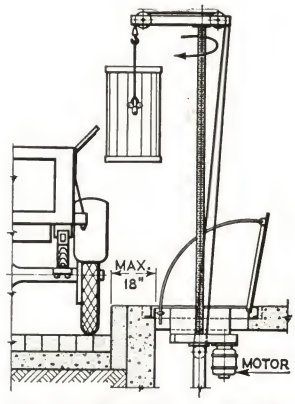
Model 19 Disappearing Screw Mast Can Lift (Electrically Operated)

This model is an inexpensive power driven outfit for the limited amount of ashes from schools, stores, apartments, hospitals, etc., for delivery from basement up through sidewalk door to truck. Its ⅓ hp. motor operates from a light or power circuit. Lifts a filled can of about 165 lb. at approximately 35 ft. per minute. Fits basements 7 to 17 ft. deep. From grade level to bucket hook, 7 ft.

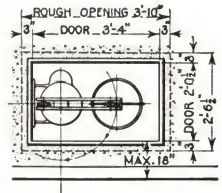
Its screw mast travels through the hub of a motor driven gear, as the bucket raises and lowers. Thus, by arrangement of ropes, the bucket is raised from the basement to truck while the screw travels above grade level.

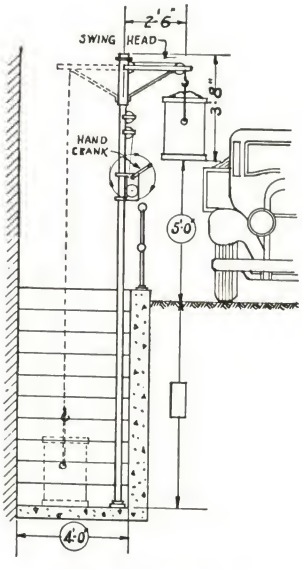
Operation — Open sidewalk door; use "Up" and "Down" switch placed there for full control of lift. Automatic switches fix limits of travel.

Ordering — In making inquiry, give basement depth "A" and electric current available.



Cans Readily Swing to Trucks





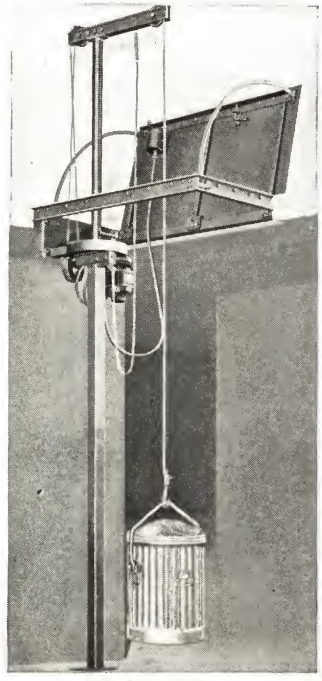
Model 11 Mast Type Revolving Can Lift

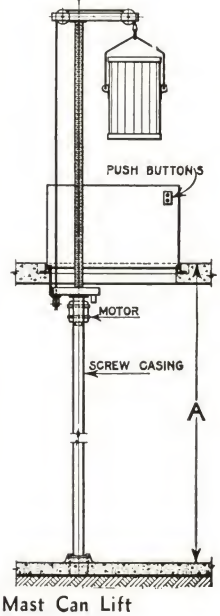
Model 11 Mast Type Revolving Can Lift

Self-supporting self-contained crane type ash lift, operated from basement (may also be arranged to operate from sidewalk). Winch same as on Model 18. Takes our No. 2 can.

May be used with sidewalk rings or in areaways or inside of walls, to swing through opening. May also be arranged to operate electrically with basement hoist.

For quotations, give basement depth "A."





Model 19 Disappearing Screw Mast Can Lift

FRANK ELIAN & CO.

Manufacturers of "Hoistwell" Telescopic Ash Hoists and Lifts
Hydraulic—Electric—Hand

ESTABLISHED 1916

36-33 to 36-39 23rd Street, LONG ISLAND CITY, N. Y.

WE INSTALL EVERYWHERE

Telephone: STillwell 4-4232

The Oldest Complete Line and Most Perfected Equipment Manufactured in U. S.

IMPORTANT ASH HOIST INFORMATION

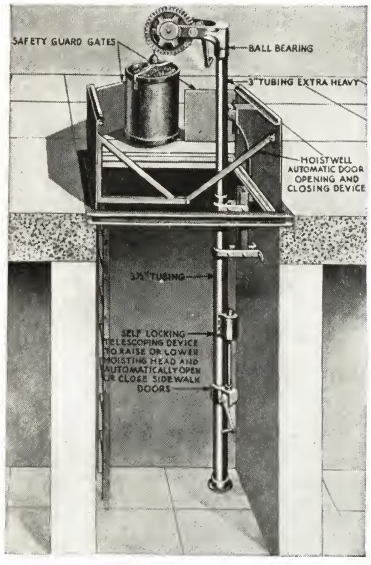
Purchasers or specification writers for ash hoist equipment should keep in mind that it is operated in cold, ice, sleet, and snow conditions of winter—that the hands of the operator are usually numb and without their normal function.

If under these conditions you supply an equipment which is not completely Self-Locking, you invite danger and trouble. Loss of the control grip or removal of the hand from the *non-self-locking type* hoist will result in injury to the operator below from a falling load.

"Self-Locking Equipment" is now available. "Self-Locking Equipment" arrests and suspends the load automatically *whenever* the hand is removed.

Other than a *self-locking* standard of safety is not completely safe and only represents a degree of safety always totally dependent upon the operator. Be sure your hoist will be *self-locking at all times.*

Your selection of "Hoistwell" will supply a *completely* "Self-Locking" ash hoist.



Hoistwell Model C "Self-locking" Hand Hoist

HOISTWELL MODEL C "SELF-LOCKING" HAND HOIST

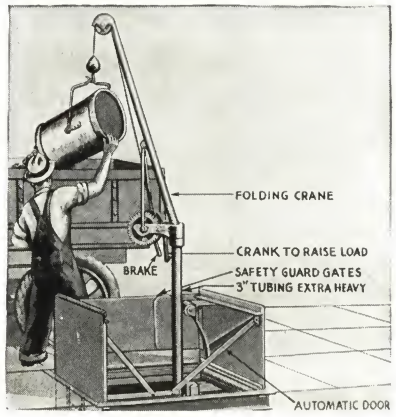
The "Hoistwell" Model C "Self-Locking" Hand Power Telescopic Hoist has only one control for all operations — *a crank.* Hoisting and lowering operations require no manual adjustment or readjustment of the gear mechanism as required in the gear shifting type hoists. To hoist, the operator *merely* starts forward cranking. Gravity lowering is speedily accomplished *simply* by a back pressure on the crank. *Removal of the hand from the crank at any time, or release of the back pressure during gravity lowering, automatically "self-locks" the load in whatever position it may be.* "Self-Locking Mechanism" completely eliminates the possibility of a dropping load and subsequent injury to the operator below. These safety features are not found in the gear shifting type hoists.

The silent, automatic, self-locking shifting, and self-reshifting mechanism capable of holding full rated load in any desired position contains no pawls. The frame is an extra heavy steel casting. The gears are machine cut and pinions of steel. All shafts rotate on anti-friction bearings. The hoisting speed is 35 ft. per min. Maximum capacity 500 lbs. Lubrication is through self-closing oiling points.

A "Self-Locking" telescoping mechanism raises the hoist above the sidewalk and automatically opens sidewalk doors. Irrespective of the hoistway depth, this exclusive telescoping mechanism is always applicable, and there is no need to pierce the basement floor for installation. Waterproofing and hydrostatic pressure problems are never obstacles. The crank is *always* situated in a convenient position not more than 3 ft. 6 in. from the floor. You do not have to construct a special hoistway depth. Our hoists meet hoistway depths confronted.

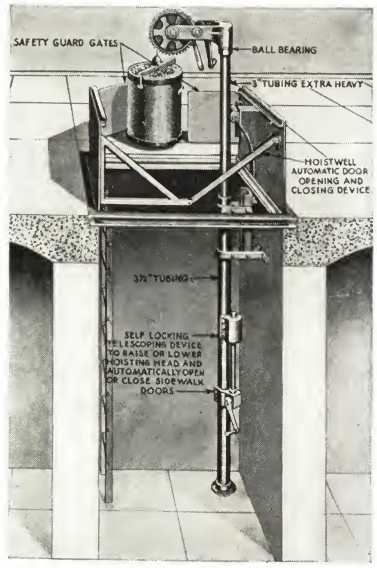
Telescoping Safety Features

In the "Hoistwell" telescoping mechanism, the telescopic post load is *not transmitted* to the telescopic crank. *The post does not rest directly upon merely one tooth of a spur gear but upon three heavy $\frac{9}{16}$-in. threads of an extra heavy worm.* These safety features are exclusive, and eliminate dangerous conditions found in many ash hoists.



Hoistwell "Self-locking" Model C-2 Overhead Crane Hand Hoist

Specify a Model C or Model C-1 hoist plus an overhead crane.



Hoistwell Model C-1 "Gear Shift" Hand Hoist

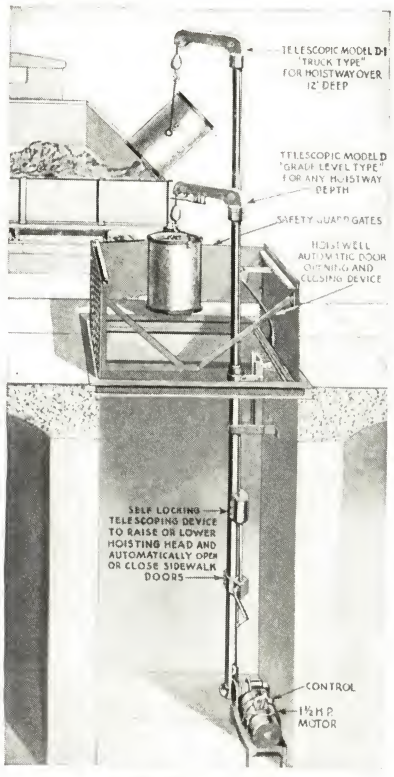
THE HOISTWELL MODEL C-1 "GEAR SHIFT" HAND HOIST

This hoist differs from the Model C Hoist in the hoisting head which is mounted upon the post.

The hoisting head has a gear shifting mechanism, lined gravity lowering brake, and automatic pawl silencing mechanism. A crank and brake lever is used for hoisting and lowering operations. All shafts revolve on anti-friction bearings. Capacity 500 lbs. Speed 30 ft. per min.

A gear shifting type construction requires the operator to manually shift or disengage the gearing to accomplish gravity lowering. After lowering, the operator is again required to manually reshift or reengage the gearing in order to hoist. This is not a self-locking mechanism nor as speedy as the Model C Hoist; but it is equal to other gear shifting hoists plus the exclusive safety feature of a self-locking telescoping post.

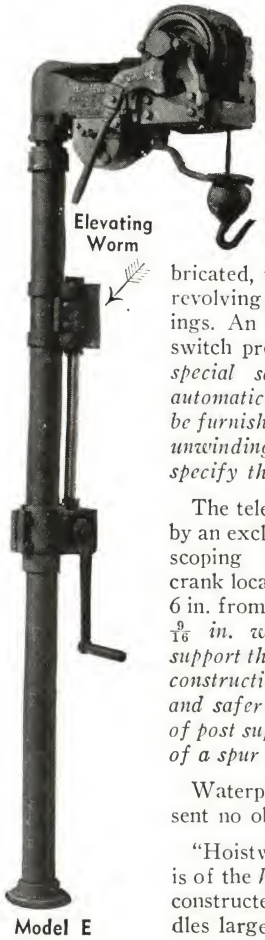
HOISTWELL "SELF-LOCKING" ASH HOISTS



Hoistwell "Self-locking" Electric Models D and D-1

The Model D Hoist raises to the sidewalk. The Model D-1 Hoist raises to the height of a truck. Use Model D-1 Hoist only for hoist depths exceeding 12 ft.

"SELF-LOCKING" ELECTRIC HOISTS
(Electric Winch Floor Mounted)



Model E Electric

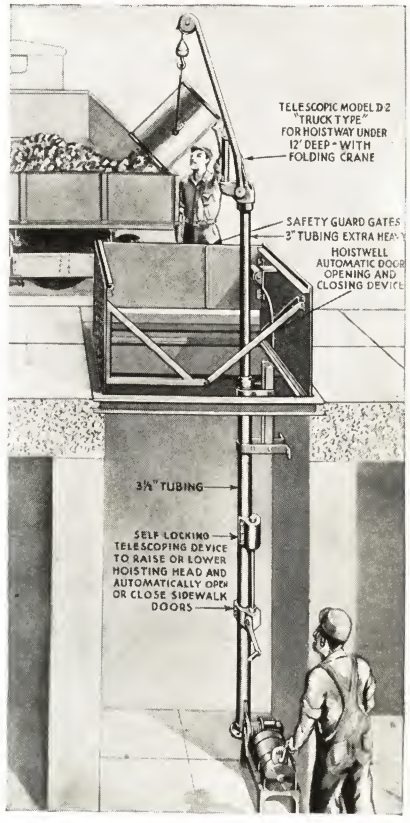
Our electric hoists are of 500 lb. capacity at a speed of 60 ft. per minute.

One control regulates hoisting operations. The winch consists of a 1½ h.p. motor and an enclosed, bath lubricated, worm gear mechanism revolving on anti-friction bearings. An automatic upper limit switch prevents overhoisting. *A special safety feature of an automatic lower limit switch can be furnished to prevent excessive unwinding in lowering. (Always specify this safety device.)*

The telescopic post is elevated by an exclusive self-locking telescoping mechanism with the crank located not more than 3 ft. 6 in. from the floor. *Three heavy $\frac{9}{16}$ in. worm threads directly support the elevated post load—a construction feature far superior and safer than the usual means of post support by only one tooth of a spur gear.*

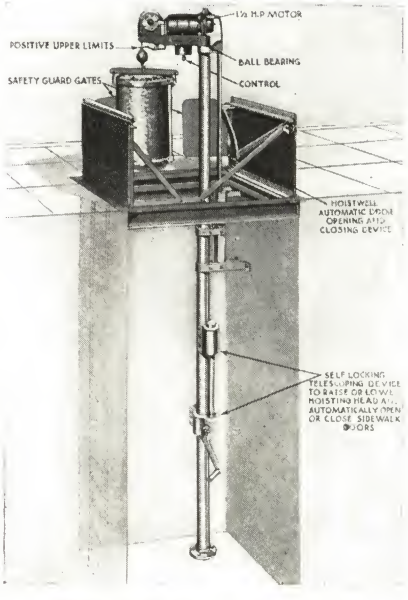
Waterproofing conditions present no obstacles.

"Hoistwell" electric equipment is of the *highest grade,* ruggedly constructed, fast, safe, and handles large quantities of ashes.



Hoistwell "Self-locking" Electric Model D-2 Hoist

The Model D-2 Hoist is especially designed for hoistway depths under 12 ft. Loads are raised to vehicle height, eliminating ash can handling at the grade.



Hoistwell "Self-locking" Electric Models E and E-1

"SELF-LOCKING" ELECTRIC HOISTS
(Electric Winch Post Mounted)

These hoists differ from floor mounted winch hoists only by having the winch mounted on the post. They raise loads to the sidewalk and are especially adapted for small hoistway areas.

Model E-1: raises and lowers electrically.

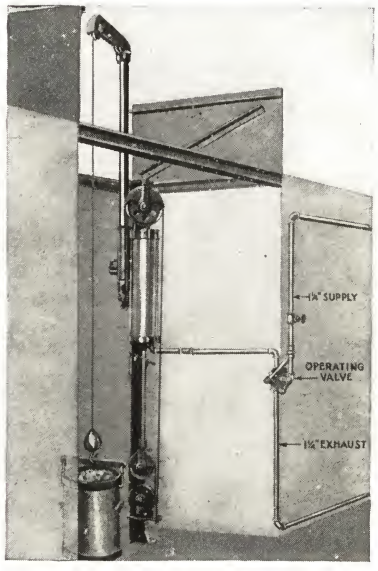
Model E: raises electrically *and lowers by gravity—reducing current consumption 50%. One control regulates all operations.* Gravity lowering is an extra economy device not in the Model E-1 Hoist.

"HOISTWELL" HYDRAULIC HOIST

"Hoistwell" Hydraulic Hoists are widely used in school and legislative buildings. They are operated by water pressure and are more economical than electric hoists. The average hoisting speed is 75 ft. per min. The maximum capacity of 500 lbs. is dependent upon the water pressure available.

COMPLETE HOIST EQUIPMENT

Complete equipment comprises a hoist, 4 ft. x 4 ft. sidewalk door, door opening device, safety guard gates, gong, sign, ash cans, and an engineer's iron ladder.



Hoistwell Model "A" Hydraulic Hoist

WE MANUFACTURE MANY OTHER TYPES OF HOISTS

Complete Layout Drawings and Catalogue Are Sent Upon Request

CHARLES K. ERNST, INC.

Originators and Manufacturers of Sidewalk Elevators and Ash Hoists

998-1006 East Ferry Street, BUFFALO, N. Y.

AGENTS IN PRINCIPAL CITIES

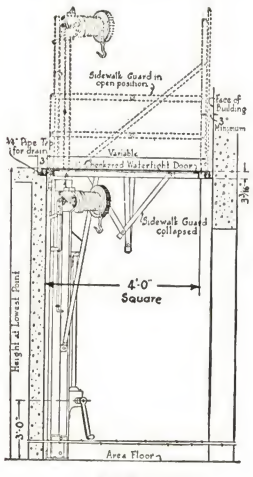
Products

TELESCOPIC HOISTS with and without overhead cranes, hand and electric, non-telescopic and basement window.
PLATFORM SIDEWALK LIFTS, hand and electric.
CELLAR WINDOW single can and "ROTATING" PLATFORM handling 4 or more cans at a time.
SAFETY-GUARDED ONE-PIECE and TWO-LEAF SIDEWALK DOORS; SPRING GUARD GATES.
LADDERS; "MAGIC CARRIER" ASHCAN TRUCKS; ASHCANS; DOOR OPERATING DEVICE, BELL RINGING ALARMS.

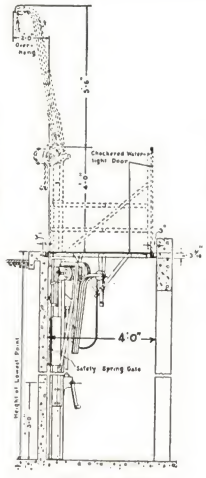
Ernst Sidewalk Doors

No better sidewalk doors made, they embody one-piece frames, with watertight concealed frame and gutter, tapped for ¾-in. pipe drain, having cast steel hinges of concealed type easily replaceable, checkered steel tops reinforced to carry load of 300 lbs. per sq. ft., having automatic guards on single leaf door, having nothing to stumble or slip on in wet and icy weather. They are widely used with and without our elevators and ashlifts, and more than outlast two average doors, giving excellent appearance as well as long-life. Frames made of a one-piece 3x3x¼-in. angle and furnished for all sizes of door openings, also two-leaf doors.

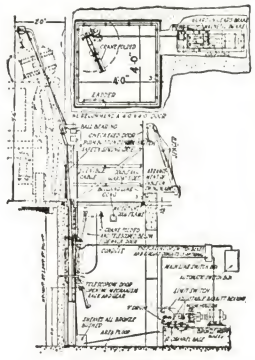
Model	Recommended for	Specifications
Model "1" Hand operated Telescopic 500 lbs.—35 ft. per min. One-man operated. *(Non-telescopic and Window Crane Lifts can also be furnished)*	For buildings where from 5 to 10 cans are hoisted daily to sidewalk. Cellars up to 20 ft.	Furnish and install, where shown on plans, one Ernst Type "1" Telescopic Hoist, having gear shift and brake device with ball bearing winch. To be complete with a 4x4-ft. Ernst safety guarded one-piece door with supertight door frame, with Ernst door operating device with spring guard gate. Also 12 Ernst swing bail cans 18x26 in., one "Magic Carrier" ashcan truck, ladder and bell alarm all for one-man operation. Outfit guaranteed one year against any defects.
Model "2" Hand operated Telescopic 300 lbs.—35 ft. per min.	For small volume of ashes—from 5 to 10 cans daily—to dump cans directly into truck or wagon. One-man operated.	Furnish and install one Ernst Type "2" Telescopic Hoist with overhead crane—to hoist cans to truck height. With gear shift, brake, ball bearing winch. Complete, with one Ernst one-piece safety guarded door with door operating device with spring guard gate. Also 12 swing bail ashcans, one "Magic Carrier" hand truck, bell alarm, ladders for complete one-man operation.
Model "3" Electric operated Telescopic Motor in basement 500 lbs.—60 ft. per min.	Two-man operated. For large amount of ashes to be hoisted directly on to truck level.	Furnish and install, where shown on plans, one Ernst Type "3" Electric Telescopic Hoist with or without overhead crane, with worm gear drive, push-button control, reversing wall switch motor on stand in basement; with upper slower limit switches, solenoid brake, complete with one Ernst 4x4-ft. safety guarded door, with door operating device. Also 12 Ernst swing bail ashcans, one "Magic Carrier" hand truck, ladder and spring guard gate.
Models "3A" and "3B" Electric operated Telescopic Motor on top of mast. Push-button, one-man controlled. These models not shown below 500 lbs.—60 ft. per min.	For electric operation, one-man operated. For hoisting cans to grade level. (Model "3B" to elevate cans for truck 300 lbs. capacity—60 ft. per min.) Send factory for detail drawing.	Furnish and install, where shown on plans, one Ernst "3A" Electric Telescopic Hoist to grade level. To wagon height, specify Model "3B." Complete with worm gear drive, upper limit switch with magnetic brake and reversing switch; complete with one Ernst one-piece safety guarded door with watertight frame and automatic door operating device. Also 12 swing bail ashcans, one ladder, "Magic Carrier" truck and bell alarm for one-man operation. Models "3A" and "3B" have motor mounted on top of Telescope Arm eliminating winch in basement.
Model "4" 25 ft. per min. Electric operated platform elevator. Push-button control, fully automatic. 1000 lbs. capacities.	For hoisting 4 to 6 ashcans at a time. Ideal for handling materials down to basement, 1000 lbs. capacity. Has double endless chain drive and numerous other advantages.	This lift, inclined but 2 ft. 5 in. from a vertical elevator, takes up considerable less space due to motor being built and attached between uprights. It has a double endless chain drive with roller bearing platform. We believe this the finest sidewalk or window elevator made today. It is worm gear driven—with solenoid brake, upper and lower hatchway limit switches and two 3-way push-button stations. Operates entirely automatic. A 4x4-ft. platform requires a door opening 4 ft. 2 in. wide, 5 ft. long. Eliminates all cable troubles.
Model "5" Hand operated platform sidewalk lift. Eliminates an outside cellar areaway, if installed at window. 12 ft. per min.	Handpower Elevator. One of the finest platform lifts made. Can be installed in sidewalk area or at cellar window. Eliminates cable drums and expensive repairs.	**Window Model**—If installed at a cellar window, it eliminates the expense of an outside areaway and if window is raised high enough ashcans can be emptied directly on to truck. No platform elevator, we believe, can approach this model for ease and speed of operation. Requires practically no upkeep expense—due to absence of cables. Platform is counterbalanced and operated from side and has 2 lifting endless chains; runs on roller bearings. Takes up no space for winch. Platform raises when empty without cranking, winch requires cranking only when lifting load.
Model "8" An electric operated vertical Sidewalk Elevator made in 500 to 1200 lbs. capacity. 15-25 ft. per min.	For boiler rooms—also stores. For handling general merchandise to and from the basement.	Made entirely of metal. Has heavy steel pipe guides on which platform sleeves ride sleeves cradle and support the platform on cable sheaves. Winch mechanism is extended in basement. Operates entirely automatic by push-button stations, upper and lower hatchway limit switches and solenoid brake. Platform has a heavy steel plate welded to 2x2½-in. angle iron frame. Motor, 2-3 hp., operates worm gear drive noiselessly. Pit 18 in. deep.
Model "9" Same as model "8." Hand operated. 500, 750, 1000 and 1200 lbs. capacities. 14 ft. per min.	Identical to Model "8" with exception of hand operating winch. Ideal for handling ashes as well as merchandise to and from basement.	One of the fastest and easiest operating sidewalk elevators made. Constructed entirely of metal, including platform. Made in any size platform up to 30 sq. ft. Stock size 4x4-ft. platform requires door opening 4 ft. 2 in. x 4 ft. 9 in. Can be furnished with two-leaf sidewalk door with bow on car. Bell alarm. For new or old buildings; very easy to install. Can be furnished also with 2 cables, 10-in. drums where required. Include "Magic Carrier" truck.



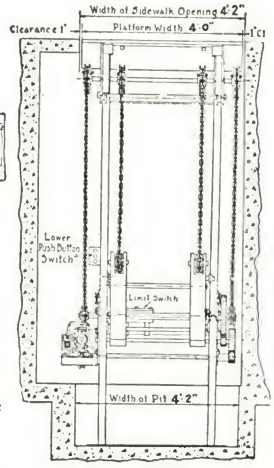
Model "1"



Model "2"

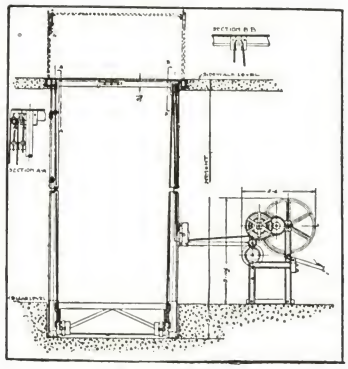


Model "3"

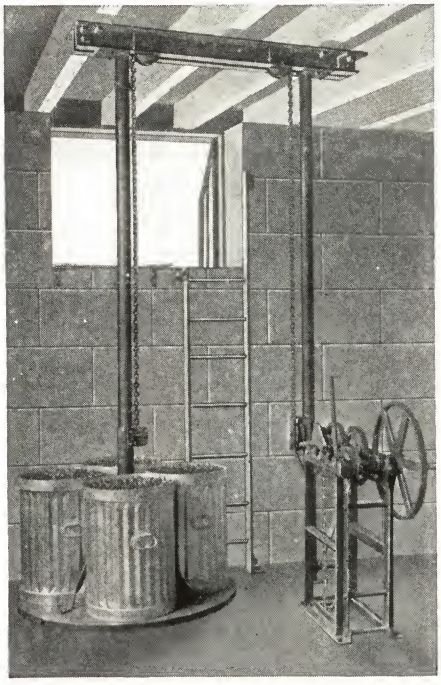


Model "4"

Complete details and large drawings of any model will be sent to Architects and Engineers on request.


Model "9"

ERNST "ROTATING" 4-CAN WINDOW ASHLIFT

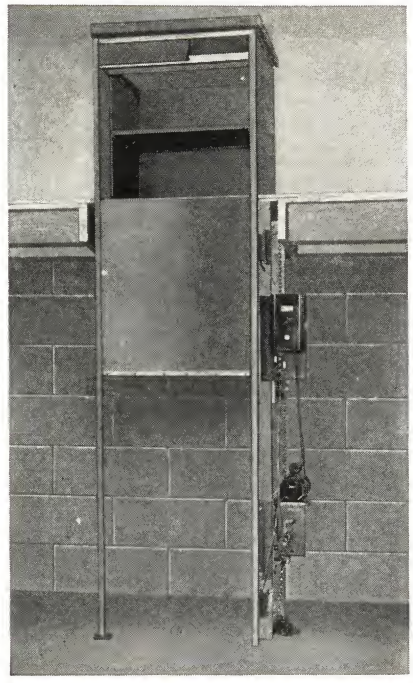


Eliminates building an outside cellar areaway requiring a cellar door, saving several hundred dollars expense, which will more than pay for the elevator, offers convenience, safety and economy. Handles all standard makes of ashcans.

For new and existing buildings, this lift utilizes any cellar window 30 in. or more high—allows *one man* to do entire ashlifting alone, handling 4 ashcans at a time. Ideal for churches, schools, apartment houses, etc. Platform lowers within 3 in. of cellar floor—so that no pit is necessary. Operator simply wheels the ashcans on to the platform from the boiler by means of the Ernst "Magic Carrier" hand truck; then turns the crank on winch, hoisting ashcans to window sill level. He then mounts the ladder—opens the window and, from sidewalk level, proceeds to remove the cans from the platform by hooking them on "Magic Carrier" (shown below); turns platform for next can, etc. Lift made entirely of metal. Lift being easy to install as well as to operate.

How to Specify—Install at window where shown on plans an Ernst "Rotating" Ashlift of 4-can capacity of 1000 lbs., with "Ernst new and improved chain drive" to eliminate cable and drum; furnished with circular 48-in. diameter steel platform, reinforced, mounted on ball bearing. State whether *hand power,* or *electrically operated* by 2-hp. motor, worm gear driven, complete with a "Magic Carrier" ashcan truck with rubber tired wheels and an Ernst Hand Bar Iron Ladder, as well as filler plate at sill level (shown above). (Patent applied for.)

ERNST "LITTLE GIANT" ELEVATOR WITH SAFETY ENCLOSURE



Model E-14

A motorized *merchandise only* handling device, that turns drudgery into a pleasant task—that makes the basement a part of the store and allows replenishing of stock on counters and shelves with a minimum of effort.

Note fire door that encloses opening near top of car, for fire protection.

This lift is designed primarily for handling the stock needed to replenish the counters and shelves in stores, from the cellar to main store level. It requires an opening cut in the floor, but 3 ft. x 2 ft. 6 in. x 3 ft. high. Platform size 2 ft. 6 in. x 2 ft. 6 in. It operates automatically at a speed of around 15 ft. per minute, by ½-hp. motor, and has a capacity of 350 lbs. It has a new chain drive operated by a compact worm gear unit. The metal platform rides on ball bearings on two 4 x 3-in. angle uprights. The top of the elevator is enclosed by a steel housing. Every precaution was taken in its design to ensure safety; access to the car is guarded by an automatically operated steel door, so as to be simple and foolproof. Saves time and labor; minimizes the damage to merchandise; reduces fire and injury hazards; allows merchandise to be conveyed from one floor level to another unobserved, saving confusion and loss of goods being damaged.

Model E-15

Is similar to standard Model E-14—with added features for handling merchandise from the truck direct through wall opening into store, to the cellar, eliminating an outside areaway. The wall door is hinged to open out, serving as an unloading platform for skid truck that allows transporting merchandise direct to cellar or to storeroom.

(Patents applied for.)

"MAGIC CARRIER" TRUCK

No Hands Need Touch the Cans



With a "Magic Carrier" on the premises, ashes are handled with utmost ease, practically effortless.

No more lifting heavy cans, rolling or marring the floors, dumping ashes, soiling the hands and clothes is necessary. Ashcans self-balanced on carrier.

To operate the "Magic Carrier" simply wheel the truck up to the ashcan, slip the catch over the rim of the can, and shove down on the lever about 8 in. (shown dotted in cut) which lifts at same time and automatically locks the can to the truck 1 in. off the floor. Insert the handle in the holder on top of the truck, and you have a 3-wheeled carrier that allows the can to be wheeled away noiselessly and released without the hands touching the can, with such little effort that even a child can handle the heaviest ashcans. Ideal also for *stoker users,* allows coal hauled from bin to stoker.

Rubber tired wheels with oilless bearings prevent marring the floors. Truck can be instantly adjusted for any stock size ashcan or metal bushel basket.

A requirement for every heating plant that makes handling of cans play of what was drudgery. (Patent applied for.)

MEMORANDA

ESTABLISHED 1866

GILLIS & GEOGHEGAN HOIST CORPORATION

TELEPHONE
BArclay 7-3560

11 Park Place
NEW YORK, N. Y.

FACTORY
98 Snediker Avenue
BROOKLYN, N. Y.

SALES REPRESENTATIVES

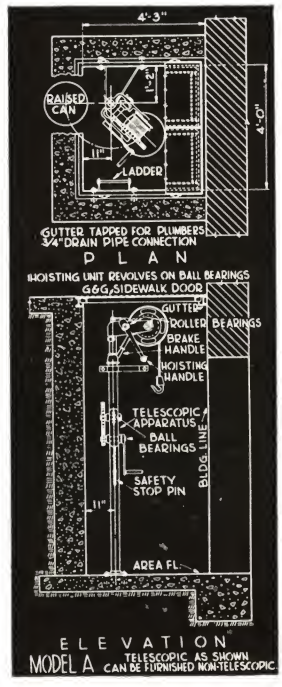
ALBANY, N. Y., Albany Builders Supply Co., Manning Blvd. No. of Central Ave. (2-3351)
ATLANTA, GA., Applewhite & Lawler, Station F, P. O. Box 3298 (Vernon 2283)
BALTIMORE, MD., Walter S. Brauns, 514 St. Paul St. (Vernon 6003)
BIRMINGHAM, ALA., James R. Adams Co., 2717 Sixth Ave. So. (4-3640)
BOSTON, MASS., A. C. Deming, 859 Boyston St. (Kenmore 5879)
BUFFALO, N. Y., Jones Iron Works, 1200 Niagara St. (Garfield 7226)
CHARLOTTE, N. C., R. Galloway Ross, P. O. Box 846 (5891)
CHATTANOOGA, TENN., Currin Andrews Co., 821 E. 11th St. (6-2763)
CHICAGO, ILL., S. I. Kaufman, 228 No. LaSalle St. (Randolph 4813)
CINCINNATI, OHIO, Durbrow & Otte, 1426 Clay St. (Parkway 0070)
CLEVELAND, OHIO, Vance Hives & Co., 1505 Broadway (Cherry 8074)
COLUMBUS, OHIO, F. L. Purdy Co., 232 No. High St. (Adams 3434)
DALLAS, TEX., R. J. DeWees, Burt Building (2-3902)
DAYTON, OHIO, F. G. Kemper Co., 653 Reibold Bldg. (Adams 3481)
DECATUR, ILL., C. J. Gandy, 245 No. West Lawn Ave. (7715)
DENVER, COLO., Harry H. Herman, 1228 California St. (Tabor 4505)
DES MOINES, IOWA, Hawkeye Engineering Co., Hubbell Bldg. (4-1429)
DETROIT, MICH., O. H. Dawson, 172 Farrand Ave. (Townsend 7-6975)
ELMIRA, N. Y., H. N. Forbes, 405 W. Clinton St. (6416)
EVANSVILLE, IND., A. G. Schlamp, 116 Herndon Drive (3-1480)
FORT WAYNE, IND., Jones & Moss, 215 Standard Bldg. (A-9488)
GRAND RAPIDS, MICH., T. K. Bender, 200 Ionia Ave., N. W. (8-1173)
HUNTINGTON PARK, CAL., B. L. Wilcox Co., 2071 Laura Ave. (Jefferson 7148)
INDIANAPOLIS, IND., Stackhouse Building Specialties, Inc., 6117 College Ave. (Humboldt 4767)
JACKSON, MISS., Fred Thrasher, Tower Building (2521)
KANSAS CITY, MO., C. S. Hawley Co., 602 New England Bldg. (Main 0766)
KNOXVILLE, TENN., Chas. M. Allen Corp., P. O. Box 1224 (2-5727)
LOUISVILLE, KY., R. B. Tyler Co., 1448 Levering St. (Magnolia 7480)
MEMPHIS, TENN., Tri-State Iron Works, 677 No. Main St. (6-0114)
MILWAUKEE, WIS., Phillip Gross Hardware Co., 174 W. Wisconsin Ave. (Marquette 2929)
MINNEAPOLIS, MINN., Morgan Gerrish Co., 314 Essex Bldg. (Main 1564)
NASHVILLE, TENN., John Williams Co., 1207 Warner Bldg. (6-7688)
NEW HAVEN, CONN., H. Dumelin & Sons, 295 Sherman Ave. (5-6495)
NORFOLK, VA., J. S. Jones, 350 Arcade Bldg. (2-1456)
OKLAHOMA CITY, OKLA., Federal Supply Co., 120 E. Main St. (2-9031)
OMAHA, NEB., Kraus & Trustin, 636 Paxton Block (Atlantic 8561)
PITTSBURGH, PA., James R. Pitcairn, Century Bldg. (Atlantic 8790)
PHILADELPHIA, PA., Chas. Clement, 401 No. Broad St. (Walnut 3741)
PORTLAND, ORE., Cress & Co., 2143 No. Pettygrove St. (Atwater 9648)
READING, PA., Harry Oxenreider, 522 Court St. (Reading 2-4101)
RICHMOND, VA., J. S. Archer, Atlantic Life Bldg. (3-5712)
ROANOKE, VA., Roanoke Eng. Sales Co., State & City Bank Bldg. (2-2298)
ROCHESTER, N. Y., S. A. Spencer, 135 Spring St. (Main 6406)
SAN FRANCISCO, CAL., Vincent Whitney Co., 130 10th St. (Hemlock 4641)
SCRANTON, PA., LaBar & Evans, 711 Linden St. (9134)
SEATTLE, WASH., F. T. Crowe Corp., 216 Walker Bldg. (Main 7950)
ST. LOUIS, MO., Herbert Golterman, Louderman Bldg. (Main 0035)
SYRACUSE, N. Y., B. R. Johnson, 145 Harding Place (9-2733)
TOLEDO, OHIO, S. L. Everitt, 619 Edison Bldg. (Main 5526)
UTICA, N. Y., American Hard Wall Plaster Co. (2-4156)
WASHINGTON, D. C., Arthur B. Gilbert, 1427 Eye Street, N. W. (Metropolitan 6856)

G&G ANTI-FRICTION BEARING MANUAL TELESCOPIC HOISTS



All G&G Hoists are now made with *all* shafts revolving in *anti-friction bearings*, further assuring (1) *ease of operation*, (2) *dependability*, and (3) *long wear*, all of which have been outstanding features of G&G Hoists even before this noteworthy improvement was adopted.

The G&G Telescopic Hoist with Automatic Gear Shifting Brake Device and Silencer



MODEL A

Anti-friction Bearing Manual Type Hoist

For raising maximum loads of 500 lbs. at a speed of 30 f.p.m. from Basement to Grade Level

One man, unaided, performs the entire operation with a pressure of only 7 lbs. applied to the Hoisting Handle for each 100 lbs. of load to be raised. Empty cans are lowered to basement by gravity. The Hoisting Handle does not revolve when hoist is used for lowering. Automatic Silencer assures quiet operation at all times.

How to Specify Model A—

Furnish and install, where indicated on plans and in accordance with manufacturer's drawings and instructions, ONE MODEL A TELESCOPIC MANUAL HOIST, with all shafts revolving in anti-friction bearings and with Automatic Gear Shifting, Brake, Silencer and Gravity Lowering Device, all as manufactured by GILLIS & GEOGHEGAN HOIST CORPORATION, New York, N. Y.

Include the following G&G Equipment (*) with the hoist, and set same in a proper manner, all as shown on manufacturer's drawings: Flush Watertight Doors; Automatic Sidewalk Door Opening-Closing and Locking Device with Automatic Safety Spring Guard Gates; Electric Warning Gong; Fixed Bail Ash Cans; Rubber-tired Ash Can Truck, and Heavy Engineer's Ladder.

(*) *For G&G Hoisting Cans and Other Equipment, see pages 4 and 5*

PATENTS ISSUED

United States

Apr. 30, 1912	Feb. 1, 1916	Apr. 24, 1923	Apr. 19, 1912
May 19, 1914	Mar. 7, 1916	Jan. 6, 1925	May 14, 1912
June 23, 1914	Mar. 28, 1916	Jan. 6, 1925	Dec. 9, 1913
(June 30, 1914)	Mar. 13, 1917	Feb. 3, 1925	(Apr. 7, 1914)
(Reissued)	Oct. 8, 1918	Feb. 9, 1925	(Reissued)
(Oct. 19, 1915)	Mar. 9, 1920	Feb. 17, 1925	(Nov. 14, 1916)
Aug. 17, 1915	Mar. 9, 1921	Oct. 27, 1925	Apr. 27, 1915
Dec. 7, 1915	Mar. 9, 1922	Nov. 10, 1925	June 22, 1915
Dec. 7, 1915	Sept. 19, 1922	Feb. 9, 1926	Aug. 3, 1915

Canada

May 9, 1916	May 30, 1922
July 25, 1916	Nov. 28, 1922
Sept. 5, 1916	Apr. 24, 1923
Oct. 10, 1916	Jan. 12, 1925
Nov. 21, 1916	Apr. 14, 1925
June 1, 1920	Apr. 14, 1925
Aug. 31, 1920	June 30, 1925
May 9, 1922	July 7, 1925
May 30, 1922	Mar. 2, 1926

G&G ANTI-FRICTION BEARING MANUAL TELESCOPIC HOISTS

G&G Anti-friction Bearing Telescopic Hoists are designed for quick, safe, dependable, economical raising and lowering of loads under 1000 lbs. between floors, or from basement to grade level.

The hoists are compact, occupy small space and are ruggedly constructed throughout so that no part has a factor of safety of less than eight, based on the ultimate strength of the material when the maximum load for which the hoist is designed is raised.

The new *anti-friction bearings* used on *all* revolving shafts, assure easy operation and long life, with a minimum of attention. While standard G&G Anti-friction Bearing Telescopic Hoists will meet the requirements of most buildings, where unusual or difficult conditions are encountered, we will be glad to work with architects and others in the design and construction of a hoist that will exactly meet all conditions.



MODEL B

Anti-friction Bearing Manual Type Overhead Crane Hoist

For raising maximum loads of 500 lbs. at a speed of 30 f.p.m. from Basement to a position of 6 ft. above Grade Level—dumping cans directly into truck without rehandling at grade

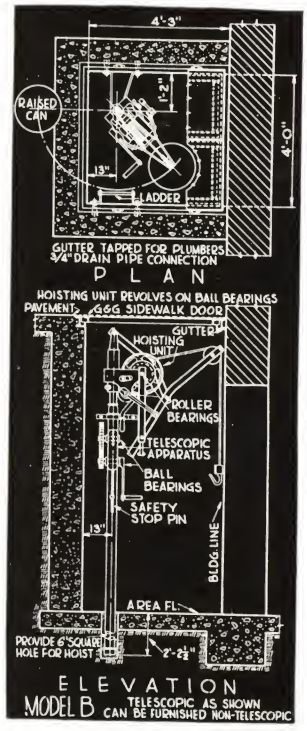
One man, unaided, performs the entire operation with a pressure of only 7 lbs. applied to the Hoisting Handle for each 100 lbs. of load to be raised. Empty cans are lowered to basement by gravity. Hoisting Handle does not revolve when hoist is used for lowering. The new counter-weighted collapsible boom is easily and quickly placed into working position with a minimum amount of effort and without danger to the operator. Because of the great savings in time and labor provided by the Model B Overhead Crane Hoist, we recommend that architects plan, wherever possible, to locate sidewalk openings near the curb or driveway, to permit the adoption of this model.

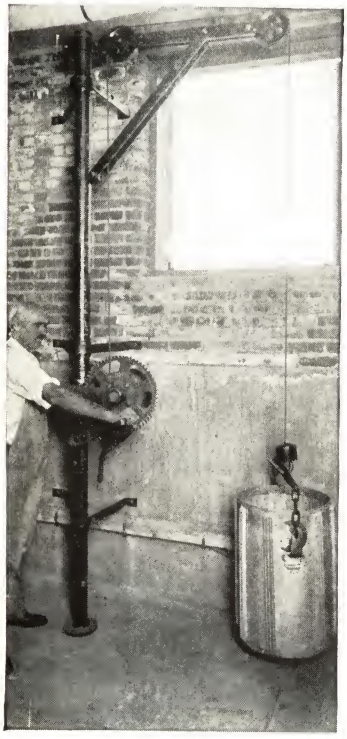
How to Specify Model B—

Furnish and install where indicated on plans and in accordance with the manufacturer's drawings and instructions, ONE G&G MODEL B TELESCOPIC MANUAL OVERHEAD CRANE HOIST, with *all* shafts revolving in anti-friction bearings, and with counter-weighted collapsible boom, Automatic Gear Shifting, Brake, Silencer and Gravity Lowering Device, as manufactured by GILLIS & GEOGHEGAN HOIST CORPORATION, New York, N. Y.

Note: Include G&G Equipment as specified for Model A on the preceding page, substituting "Swing Bail" for "Fixed Bail" Ash Cans.

(For description of G&G Hoisting Cans and Other Equipment, see pages 4 and 5)





MODEL BW

Anti-friction Bearing Manual Type Hoist

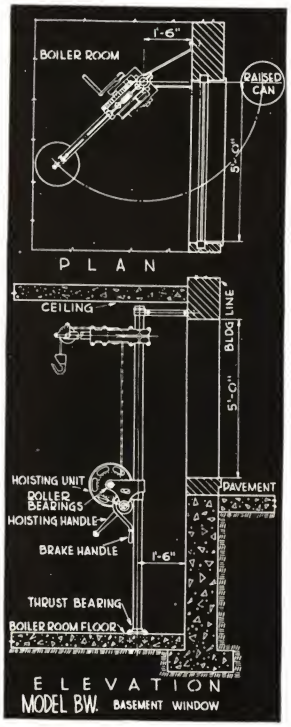
For raising maximum loads of 500 lbs. at a speed of 30 f.p.m. Loads can be raised and swung through a window or doorway

A pressure of only 7 lbs. applied to the Hoisting Handle for each 100 lbs. to be raised is required. Empty cans are lowered to boiler-room floor by gravity. The Hoisting Handle does not revolve when the hoist is used for lowering. Automatic Silencer assures quiet operation.

How to Specify Model BW—

Furnish and install where indicated on plans and in accordance with the manufacturer's drawings and instructions, ONE G&G MODEL BW MANUAL HOIST with *all* shafts revolving in anti-friction bearings, and with Automatic Gear Shifting, Brake, Silencer and Gravity Lowering Device and Fixed Bail Ash Cans, as manufactured by GILLIS & GEOGHEGAN HOIST CORPORATION, New York, N. Y.

(For description of G&G Hoisting Cans and Other Equipment, see pages 4 and 5)



For G&G Anti-friction Bearing, Electric Telescopic Hoist, see following page

G&G ANTI-FRICTION BEARING ELECTRIC TELESCOPIC HOISTS

G&G Electric Hoists should be specified wherever a large quantity of ashes must be handled quickly, where the area is deep, or both. G&G Electric Hoists have been installed in schools, apartments, hospitals, theatres, industrial and public buildings of all types throughout the United States, Canada and foreign countries, and are recognized for their dependability, durability and economy.

the G&G ELECTRIC REG. U.S. PAT. OFF. **Telescopic Hoist** With Automatic Stop and Gravity Lowering Device

Today, the cost of operation has been further reduced and efficiency increased by the *anti-friction* bearings used with *all* revolving shafts which assure lower current consumption, together with smoother operation and trouble-free performance.



MODEL E

Anti-friction Bearing Electric Type Hoist With Motor Located on Hoisting Head

For raising maximum loads of 500 lbs. at a speed of 60 f.p.m. from Basement to Grade Level

Empty cans are lowered quickly to basement by gravity. One man, unaided, performs the entire operation. Current is consumed only when hoisting. The Hoist is operated by a 1½ hp. a-c. or d-c. motor, equipped with Magnetic Brake, Gravity Lowering Device, Automatic Upper Limit and Single Speed controller. All gears and bearings operate in a bath of lubricant in a sealed housing.

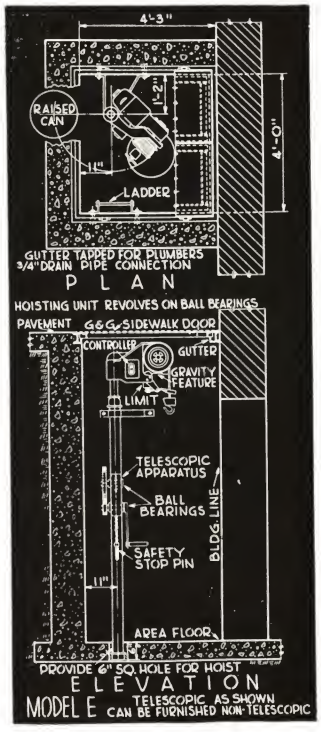
How to Specify Model E—

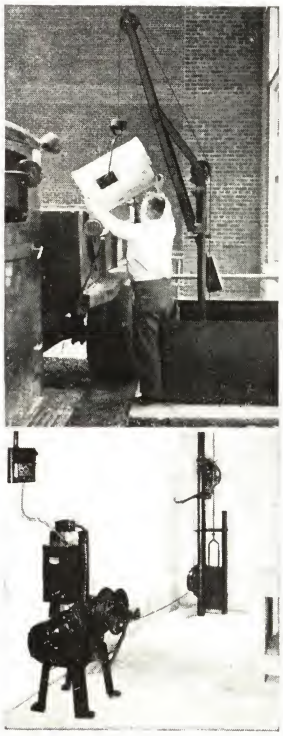
Furnish and install, where indicated on plans and in accordance with the manufacturer's drawings and instructions, ONE G&G MODEL E TELESCOPIC ELECTRIC HOIST, with *all* shafts revolving in anti-friction bearings, and with Automatic Upper Limit and Gravity Lowering Device, as manufactured by GILLIS & GEOGHEGAN HOIST CORPORATION, New York, N. Y.

Include the following G&G Equipment (*) with the hoist and set same in a proper manner, all as shown on manufacturer's drawings: Flush Watertight Doors; Automatic Sidewalk Door Opening-Closing and Locking Device with Automatic Safety Spring Guard Gates; Electric Warning Gong with transformer (*See note*); Fixed Bail Ash Cans; Rubber-tired Ash Can Truck, and Heavy Engineer's Ladder.

Note: Electrical wiring, from service line to outlets on hoist motor and to transformer of warning gong, shall be provided by the electrical contractor.

(*) *For description of G&G Hoisting Cans and Other Equipment, see pages 4 and 5*





MODEL D

Anti-friction Bearing Electric Type Overhead Crane Hoist With Motor Located in Basement

For raising maximum loads of 500 lbs. at a speed of 60 f.p.m. from Basement to a position 6 ft. above Grade Level dumping cans directly into truck without rehandling at Grade

Model D is popular where many cans must be handled quickly. The hoist is operated by a 1½ hp., totally enclosed a-c. or d-c. motor, equipped with Magnetic Brake, Automatic Upper Limit and Single Speed Controller. All gears and bearings operate in a bath of lubricant in a sealed housing. This hoist is also equipped with the new counter-weighted collapsible boom which is easily and quickly placed into working position with a minimum amount of effort and without danger to operator.

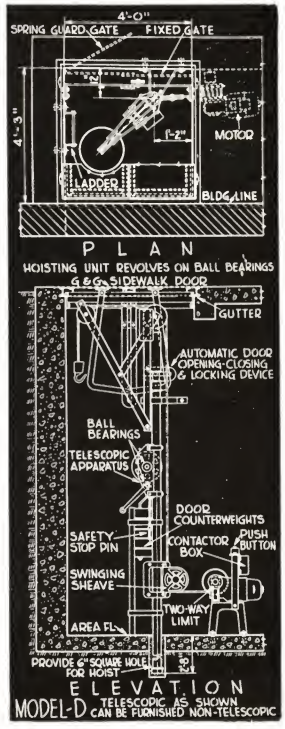
How to Specify Model D—

Furnish and install, where indicated on plans and in accordance with the manufacturer's drawings and instructions, ONE G&G MODEL D HOIST, with *all* shafts revolving in anti-friction bearings, and with counter-weighted collapsible boom, Magnetic Brake, Automatic Upper and Lower Limit and Single Speed Controller, as manufactured by GILLIS & GEOGHEGAN HOIST CORPORATION, New York, N. Y.

Include the following G&G Equipment (*) with the hoist and set same in a proper manner, all as shown on manufacturer's drawings: Flush Watertight Doors; Automatic Sidewalk Door Opening-Closing and Locking Device with Automatic Safety Spring Guard Gates; Electric Warning Gong with transformer (*see note*); Swing Bail Ash Cans; Rubber-tired Ash Can Truck, and Heavy Engineer's Ladder.

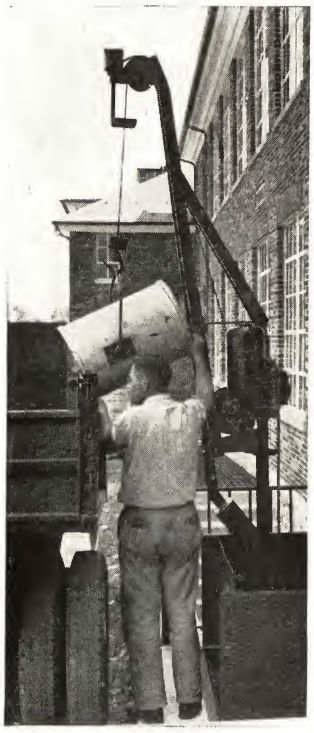
Note: Electrical wiring, from service line to outlets on hoist motor and to transformer of warning gong, shall be provided by the electrical contractor.

(*) *For description of G&G Hoisting Cans and Other Equipment, see pages 4 and 5*



GILLIS & GEOGHEGAN HOIST CORPORATION

G&G ANTI-FRICTION BEARING ELECTRIC TELESCOPIC HOISTS



MODEL D3

Anti-friction Bearing Electric Type Overhead Crane Hoist with Motor Located on Hoisting Head

For raising maximum loads of 500 lbs. at a speed of 60 f.p.m. from Basement to a position of 6 ft. above Grade Level, dumping directly into truck without rehandling at Grade

Model D3 is designed for conditions where lift is of moderate height and where few quick trips are to be made at one time. One man performs the entire operation. The hoist is operated with a 1½ hp., totally enclosed a-c. or d-c. motor, equipped with Magnetic Brake, Automatic Upper Limit and Single Speed Controller. All gears and bearings operate in a bath of lubricant in a sealed housing. This hoist is also equipped with the new counter-weighted collapsible boom which is easily and quickly placed into working position with a minimum amount of effort and without danger to the operator.

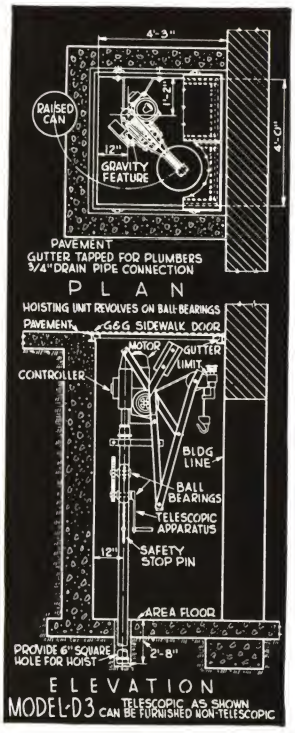
How to Specify Model D3—

Furnish and install, where indicated on plans and in accordance with the manufacturer's drawings and instructions, ONE G&G MODEL D3 TELESCOPIC OVERHEAD CRANE ELECTRIC HOIST, with *all* shafts revolving in anti-friction bearings, and with counter-weighted collapsible boom, as manufactured by GILLIS & GEOGHEGAN HOIST CORPORATION, New York, N. Y.

Note: Include G&G Equipment as specified for Model D on page 3.

Note: Electrical wiring, from service line to outlets on hoist motor and to transformer of warning gong, shall be provided by the electrical contractor.

(For G&G Hoisting Cans and Other Equipment, see below and page 5)



G&G IMPROVED HOISTING CANS

Description

G&G Improved Hoisting Cans are made in our own factory especially for use with G&G Hoists. They are constructed throughout of 16-gauge galvanized and copperized sheet steel, reinforced at top and bottom with 1¼ x ¼-in. steel bands. The thickness and weight of the 16-gauge sheet steel (*very much heavier than the material ordinarily used for ash cans*) results in greater strength, ruggedness and durability. The "swing bail" can is *balanced*—the can is easily tilted for emptying yet it will not spill ashes while being raised. The swing bail is so arranged that it will not drag on the floor when the can is being handled in the cellar and it remains stationary for easy hooking and raising. These cans are particularly recommended for their labor-saving features.

Types of G&G Improved Hoisting Cans

Fig. A: G&G Standard 16-gauge 17x24 in. Side Handle Hoisting Can—Where the convenience of the fixed bail feature is not desired, this can will be found very useful for general purposes and will outlast several ordinary cans. *Weight*: 42 lbs.

Fig. B: G&G Standard 16-gauge 17x24 in. Fixed Bail Hoisting Can—Recommended for use with Models A, BW and E because it is easy to hook preparatory to raising. *Weight*: 42 lbs.

Fig. C: G&G Standard 16-gauge 17x24 in. Swing Bail Hoisting Can—Recommended for use with Models B, D and D3. Swing Bail remains stationary for hooking preparatory to raising. *Weight*: 45 lbs.



Fig. A Fig. B Fig. C

G&G FLUSH WATERTIGHT SIDEWALK DOORS

Standard Sidewalk Door

The door rests perfectly flush with the sidewalk in every detail of its construction. This checkered steel door is designed to sustain a live load of 300 lbs. per sq. ft.—insuring against deflection.

G&G Sidewalk Doors are watertight—a condensation gutter, tapped for plumber's drain connection, provides a perfectly dry area. All corners are welded. Hinges are flush, of cast bronze with monel metal hinge pins which are easily removed without breaking surrounding concrete.

Extra Heavy Sidewalk Door

Wherever the ash truck or other heavily-loaded vehicles pass over the door, we recommend that G&G Extra Heavy Flush Watertight Sidewalk Doors, which are designed to sustain a live load of 1200 lbs. per sq. ft., be specified. The frame is constructed of 5-in. I-beams. The leaves are of ⅜-in. diamond plate steel, reinforced with six 3-in. I-beams, spaced approximately 8 in. on center. Extra heavy hinges are of cast bronze, with ½ in. diameter monel metal hinge pins. Angle iron gutters, 4x3x¼ in., are tapped at two points for plumber's drain connection.

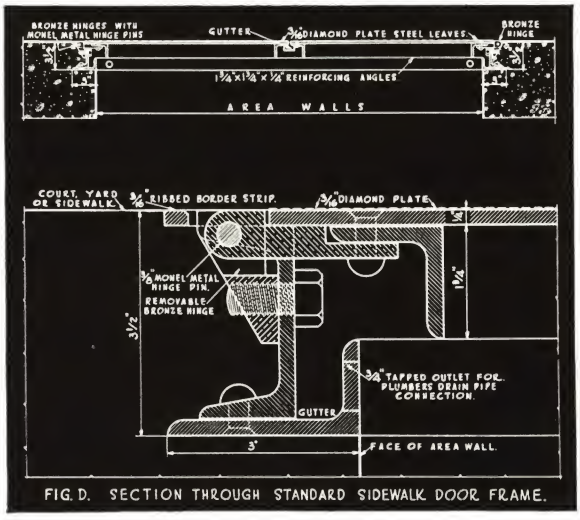


FIG. D. SECTION THROUGH STANDARD SIDEWALK DOOR FRAME.

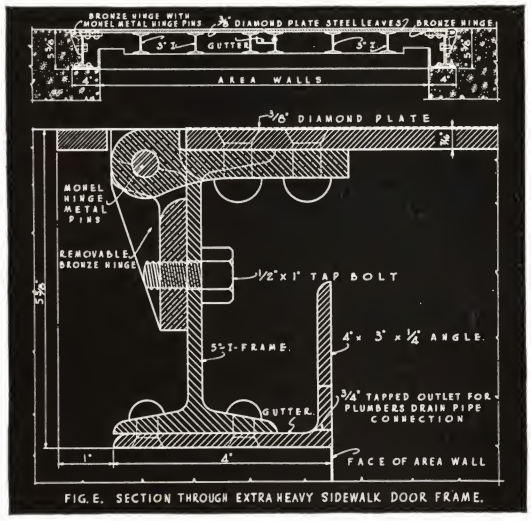


FIG. E. SECTION THROUGH EXTRA HEAVY SIDEWALK DOOR FRAME.

OTHER G&G EQUIPMENT

Safety Spring Guard Gates

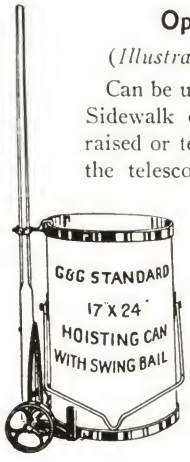
(*Illustrated in connection with Models A, E, and D*)

These gates meet all municipal sidewalk regulations. They automatically close up the space at the sidewalk level between the open doors. Swing gate does not swing *inward*—swings *outward only* to permit passage of can or other load, thus protecting both pedestrians and operator.

Automatic Sidewalk Door Opening-Closing and Locking Device

(*Illustrated in connection with Models A, E and D*)

Can be used with all G&G Hoists (except Model BW). Sidewalk doors open and close as the hoisting head is raised or telescoped. A counter-weight is provided so that the telescoping handle works smoothly and easily. An important feature is the automatic *self-locking* of the doors, whether opened or closed.



Ash Can Truck

A convenient one-handled truck which greatly facilitates handling of the cans. Furnished with rubber wheels. Saves time and labor and prevents wear and tear on the cans.

G&G Anti-friction Worm Gear Telescopic Device

For the raising and lowering of G&G Hoists to and from working position. Eliminates opening in area floor, thus overcoming waterproofing and hydrostatic pressure problems. By providing the following area depths, the extension of the hoist into area floor can be eliminated.

Models A and E—(*Grade Level Delivery of Cans*): Spur Gear telescopic device, minimum area depth, 7 ft., 9 in. Worm Gear telescopic device, minimum area depth, 7 ft. 6 in.

Models B, D and D3—(*Truck Height Delivery of Cans*): Spur Gear telescopic device, opening in area floor necessary irrespective of area depth.

Worm Gear telescopic device, minimum area depth, 10 ft., 10 in.

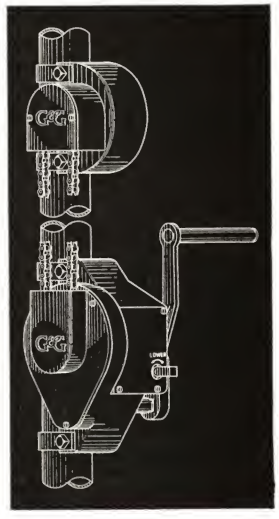


Fig. F: Anti-friction Worm Gear Telescopic Device
Eliminates piercing of area floor.

Electric Warning Gong

Sometimes required by municipal regulations to warn those on the sidewalk. The G&G Electric Warning Gong complies with all such regulations.

Engineer's Ladder

G&G Ladders, located in the hoistway, provide quick and direct access from basement to grade and return.

Shop Test

All G&G Hoists and Equipment are subjected to a thorough working test before shipment.

Instructions

Complete instructions for erecting and installing hoists are furnished with each shipment together with complete maintenance instructions.

POTTS ASH HOIST CORPORATION

GENERAL SALES OFFICE AND FACTORY

MECHANICSBURG, CUMBERLAND COUNTY, PA.

SALES AGENCIES IN THE UNITED STATES

ALBANY, N. Y., The Builders Agency, 61 Maiden Lane
ALTOONA, PA., Altoona Pipe & Supply Co., 2111 Beale Ave.
ATLANTA, GA., Hill R. Huffman, 1000 Peachtree St.
BALTIMORE, MD., Charles A. Gareis, 1417 Carswell St.
BIRMINGHAM, ALA., Charles M. McCrum, 2015 Fifth Ave., No.
BOSTON, MASS., J. G. Waxman Co., 72 Granite St.
CHARLESTON, W. VA., Fireproof Products Co., P. O. Box 1327
CHICAGO, ILL., Elmer A. Sell, 1546 Conway Bldg.
CINCINNATI, OHIO, A. W. Frank Co., 950 E. Court St.
CLEVELAND, OHIO, The Queisser Builders Supply Co., 9105 Woodland Ave.
DAYTON, OHIO, Robert E. Schenck, 116 Indianola Ave.
DENVER, COLO., The George P. Heinz Co., 812 Twelfth St.
DES MOINES, IOWA, Preston Daniels, 322 Securities Bldg.
DETROIT, MICH., Walter M. Rogers, 207 Architects Bldg., 415 Brainard St.
ERIE, PA., George H. Kraft & Son, 602 Schenley Drive
FORT WAYNE, IND., C. L. Schust Roofing Co., Taylor St. and Lake Erie Ry.
GRAND RAPIDS, MICH., Haven-Busch Co., 501 Front Ave., N. W.
GREENSBORO, N. C., The Carolina Steel & Iron Co.
GREENSVILLE, S. C., Poe Hardware & Supply Co., 108 So. Main St.
INDIANAPOLIS, IND., Hoover Bros., 604 Majestic Bldg.
JACKSONVILLE, FLA., Peter G. Ward, Atlantic National Bank Bldg.
KANSAS CITY, MO., Robert O. Smith, 2035 E. 19th St.
LITTLE ROCK, ARK., Clippard Builders Supply Co., 419 Center St.
LOS ANGELES, CAL., Frank Peck Specialty Co., 420 So. San Pedro St.
LOUISVILLE, KY., Kentucky Metal Products Co., Preston St. and Audubon Park
LYNCHBURG, VA., A. P. Montague, Jr., 302 Peoples Bank Bldg.
MEMPHIS, TENN., Akers & Co., 215-16 Falls Bldg.
MILWAUKEE, WIS., Worden-Allen Co., P. O. Box 2057
MINNEAPOLIS, MINN., Arthur D. Hale, 121 W. Rustic Lodge Ave.
NEW HAVEN, CONN., The Warner-Miller Corp., 301-29 East St. near St. John St.
NEW YORK, N. Y., Potts Ash Hoist Corp., 19 Rector St.
OMAHA, NEB., The Geo. H. Alwine Co., Brandeis Theatre Bldg.
PHILADELPHIA, PA., Culbert-Whitby Co., 2019 Rittenhouse St.
PITTSBURGH, PA., Keystone Sales Co., P. O. Box 4201 Bellevue
ROCHESTER, N. Y., F. H. Fredman Co., 36 St. Paul St.
SALT LAKE CITY, UTAH, Williams & Richardson, 204 Dooly Bldg.
SCRANTON, PA., Harvey R. Allen, 711 Linden St.
SEATTLE, WASH., Star Machinery Co., 1741 First Ave., So.
ST. LOUIS, MO., George A. Caine, Chemical Bldg.
SYRACUSE, N. Y., Waterman Building Specialties, 1407 E. Erie Blvd.
TOLEDO, OHIO, Jos. P. Kessler & Co., P. O. Box 83, Station A
WASHINGTON, D. C., Arthur R. Myers, 410 Bond Bldg.
WHEELING, W. VA., David Tyler, 28th and Chapline Sts.

Note: The suit for infringement of patent and unfair competition involving Potts Ash Hoists was dismissed by order of the Federal Court in New York City on April 25, 1938.

MANUFACTURERS OF IMPROVED ELECTRIC AND HAND-POWERED TELESCOPIC HOISTS FOR THE REMOVAL OF ASHES, RUBBISH AND GARBAGE—AND SIDEWALK ELEVATORS TO HANDLE MISCELLANEOUS FREIGHT

Potts *Hoists* are made for rugged wear. Castings are of first quality steel. They are guaranteed work- and weather-proof. All gears have cut teeth and working parts are machined with precision.

The Potts *Manufacturing Company* plant, at Mechanicsburg, Pa., has been making the highest grade of building equipment, since 1887, including ornamental iron work and sidewalk doors, and ash hoists sold under another distributor's name. Potts quality is time-tested. It has been long and favorably known in all parts of the country.

TELESCOPIC POTTS ASH HOIST



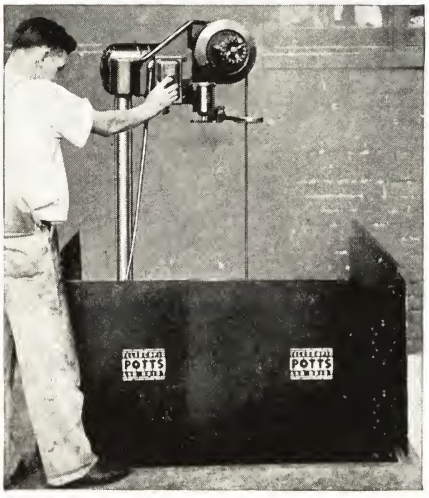
Overhead Crane Hoist

Model D-3, at right, with overhead crane to facilitate dumping directly into ash trucks, and Model B (see Page 2) are recommended where hoistway openings are near curbs or driveways

New Electrically Operated Hoisting Head

The Potts *Model E Hoist,* without any sacrifice in quality, has been designed to bring an electrically operated telescopic ash hoist within the price range of a hand-powered one, thus making it possible to secure the labor-saving and efficiency of an electric hoist at little more than the price of a hand-powered model.

The *Model E* and *Model D-3* hoists are equipped with every known feature to insure safety and efficiency of operation: Special mechanism to permit lowering by gravity, automatic upper limit, magnetic brake, push button control, 1½ horsepower motor. They are designed for a maximum working capacity of 500 pounds, with a hoisting speed of 60 feet per minute.



Newest Electric Model

Electric Models, such as Model E, at left and Model D-3, above, have push button control for raising and stopping the load. A special mechanism permits lowering by gravity and cuts electric power consumption in half. A magnetic brake and safety upper limit automatically stop movement of motor and load when current is interrupted or limit of upper travel is reached

How to Specify—Furnish and install where shown on plans, and in accordance with manufacturer's details, one Potts electrically operated *Model E* telescopic hoist, grade level type, having maximum working capacity of 500 pounds, with hoisting speed of 60 feet per minute, and designed to lower by gravity as manufactured by the Potts Ash Hoist Corporation of Mechanicsburg, Pa.

For specification of complete installation, including Sidewalk Doors, etc., see page 4.

Overhead Crane Simplifies Ash Removal

The *Model D-3,* electrically operated, has an overhead crane to facilitate the dumping of loaded ash cans directly into ash trucks. It is designed for installation in hoistways located in driveways or adjacent to curb lines. Using the *Model D-3,* and Potts *Swing Bail Ash Cans,* it is possible for one man to raise the cans above grade level and dump them into waiting trucks, merely by tipping the bottom of the cans. The operator does not have to leave the grade level. See illustration of hand-powered *Model B* on page 2.

How to Specify—Furnish and install, where shown on plans, and in accordance with manufacturer's details, one POTTS electrically operated Model D-3 telescopic, overhead crane hoist, truck dumping type, having maximum working capacity of 500 pounds, with hoisting speed of 60 feet per minute, and designed to lower by gravity as manufactured by POTTS ASH HOIST CORPORATION of Mechanicsburg, Pa.

For specification of complete installation, including Sidewalk Doors, etc., see second page following.

Hoists with Motor Units in Basement

Model C hoist is equipped with a horizontal crane, designed to raise cans to grade or sidewalk level.

Model D hoist is equipped with truck-dumping facilities similar to Models B and D-3. (See cut on page 3.)

Features of Models C and D

Power Unit—Consists of 1½ horsepower motor with integral worm-gear reducing unit mounted on base, located in basement.

Control—Either drum-type or push button, located at basement or sidewalk level. Other features, such as automatic upper limit, magnetic brake, etc., are standard on these models. *Models C and D* are designed for electric raising and lowering and are recommended for installation where conditions necessitate the employment of more than one man for the removal of ashes. Complete specifications sent on request.

Reliable and Efficient Hand-powered Model

The POTTS *Model A,* hand-powered, hoist must deserve popularity through its efficient service and the ruggedness of its construction.

Its use is recommended where costs do not permit, and conditions do not require, the installation of electric equipment.

The *Model A* will safely and easily raise loads of 500 pounds at a speed of 30 feet per minute and lower them by gravity at any desired speed, controlled by a specially designed hand brake with heavily woven lining.

The hoisting handle does not revolve during lowering, thus insuring speed of operation and additional safety for operator.

Model A hoist is noiseless, due to special silencing mechanism.

How to Specify—Furnish and install where shown on plans, and in accordance with manufacturer's details, one POTTS hand-powered *Model A* telescopic hoist, grade level type, having maximum working capacity of 500 pounds with hoisting speed of 30 feet per minute as manufactured by the POTTS ASH HOIST CORPORATION of Mechanicsburg, Pa.

For specification of complete installation, including Sidewalk Doors, etc., see following page.



Potts Hand-powered Type

Automatic safety spring guard gates swing outward to permit cans to be placed on sidewalk, but completely enclose hoistway opening. Operator of hand-powered Model A, at left shows how POTTS Hoisting Units revolve, on ball bearing plates, to deposit cans on sidewalk

How to Operate POTTS Telescopic Ash Hoists

POTTS special Fixed or Swing Bail *Ash Cans* are placed in area, around base of hoist. Operator at grade level then "fishes" for, and catches, bail of can on hoist hook. Cans are raised to grade level without operator leaving his position.

Cans are easily swung over sidewalk level—guard gates being designed to swing outward permitting passage of can. See above illustration of *Model A.*

All POTTS *Hoist* Units revolve on ball bearing plates, insuring ease of operation.

Special Potts Features

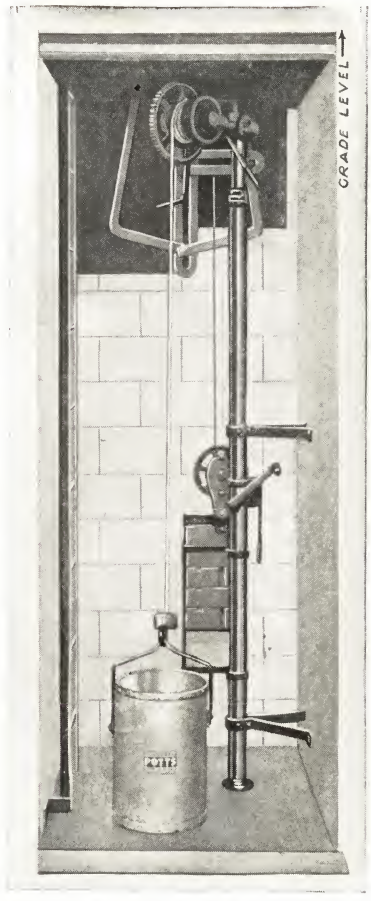
All POTTS *Telescopic Hoists,* when not in use, telescope under the sidewalk doors as illustrated.

The POTTS *Sidewalk Door Opening and Closing Device* automatically opens and closes the sidewalk doors as the operator at the basement level raises and lowers the hoist. No outside locking mechanism is necessary as the POTTS *Opening and Closing Device* is self-locking.

The POTTS *Safety Spring Guard Gates* automatically spring into position as the Sidewalk Doors are opened, and absolutely prevent the possibility of injury to passers-by.

The POTTS *Warning Gong* automatically sounds and warns pedestrians of opening sidewalk doors.

The POTTS *Heavy Iron Ladder* is designed for operator's use.



Potts Telescopic Hoist

At right is shown a Model A Hoist fully telescoped. Simple pressure on the telescoping handle in the basement raises the hoisting head, opening the sidewalk doors and sounding warning gong. Stop pin securely locks telescoping standpipe when fully raised. Ash cans can be placed at bottom of hoistway and hooked by operator standing at grade level

Hand-powered, Truck-dumping Model

Model B Hand-powered has the truck-dumping facilities of the *Model D-3* and the efficient and reliable features of the *Model A.* It is recommended for installation where hoistway is near curb or driveway and hoisting requirements do not demand an electrically operated model.

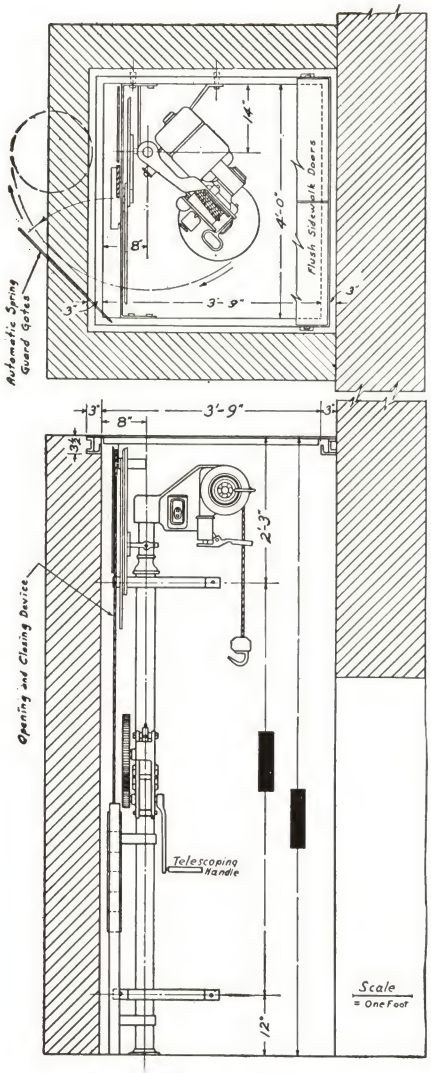
How to Specify—Furnish and install, where shown on plans, and in accordance with manufacturer's details, one POTTS hand-powered *Model B* Telescopic, overhead crane hoist, truck-dumping type, having maximum working capacity of 500 pounds with hoisting speed of 30 feet per minute as manufactured by the POTTS ASH HOIST CORPORATION of Mechanicsburg, Pa. For specifications of complete installation, including Sidewalk Doors, etc., see the following page.



Dumping Direct Into Truck

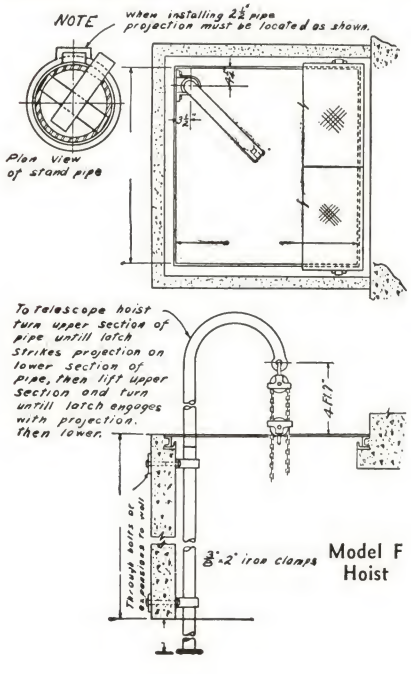
Operator of above *Model B* hand-powered overhead crane type hoist does not have to leave grade level to hook on cans in the basement for cable is equipped with weighted grab hook

POTTS ASH HOIST CORPORATION



Sample Plan and Elevation

Above is shown plan and elevation of Potts Model E, electric hoist. It is strongly recommended that where possible, area openings measure 4'0"x4'0", as this permits use of Potts Standard Equipment



Model F Hoist

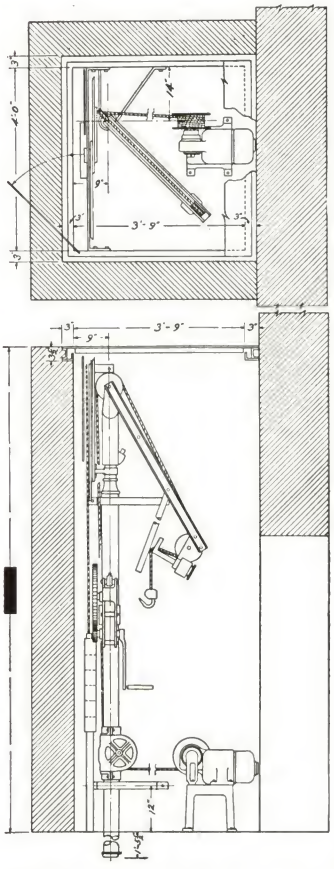
Non-telescopic Models

All Potts *Ash Hoists* may be furnished without the telescopic feature. Non-telescopic models are often required to meet unusual conditions, such as service inside of buildings, installations in open and exposed areas, etc. Potts *Ash Hoists may also be furnished with maximum capacities ranging to 1000 pounds.*

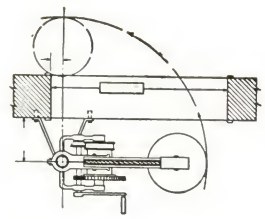
Basement Window Model

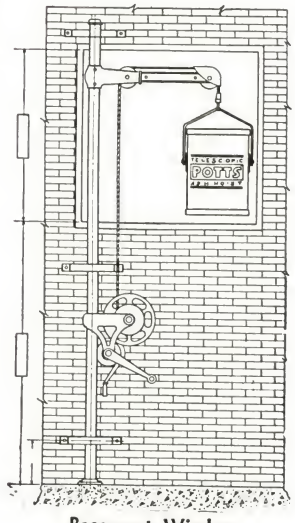
Designed especially for installation where conditions require cans to be swung through basement window or doorway.

How to Specify—Furnish and install where shown on plans, and in accordance with manufacturer's details, one Potts *Basement Window* hand-powered hoist, as manufactured by the Potts Ash Hoist Corporation of Mechanicsburg, Pa.



Model D Hoist





Basement Window

Elevation shows typical basement window installation. This model is recommended for use where no outside hoistways exist

Model D Hoist

Where installation is desired with motor mounted on basement floor, we recommend the Potts *Model D Hoist* which is otherwise similar to our *Model D-3 Hoist* shown on first page. This *Model D Hoist* permits dumping of cans directly into ash trucks.

Model F Hoist

Where low priced ash removal equipment is desired, we recommend the Potts *Type F Hoist* which is telescopic and equipped with either a chain or rope block. This hoist can be furnished to raise cans to grade or ash truck level. It is equipped with a special locking device, eliminating the use of any thru-pin or bolt.

How to Specify—Furnish and install where shown on plans and in accordance with manufacturer's details, one Potts Type F Telescopic Hoist with Differential Chain or Rope Block, as manufactured by the Potts Ash Hoist Corporation of Mechanicsburg, Pa.

Data on Potts Hoists

Complete specifications, detailed blueprints, and catalogues furnished on request.

Our Engineering Department will gladly suggest solutions of unusual hoisting problems.

Standard Specifications for POTTS Ash Hoists

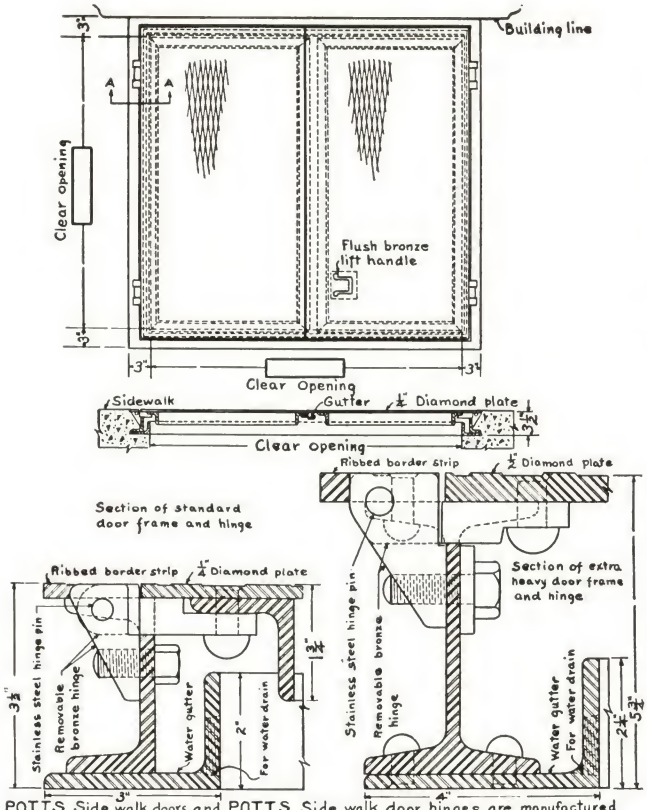
(For individual specifications see description of hoist model)

Furnish and install where shown on plans and in accordance with manufacturer's details, one Potts *Standard Water-tight* double-leaf *Sidewalk Door* equipped with leaves constructed of diamond plate steel (or leaves of diamond plate steel, fitted with vault light lenses), also one Potts *Automatic Sidewalk Door Opening* and *Closing Device,* Potts *Automatic Safety Spring Guard Gates,* Potts *Automatic Warning Gong,* and Potts *Heavy Iron Ladder* for operator's use.

Furnish and deliver to building contractor (number required) Potts *Standard Galvanized Hoisting Cans* 24 in. high by 17 in. in diameter, fitted with fixed or swing bails.

Furnish and deliver to building contractor one Potts *Rubber-tired Ash Can Truck.* All of the above as made by the Potts Ash Hoist Corporation of Mechanicsburg, Pa.

Note: Specify Fixed Bail Cans for use with Models A, E, C and Basement Window. Specify Swing Bail Cans for use with Models B, D and D-3.



POTTS Side walk doors and POTTS Side walk door hinges are manufactured under, and protected by, U.S. Patents. 1,462,805 and 1,462,806.

Potts Patented Sidewalk Door

How to Specify—Standard Doors

Furnish and install, where shown on plans and according to manufacturer's specifications, one Potts Standard Flush Watertight Sidewalk Door. Constructed with diamond plate leaves reinforced on under side with angle irons, heavy bronze hinges with stainless steel hinge pins, channel iron frame, and angle condensation gutter tapped for ¾-in. drain pipe, as manufactured by the Potts Ash Hoist Corporation of Mechanicsburg, Pa.

How to Specify—Extra Heavy Doors

Furnish and install where shown on plans and according to manufacturer's specifications, one Potts Extra Heavy Flush Watertight Sidewalk Door. Constructed with ½-in. diamond plate leaves reinforced with 3-in. I beams bearing directly on I beam frame, heavy bronze hinges with stainless steel hinge pins, and condensation gutter tapped for 1-in. pipe, as manufactured by the Potts Ash Hoist Corporation of Mechanicsburg, Pa.

Potts Sidewalk Doors Since 1883

We have been manufacturing doors for over 50 years, which have met the most rigid requirements. They can be furnished with leaves of solid diamond plate steel or leaves of diamond plate steel equipped with vault light lenses. Construction is rugged and designed for long life.

Frame is equipped with condensation gutter, tapped for standard plumber's drain-pipe connection.

Hinges are of heavy cast bronze, so designed that entire surface of door lies flush with surrounding pavement.



Fixed Bail **Side Handle** **Swing Bail**

Potts Ash Cans are constructed throughout of No. 16 gauge galvanized iron, 17 in. in diameter, 24 in. high, and reinforced at top and bottom with 1¼ x ¼ -in. steel bands, heavily riveted. Use Potts Rubber-tired Ash Can Trucks

Types: Standard—Constructed to sustain live load of 300 pounds per square foot.

Extra Heavy—Designed to withstand heavy driveway truck traffic.

Special sizes of either type can be furnished.

Complete details and specifications sent on request.

Potts New Model Sidewalk Elevators

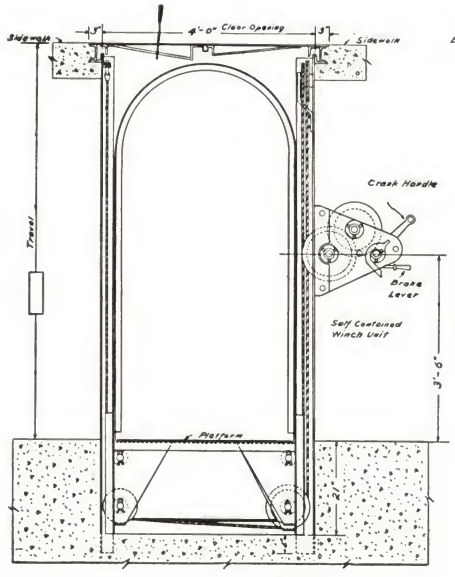
We have a complete line of *hand-powered* and *electric sidewalk elevators* for the raising and lowering of objects of all dimensions.

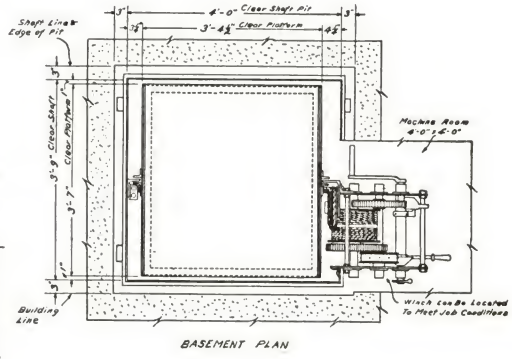
Hand-powered elevators are built both in standard sizes and to fit existing conditions. Capacities range from 1000 to 1500 pounds for the medium duty machine and from 2000 to 3000 pounds for the heavy duty type.

Electric sidewalk elevators are manufactured in capacities ranging from 500 to 4000 pounds, with speeds from 20 to 30 feet per minute. Control is by push button, hand cable or car switch. Elevators operate on direct current or 3-phase alternating current.

Medium duty elevators are of the 2-point suspension type; heavy duty elevators are of the 4-point suspension type.

Potts Sidewalk Doors, both water-tight and non-water-tight types, are specially designed for these elevators. Where door-opening bows are desired, sidewalk doors are equipped with bow strike plates.





BASEMENT PLAN

How to Specify—Furnish and install where shown on drawings and in accordance with manufacturer's details, one Potts manually-operated (or electric) Sidewalk Elevator as manufactured by the Potts Ash Hoist Corporation of Mechanicsburg, Pa.

AMERICAN CHIMNEY CORPORATION

147 Fourth Avenue, NEW YORK, N. Y.

SALES OFFICES

PHILADELPHIA, PA., Stephen Girard Building
BOSTON, MASS., 131 Clarendon Street
DETROIT, MICH., 2832 E. Grand Boulevard
CLEVELAND, OHIO, 304 Chester-Twelfth Building
COLUMBUS, OHIO, 243 No. High Street

SPECIALISTS IN EVERY PHASE OF CHIMNEY CONSTRUCTION, MAINTENANCE AND REPAIR

Products

PERFORATED RADIALBRICK CHIMNEYS; ACIDPROOF CHIMNEYS; HIGH TEMPERATURE CHIMNEYS; ORNAMENTAL CHIMNEYS; REFRACTORY LININGS for Steel Stacks.

REPAIR WORK including Heightening of Chimneys; Demolition; Installation and Maintenance of Lightning Rods; Restoration of Concrete Chimneys; etc.

Service

Nearly 40 years of experience in every phase of chimney work enables us to render valuable service to architects, engineers and owners. We will be glad to confer with you at any time.

Through an affiliated business, the Refractory Construction Co., Inc., we offer you our services for Boiler Settings and Furnace Work.

Necessary Information for Estimates

(1) Intended use of chimney (boilers, smelter, chemical plant, incinerator).

(2) Height above foundation and inside diameter at top; or boiler horsepower; or number, type and dimensions of boilers.

(3) If a bid is desired on foundation, give character of soil.

(4) Does chimney stand independent of building? If it is a part of the building, state for what height.

(5) Give hauling distance from purchaser's railroad siding or nearest railroad freight yard.

(6) If possible, give approximate prices of building materials and wage scale of local common labor.

Other Work—Estimates furnished on boiler brickwork and the construction and the repair of industrial furnaces.

Determining Principal Construction Features

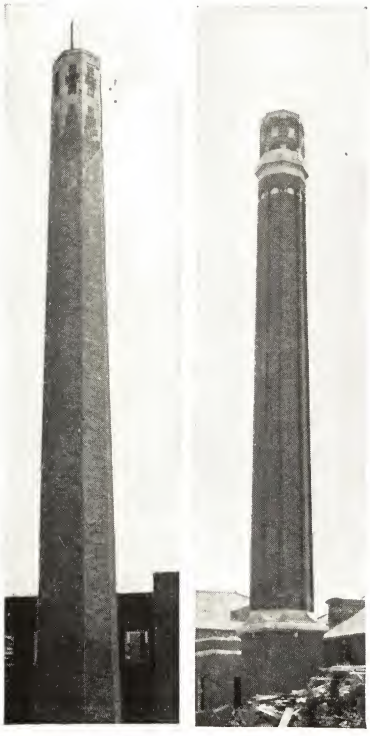
Principal dimensions of a chimney can be determined on the basis of the line drawing below. To determine the bottom outside diameter of chimney use the following:

H/D=15; increase outside diameter of chimney by 2 ft. 3 in. for 100 ft. in height.

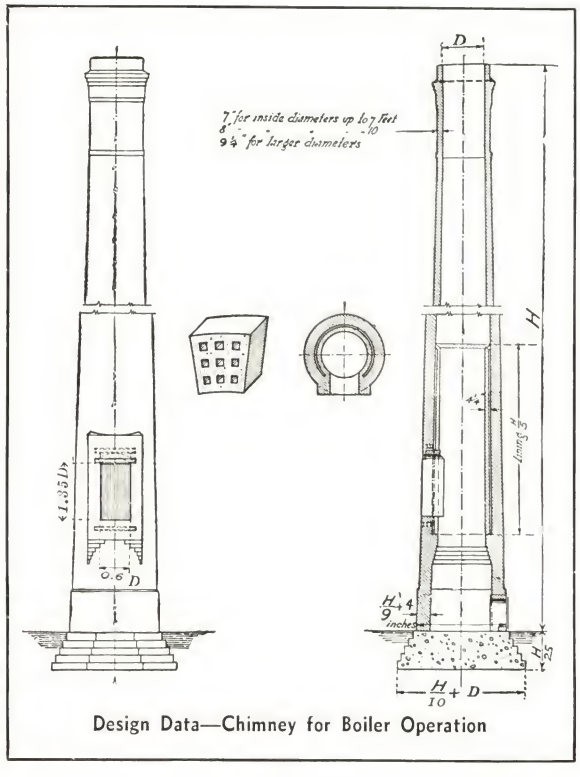
H/D=20; increase outside diameter of chimney by 4 ft. for 100 ft. in height.

H/D=30; increase outside diameter of chimney by 4 ft. 6 in. for 100 ft. in height.

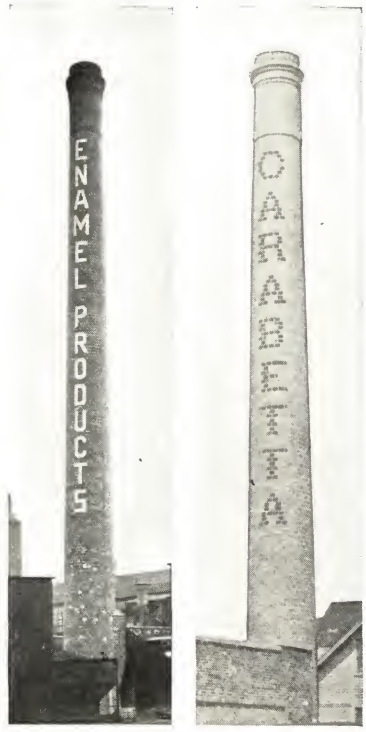
Lining—A protective lining should be provided in every instance. It should be equal to one-fifth of the height of the chimney in case of boiler plants; one-half height of the chimney for stacks carrying temperatures of 800° to 1200°, and a high grade fire brick lining for the entire height of the chimney where the temperature exceeds 1500°.



Typical "American" Chimneys



Design Data—Chimney for Boiler Operation



Typical "American" Chimneys

ALPHONS CUSTODIS CHIMNEY CONSTRUCTION CO.

Designers and Builders of All Types of Masonry Chimneys

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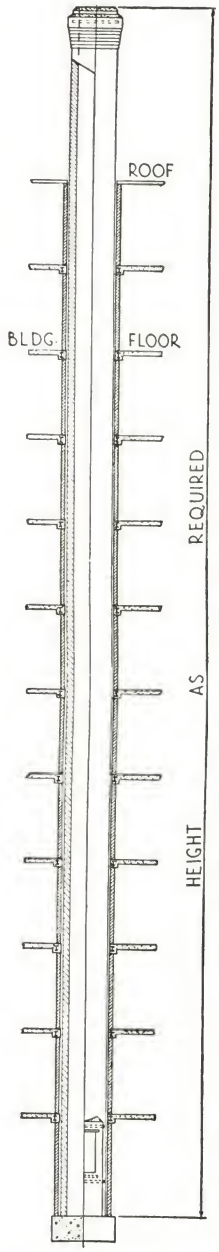
BRANCH OFFICE
Marquette Building, CHICAGO, ILL.

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Types

We erect all types of masonry chimneys—common brick, face brick veneer, perforated radial brick and reinforced concrete chimneys. One of these types will fit your architectural scheme and meet the economic requirements of the particular situation. For forty-two years we have been building chimneys throughout the United States. During this time we have erected the largest and best known chimneys in the world. We use our own skilled mechanics and carefully select the sources of our material supplies.



Interior Chimney

Architectural Chimneys

A chimney is a necessity where draft is required for boiler operation or process purposes. Architecturally it is a problem but properly treated it can be made a feature. We are glad to assist Architects in preparing chimney specifications. The chimney may be free standing and independent, banded to the building or superimposed on roof of building.

Interior Chimneys

Interior chimneys of perforated radial brick construction for apartment houses, hotels, office buildings, etc., take up very little space and insulate the heat of the flue gases. Where an offset in the shaft is required it can be effected with an insulated metal "gooseneck."

Foundations

We furnish foundation designs without charge. These are of the spread type for normal soil, simple footings where rock is encountered, or special designs where the soil is deficient in bearing power—specially deep foundations and foundations to rest on piles or caissons.

Linings

We provide special linings to resist the condition where low temperatures, introducing moisture and aggressive acids, are expected. On the other hand, where high temperatures are expected, we provide suitable refractory linings.

Repairs, Alterations and Lightning Rods

We heighten old chimneys, cut new openings and perform necessary repair work while the chimney is in operation. Obsolete chimneys dismantled or thrown as circumstances permit. Lightning rods attached and repaired.

Service

Estimates gladly furnished at all times. Through our foreign associates and connections we can figure work in any part of the world. Write for descriptive literature or our text book catalogue S.A. 10.


Face Brick Chimney
200'x13' 0"


Radial Brick Chimney
175'x12' 6"


Concrete Chimney
125'x8'

THE M. W. KELLOGG COMPANY

Manufacturers of Perforated Radial Brick Chimneys

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WATERPROOFING for Concrete and Brick Buildings.

Service

THE M. W. KELLOGG COMPANY has erected some of the finest chimneys in the United States during the last 38 years, and is ready to share the results of that experience with engineers and architects who are engaged in problems where chimney construction is required.

This Company's engineers will be glad to advise on types, sizes, shapes, etc., of chimneys for any conditions that may exist.



New York City Incinerator

Kellogg Perforated Radial Brick Chimneys

No artificially produced material for the construction of the modern factory chimney compares with refractory clay. This raw material is put through a variety of scientific treatments by skilled hands and especially designed machines before it comes from the kilns in the form of perforated radial brick ready for shipment, and for use in chimney construction.

Bricks are made to conform closely with the circular and radial lines of the shaft and are weatherproof and acidproof.

The perforations in the radial bricks form a dead air space about the core of the chimney. This has a marked effect in reducing amount of fuel used, in preventing sudden changes in temperature within the chimney, and in reducing radiation. Thus a uniformly maximum draft is maintained in any kind of weather.



Radial Brick Chimney, Pequanoc Rubber Co., Butler, N. J.

Reinforced Concrete Chimneys

Concrete chimneys are constructed by steel forms for both the inside and the outside and are adjusted to insure accurate taper and desired wall thickness. Concrete chimneys are reinforced vertically and horizontally with steel bars and electrically welded rectangular wire mesh.

Repairing and Heightening

Brick chimneys, concrete chimneys and steel chimneys repaired. We can perform work while chimney is in operation. We heighten old chimneys without interruption to plant. Brick, concrete and steel chimneys demolished without danger. Inspections of all kinds of chimneys and reports and recommendations made.

Chimney Linings

We provide chimney linings specially designed to resist moisture and aggressive acids induced by low temperatures. For high temperatures we install refractory linings of special composition.

Lightning Rods

We install and repair lightning rods.

Refractory Products

Ignisite High Temperature Cement, for bonding all forms of brickwork.

Kastic Dry Monolithic Refractory, a castable monolithic material.

Kalolith, a plastic monolithic refractory.

Thermostic, a plastic insulating material.

Standard Specifications

Send for free set of M. W. Kellogg Standard Specifications No. 59, giving complete information as to sizes, design, weights, etc., of chimneys, including a detailed specification.

We will also be glad to send complete literature on all our refractory products.



Repairing Chimney, Bethlehem Steel Co., South Bethlehem, Pa.

THE RUST ENGINEERING COMPANY

RUST FURNACE COMPANY

Construction Work of All Kinds

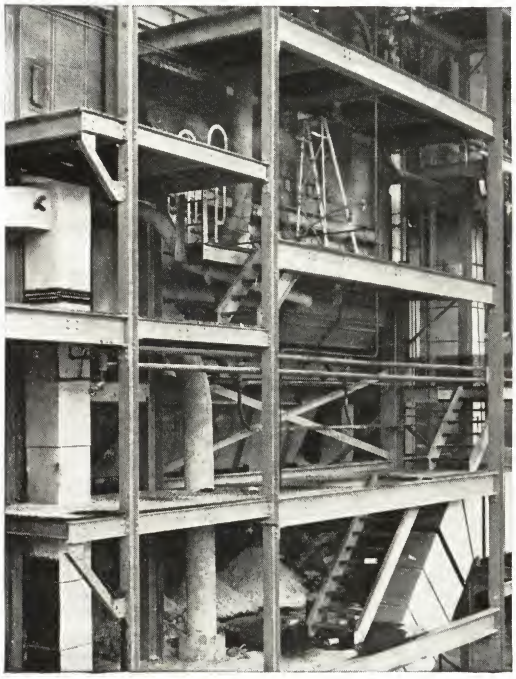
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Power Plants
Boiler Settings



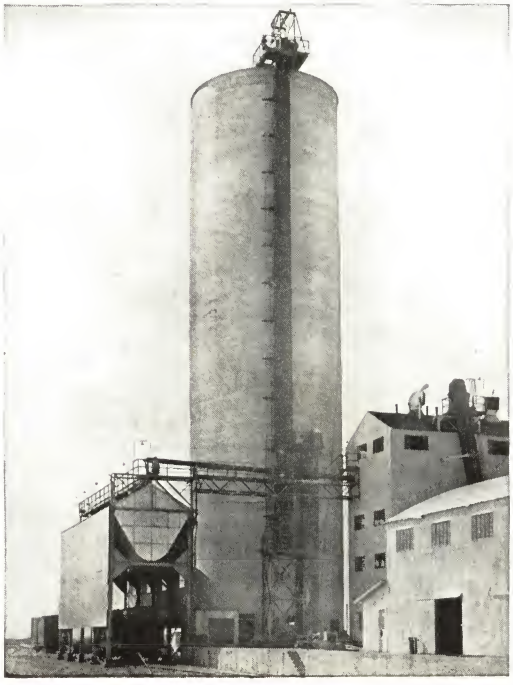
Brick Chimneys



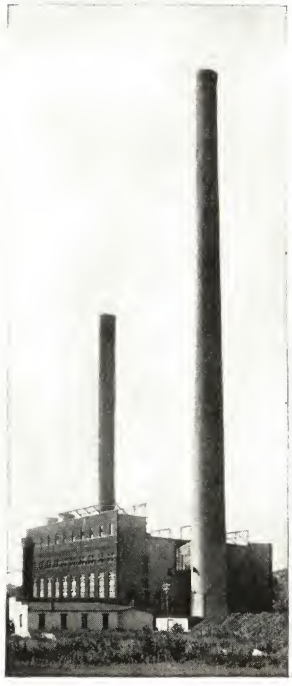
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Concrete Chimneys



Water-Proofing
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CONDENSATION ENGINEERING CORPORATION

Manufacturers of "Vitroliner" Acid-Resisting Chimney Lining, the Howle Heat Extractor and the Condensation Eliminator

335 South Western Avenue, CHICAGO, ILLINOIS

CONDENSATION FROM GAS HEATING CAN BE SUCCESSFULLY ELIMINATED

Chimney Condensation—A Problem Where Gas or Oil Is the Fuel

Condensation upon chimney walls wherever gas or oil fuel is used becomes a destructive influence that should be eliminated. This condensate, one of the products of combustion, is an acid-bearing moisture that is absorbed by brick and mortar after coming into contact with the cold walls of the flue. These acids cause gradual disintegration of the chimney and weaken the structure. A chimney lining, such as the Vitroliner, will give positive protection.

You Can Eliminate Condensation by Using VITROLINER, the CONDENSATION ELIMINATOR, or HOWLE HEAT EXTRACTOR

Vitroliner, used in connection with the Condensation Eliminator or Howle Heat Extractor, will totally eliminate chimney deterioration caused by acid-bearing moisture deposited by all types of fuel.

All of this equipment is formed from heavy gauge enameling stock iron completely covered with a special acid-resisting vitreous enamel. It will stand up to 1100 degrees temperature without danger of chipping or cracking.

VITROLINER—The Permanent "Acid-Resisting" Vitreous Enamel Chimney Lining

Construction of Vitroliner

Vitroliner, the Permanent Chimney Liner, is made of heavy gauge, high quality, enameling stock iron and is coated inside and out with our special high temperature acid-resisting vitreous enamel. Each joint is welded in such a manner as to give the finished product the appearance of a weldless pipe. The metal used in the manufacture of Vitroliner and our special acid-resisting vitreous enamel have exactly the same coefficient of expansion thereby eliminating the possibility of chipping when coming in contact with the hot flue gasses. Vitroliner is constructed to withstand a reasonable amount of abuse without chipping. The new Bell and Spigot type joint, now standard on all Vitroliner, assures a perfect and uniform fit of all parts.

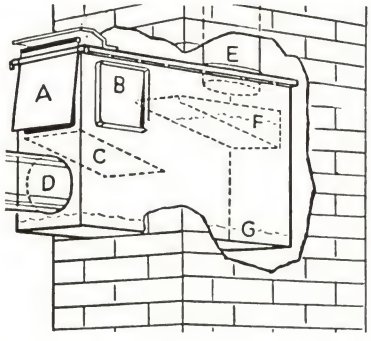


Vitroliner Is Used by Leading Gas Utilities

Vitroliner has been used by a number of leading Gas Utility Companies for the past 8 years with excellent results. An inspection of the oldest installations showed the equipment to be in perfect condition. This convincing evidence is ample proof that the condensation problem is met by Vitroliner.

Has Produced 10% to 15% Fuel Saving

Actual tests after installation of a properly sized flue liner have shown fuel economies of 10% to 15% in many cases, and in every case to be large enough to be noticed. Basements are kept warmer and draft conditions are lessened on the first floor. Damage to chimney and wall is eliminated.

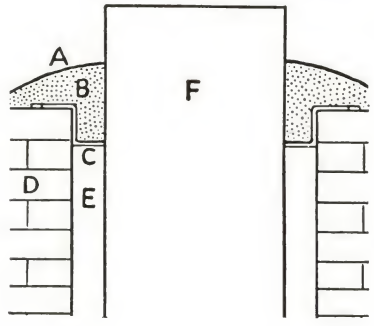


At Left—Vitroliner Installed in Conjunction with the Condensation Eliminator

A—Back-draft door.
B—Up-draft door.
C—Front baffle.
D—Heating plant connection.
E—Flue lining.
F—Back baffle with water storage for re-evaporation.
G—Excess water storage for re-evaporation.

At Right—Cross Section Showing Construction at Top of Chimney

A—Waterproofing.
B—Concrete.
C—Sheet metal form.
D—Chimney wall.
E—Dead air space.
F—Flue lining (vitrified).

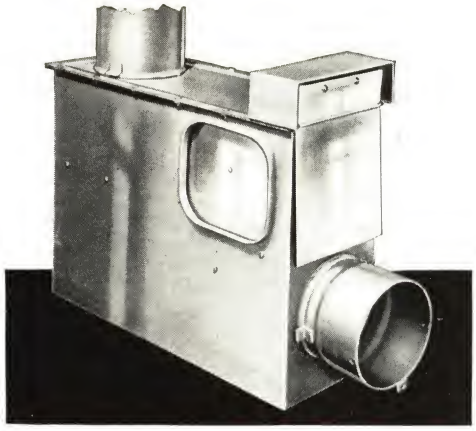


Installation of Vitroliner

The various shapes and sizes in which Vitroliner is manufactured makes it remarkably easy to line any type of chimney whether old or new. By the use of short lengths of Vitroliner it is possible to line the large majority of offset chimneys without breaking into the flue. Bolts through lugs at each end of each joint of Vitroliner hold the various lengths together while it is being lowered into the chimney. After the installation is made, the top of the chimney should be sealed up around the liner in order to create a dead air space in the chimney and prevent the escape of heat radiated from the liner.

The Condensation Eliminator

The Condensation Eliminator which is connected at the bottom of the chimney liner operates on the re-evaporation principle. The Chimney Liner used with this unit is connected to the top of the Condensation Eliminator and extends upward inside the flue the entire length of the chimney. The condensate is collected on the inner surface of the Vitroliner and flows back into the storage space of the Condensation Eliminator. This condensate is stored there during the time the heating plant is warming up. When the flue gases, passing through the Eliminator, reach a sufficiently high temperature this collected liquid is re-evaporated and carried up and out of the chimney.



The Condensation Eliminator Displaces the Common Draft Type Diverter

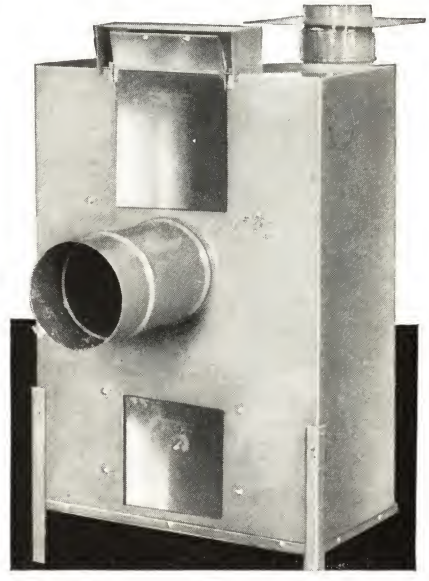
The conventional or commonly used Draft Diverter is in fact a ventilator. At all times a large volume of heated air, that has cost money to produce, is being taken out of the house through this device and must be replaced with much colder air from the outside. Every cubic foot of air removed from the house must be replaced with an equal cubic foot of air from outside the house. In addition to this wasteful heat loss, the air taken into the flue materially lowers the stack temperature and increases condensation.

The Condensation Eliminator displaces the common Draft Diverter as well as controlling condensation. It is equipped with up-draft doors which operate automatically and maintain a perfectly balanced draft at all times. It is also equipped with baffles to direct the flow of down-draft out through the back-draft door. When a down-draft occurs the back-draft door automatically opens outward to release it and closes as soon as it subsides. The counterbalanced up-draft door, which can be adjusted to compensate for any draft condition, opens inward and controls the up-draft.

When this device is used the amount of warm air removed from the basement is reduced to an absolute minimum. The retention of the pre-heated basement air aids materially in heating the first floor and at the same time will decrease, to a certain extent, fuel consumption.

THE HOWLE HEAT EXTRACTOR

The Howle Heat Extractor is a new development which incorporates in its design all the features of the Condensation Eliminator. In addition, it captures and radiates into the basement, heat from combustion otherwise lost. It gives you additional heat that costs nothing.



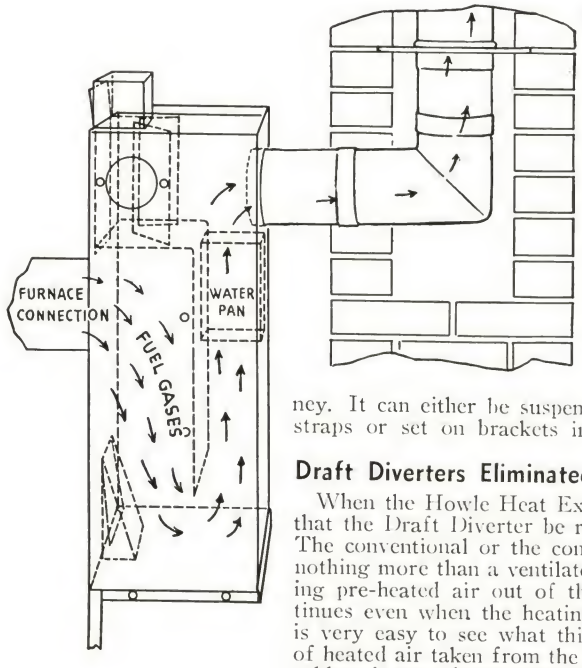
Construction

The Howle Heat Extractor is made of high quality, 18 gauge, enameling stock iron and covered inside and out with our special high temperature acid-resisting vitreous enamel. It is equipped with a counter-balanced down-draft door, which opens automatically to release the back-draft and closes as soon as it subsides. Baffles inside the Heat Extractor direct the flow of down-draft directly through the down-draft door eliminating the possibility of snuffing out the pilot light and endangering the home.

This unit is also equipped with a counterbalanced up-draft door which is adjustable to any draft condition and which guarantees at all times a perfectly balanced draft so necessary for efficient operation of the heating plant. It is also equipped with a storage pan located directly below the flue outlet to collect and store the condensate.

There is an opening on each side of the Howle Heat Extractor for the purpose of connecting any auxiliary gas fired equipment such as water heater, clothes dryers, etc. Be sure to remove the draft hood on any gas fired appliance vented into the Howle Heat Extractor.

All Condensation equipment is finished in a pleasing shade of green which will readily blend with any color scheme in the modern dressed-up basement.



Installation

The installation of the Howle Heat Extractor is extremely simple and can be accomplished at very little cost. The chimney is first lined with Vitroliner. This liner terminates with a lining support plate and elbows which extend through the base of the chimney wall at the point at which the flue connection is to be made. The Howle Heat Extractor is connected to the Vitroliner at this point or it can be located at any point between the heating plant and the chimney. It can either be suspended from the ceiling by metal straps or set on brackets imbedded in the chimney wall.

Draft Diverters Eliminated

When the Howle Heat Extractor is used it is imperative that the Draft Diverter be removed from the heating unit. The conventional or the commonly-used Draft Diverter is nothing more than a ventilator which is continually syphoning pre-heated air out of the basement. This action continues even when the heating plant is not in operation. It is very easy to see what this means—for every cubic foot of heated air taken from the basement a cubic foot of much colder air must be brought in from the outside to replace it.

Proved Successful

Tests show how successfully the Howle Heat Extractor solves the condensation problem and adds to the efficiency of the heating plant. A rise in the basement temperature of 10° F. is the lowest ever recorded after the installation of the Howle Heat Extractor. A recorded rise in temperature of as high as 22° F. has been obtained in several instances. Warm air removed from the basement is reduced to a minimum. Retention of this warm air plus the additional heat radiated by the Extractor aid materially in heating the basement and first floor.

Typical Installations

Homes	Laundries
Apartments	Bakeries
Hotels	Theaters
Clubs	Offices
Restaurants	Factories
Stores	Warehouses
Hospitals	Garages
Schools	Institutions

BENNETT FIREPLACE COMPANY

1 State Street, NORWICH, NEW YORK

Representatives in 50 Principal Cities and Dealers Throughout United States and Canada

PRODUCTS

FIREPLACE HEATING UNITS, both Recirculating and Fresh Air Types.

BENNETT *Guaranteed* FIREPLACES

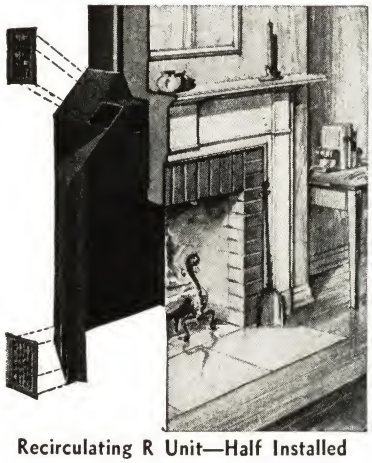
EXPANSLIP THROAT DAMPER; MISCELLANEOUS FIREPLACE CONSTRUCTION EQUIPMENT; the BENNETT FLEXSCREEN.

BENNETT FIREPLACE UNITS

For Circulation of Fireplace Heat

Bennett Fireplace Units are heavy welded steel forms which govern the construction of all out-of-sight but vital details of the fireplace. The throat damper, combustion chamber, downdraft shelf, firebox or back and air heating chambers, are one integral unit. Bennett Units have been in use since 1923.

Bennett Units assure (1) strong smokeless draft; (2) far more heat from wood or coal fires; (3) accurate, easily specified, low cost construction. The Fresh Air Type also gives (4) thorough, adequate ventilation; (5) elimination of cold drafts and chilling of other rooms; (6) without unbalancing automatic heat controls or air conditioning. There is no outward change in appearance, no limitation in architectural design.



Recirculating R Unit—Half Installed

CHOICE OF TWO PRINCIPLES

In warm air heating there are two different principles: (1) To recirculate and reheat air from the building; (2) to introduce fresh heated air from outdoors. (See diagrams below.)

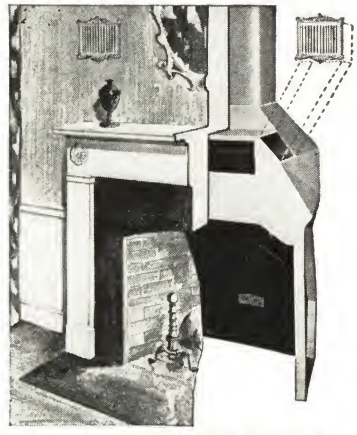
Model R uses the recirculating theory. It will deliver up to three times the heat and is low in cost. It is a fine recirculating type unit for use in moderate cost homes or camps.

Model FM circulates heated fresh air drawn from outdoors. In furnace heating the recirculating principle is preferable, but in fireplaces the Fresh Air Unit has several advantages. The draft up a furnace chimney draws air from the basement and replacement air, which must come in cold from outdoors, enters this *uninhabited* part of the house. Its chilling effect is not important.

But a fireplace flue draws air out of *inhabited* rooms, and cold replacement air entering living quarters more than offsets all the warmth and comfort from the fire. It actually and materially *lowers temperatures in all other rooms,* unbalances heat controls and causes uncomfortable cold drafts. The recirculating principle does not stop this action.

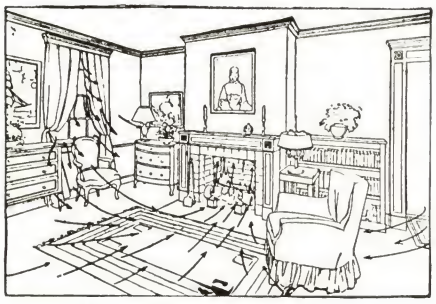
With a Fresh Air Unit, air to replace the flue exhaust enters more easily through the large chambers in the unit than through cracks all over the house. It comes in thoroughly warmed, not cold.

In Residences—It is the elimination of this cold air infiltration that makes a Fresh Air type fireplace absolutely necessary. The more modern and automatically controlled is the central heating system, just so much more essential is a Fresh Air Fireplace. Tight weatherstripping, insulation and air conditioning further increase the need.



Fresh Air Unit—Half Installed

In Camps and Cottages—A Bennett Fireplace adds immeasurably to comfort and usefulness. "Summer camps" become "year around." The generous flow of warm drying air makes possible early spring fishing parties, late fall hunting and even mid-winter sports.



Common Fireplace

The flow from an average fireplace flue (13 x 13) is 300 cu. ft. per minute. This air is drawn from the room at room temperature (70°). To replace air drawn out an equal amount seeps in through cracks all about the house from outdoors, at outdoors temperature (say 30°). Net results: that part of room in zone of radiant heat is warmed, average temperature throughout house is actually lowered, heat controls are upset, cold drafts sweep across floors



Recirculating Fireplace

Cold air is drawn off the floor into heating chambers, is warmed thoroughly and returned to the room. This *extra* heat is equal to three times the radiation from a common fireplace and circulates evenly throughout the room and to connecting rooms. Cold air infiltration to supply draft up the chimney continues, but sharp floor drafts are tempered by warm air from unit

Wavy lines represent heated air circulation, straight arrows, cold drafts. Exact figures are used above to illustrate typical conditions



Fresh Air Fireplace

Unit is connected with outdoors and air to replace that drawn from building by chimney comes in through heating chambers rather than seeping through small cracks about the house. Net results: replacement air comes in heated (220°), not cold (say 30°); temperatures and air conditions throughout the house remain constant; cold floor drafts are eliminated; yet, fresh warmed air is circulating 5 to 6 times the heat evenly to all accessible rooms

Strong Smokeless Draft

Today you can be absolutely sure that a fireplace will not smoke. You get a positive guarantee when you specify a Bennett Fireplace, installed in accordance with manufacturer's directions. This relieves the architect, mason contractor or owner of heavy risks. This "insurance" alone is worth the added cost of the unit.

Highest Heating Efficiency

The heating surface in Bennett Units is not limited to the firebox alone. There are chambers across the entire front of the throat where heat is most intense and also at each side of the combustion chamber. These add over 50% to efficiency.

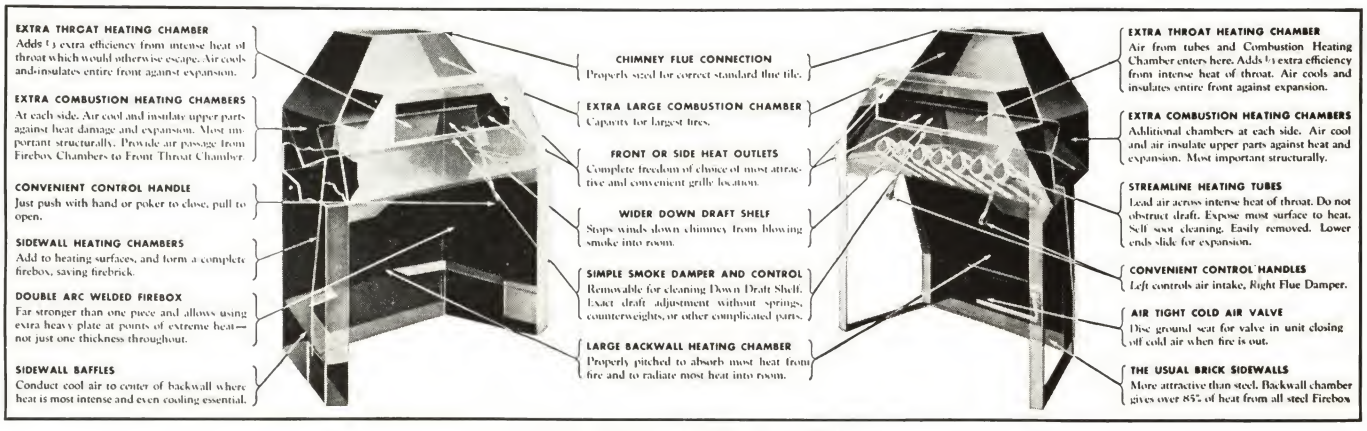
In addition, Model FM has a series of streamlined heating tubes across the throat. These tubes are out of sight, do not obstruct the draft and give Model FM the extra capacity necessary to thoroughly heat outdoor air no matter how cold.

Structurally Better

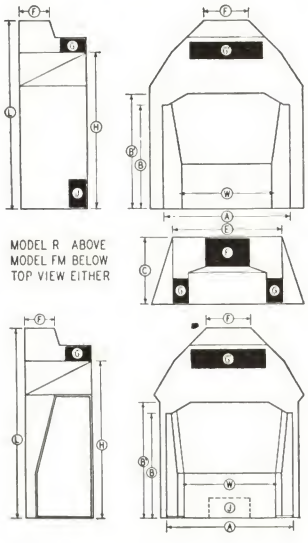
Extra heavy plate of special analysis steel to resist both heat and corrosion is used. Properly distributed cooling air-flow throughout firebox, combustion chamber, and throat, plus provision for expansion internally, prevents damage to unit or masonry. Mineral wool packing is not required either for expansion or heat loss.

Construction Savings

Saves (1) purchase of flue damper and many firebrick, (2) much of mason's cutting, fitting and corbeling, (3) possible later rebuilding to correct poor draft.



Phantom View—Models R and FM



SPECIFICATIONS AND DIMENSIONS (INCHES)

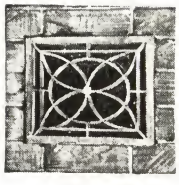
Model R is made in sizes 25, 28, 34, 37, 43 and 49 ins.
Model FM is made in sizes 31, 34, 37, 43, 49 and 61 ins.

Size of unit, inches	25	28	31	34	37	43	49	61
A. Max. width of opening	25	28	31	34	37	43	49	61
B. Max. height opening, straight	24	26	28	28	28	30	33	33*
B. Max. height opening, arched	25	28	30	30	30	32	36	36*
C. Depth of unit	16	18	18	18	18	21	24	26
E. Width across back	21	23½	20	29½	32	39	43	53
F. Size flue lining tile	8½x8½	8½x13	8½x13	8½x13	13x13	13x13	13x18	18x18
G. Outlet grille using 2	5x8	5x8	5x8	8x8	8x8	8x10	8x10	10x10
G. Single center grille	14x5	14x5	14x5	20x5	20x5	26x5	26x5	32x5
H. Minimum grille height	40	41	42	42	42	44	48	51
J. Air intake openings, Model R	5x8	5x8	..	5x8	8x8	8x8	8x10	..
J. Intake opening, Model FM	..	..	12x6	12x6	12x6	16x6	16x6	16x9
L. Height unit over all	45	46	48	51	52	57	63	68
W. Average fuel length	18	22	24	27	30	36	42	48

*This height of opening may be increased 3, 6 or 9 ins. by setting the unit up 1, 2 or 3 courses of firebrick above the hearth.

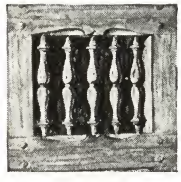
Complete directions for the simple installation are shipped with each unit.

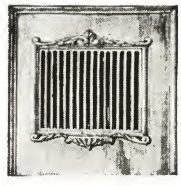
BENNETT GRILLES

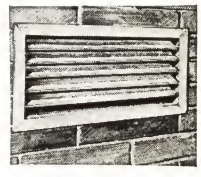

Style A


Style C


Style D


Style E


Style F


Intake Louvre

Grilles for Bennett Fireplace Units

Bennett grilles are carefully designed and made as a permanent part of the fireplace deserves to be. They should be specified *with shut off* if heat from the unit is delivered to more than one room. Fan attachments at the intakes of Model R increase efficiency about 50% but rarely are required for Model FM because of its *natural forced circulation.* Outlet grilles placed as near the ceiling as possible increase efficiency.

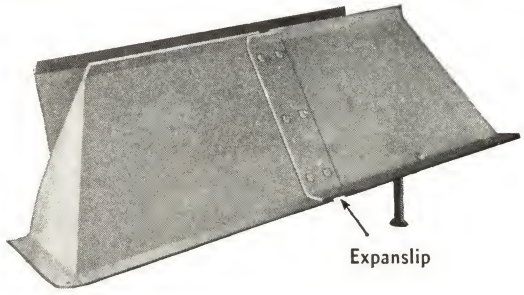
Intake Louvre

Shown above, is used only for the *outdoor* intake of Model FM. Gives the opening protection against snow, rain, dust and insects. The air control damper is in the unit.

Expanslip Construction

Expanslip is a simple bolted slip joint which takes up all lengthwise heat expansion. Without it the mason *must* leave space at each end, or the damper will either damage itself or crack the masonry. Any damper should have this feature.

BENNETT EXPANSLIP THROAT DAMPER



Advantages of Structural Steel Construction

Structural steel always has had desirable advantages for dampers and is thoroughly practical with Expanslip Construction to take up the greater expansion of steel.

Structural steel will not break in transit, during construction or in years of use. No strain can develop from constant heating or cooling and there can be no flaws or thin spots. Steel is rolled to exact thickness required at all points. Frames of Series 30 and 36 are ⅛ in. plate, $\frac{3}{16}$ in. in Series 42, and ¼ in. plate in larger sizes. Special rust and heat resistant steel proven by years of use is used.

More Perfect Proportions

More perfect proportions are possible in steel dampers. There are limitations to cast design but none on welded plate. For example, the usual front slope is 45°—very flat. Bennett has a 60° pitch—33% less resistance to passage of smoke. Also this steeper slope allows the damper to be placed farther forward, out from under the flue and down the draft zone.

And larger combustion chamber and more generous down-draft shelf are possible.

Dampers for Unusual Problems

Often an architect wishes to design some fireplace of unusual shape or size, but cannot find experienced engineering and production facilities to produce the required flue damper.

We are glad to submit quotations from blueprints of such fireplaces.

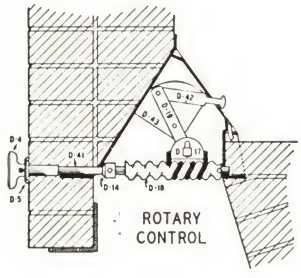
Designed for Both Width and Height of Opening

A damper designed for a 42 x 30-in. opening is not right for one 42 x 36 or 42 x 42 in. Respectively, 20% and 40% more throat capacity is needed.

Bennett Dampers are made in three series: 30, 36 and 42 in., the series number designating the maximum opening height. So specify the full Bennett size—43 x 36 in. for example, and be sure.

Openings over 42 in. high should have specially designed dampers.

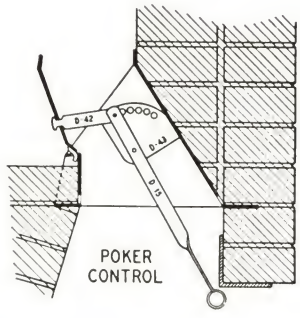
Depth of the opening is also considered. The larger the opening the more provision for depth in the design.

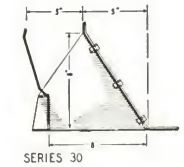


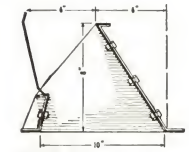
Damper Controls

Damper controls are extremely simple mechanically, but give positive draft control. Either poker or rotary is offered and parts are fully interchangeable even on the job.

Notice in the diagrams that there are no tension springs or heavy counterweights. Notice, too, the worm and *self-cleaning* traveler coil which soot accumulations cannot stick or jam.









DATA AND DIMENSIONS FOR BENNETT EXPANSLIP THROAT DAMPERS

Maximum width of opening, in.....	25	28	31	34	37	43	49	55	61	73
Series 30-in. (For Openings Up to 31 In. High)										
Maximum size of opening, in.....	25x30	28x30	31x30	34x30	37x30	43x30	49x30	55x30	.....	.....
Proper flue tile size, in.....	8½x8½	8½x13	8½x13	8½x13	13x13	13x13	13x18	13x18	.....	.....
Width front flange, in.....	2½	2½	2½	2½	2½	1½	1½	1½	.....	.....
Front plate Expanslip joint.....	Not Required		Yes	Yes	Yes	Yes	Yes	Yes	.....	.....
Back rail Expanslip joint.....	Not Required					Yes	Yes	Yes	.....	.....
Approximate shipping weight, lbs.....	24	27	30	33	35	42	50	57		
Series 36-in. (For Openings Up to 36 In. High)										
Maximum size of opening, in.....	.....	.....	31x36	34x36	37x36	43x36	**49x36**	**55x36**	61x36	73x36
Proper flue tile size, in.....	.....	.....	13x13	13x13	13x13	13x18	**13x18**	**13x18**	18x18	18x18
Approximate shipping weight, lbs.....	.....	.....	32	35	38	45	**54**	**60**	66	72
Series 42-in. (For Openings Up to 42 In. High)										
Maximum size of opening, in.....	.....	.....	.....	.....	37x42	43x42	49x42	55x42	**61x42**	**73x42**
Proper flue tile size, in.....	.....	.....	.....	.....	13x13	13x18	13x18	18x18	**18x18**	**18x18**
Approximate shipping weight, lbs.....	.....	.....	.....	.....	54	63	72	81	**90**	**110**

Bold face type shows sizes which are shipped when Series is not specified. Larger sizes are made on special order and we also specialize in dampers for fireplaces of unusual design requirements.

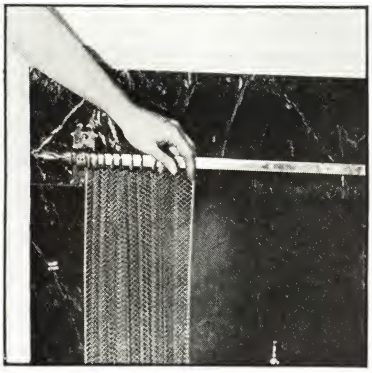
The Flexscreen* consists of flexibly woven metal fabric curtains which slide or roll on a bar across the fireplace opening. The Flexscreen literally curtains the fireplace, blends most harmoniously with room decorations, provides absolute safety and unexcelled modern convenience of operation. You can provide no finer means of spark protection.

BENNETT *Flexscreen*

REG. U.S. PAT. OFF.

FIREPLACE SPARK CURTAINS

Flexscreen is made in three general types: (1) Styles A, B, C, E and N have slide bars mounted on the mantel facing; (2) Style D has roller track mounted inconspicuously within the opening; (3) Style O is a complete built-in unit, similar to Style D, but providing hidden curtain recesses at each side.



Face Mounting (Styles A, B, C, E, N)

Finger Tip Motion

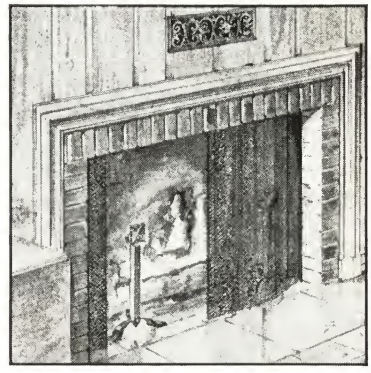
A touch of the fingers and the curtains glide open or closed. There is no awkward lifting, danger of bruised furniture or scorched hands.

Harmonious Beauty

The flexible curtains have a unique graceful beauty and blend in perfect taste with both period and modern room decorations.

Absolute Safety

Flexscreen curtains overlap the masonry on all sides and automatically overlap in the center. Sparks cannot get through or around. No danger either of this fire screen falling or being knocked over. It is permanently in place.



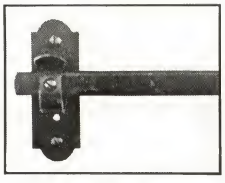
Inside Mounting (Styles D and O)

Attachment

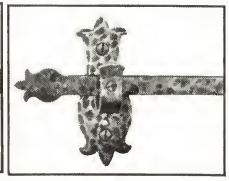
Flexscreens (except Style O) are attached to the masonry with $\frac{5}{16}$-in. expansion shields. These, together with a star drill and all necessary screws are furnished with each screen.

Sizes

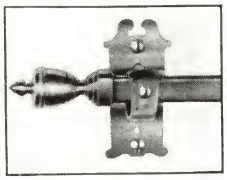
Any fireplace opening, no matter how large, can be fitted. The size of the Flexscreen is rated on the dimensions of the *actual masonry opening* (width x height).



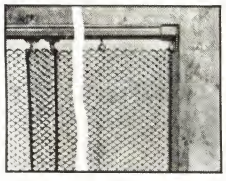
Style A—*Cape Cod*



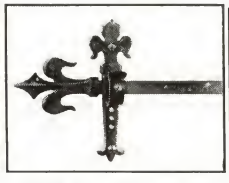
Style B—*Norman*



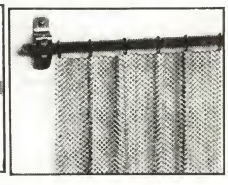
Style C—*Colonial*



Style D—*Recessed*



Style E—*Spear Head*



Style N

Finishes

There are four standard finishes: (1) Satin Black, (2) Swedish Two-toned Hand Hammered Iron, (3) Polished Brass Fixtures with Black Bar and Curtains, (4) All Polished Brass.

Styles A and C are made in finishes 1, 3, 4. Styles B and E in all finishes. Styles D and O in Nos. 1 and 4. Style N in Satin Black only.

On special order samples of any other finish can be matched.

Special Requirements

Practically any unusual fireplace can be equipped at moderate extra cost. Send details.

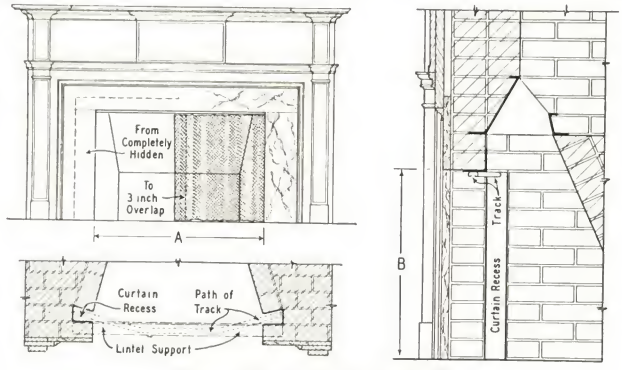
Projecting Andirons can be provided for with chain insert sections.

Pull Cords for greatest convenience are offered on Style D.

Built-in Style O

This style of Flexscreen is usually specified by architects because it provides built-in recesses at each side into which the curtains completely disappear when opened.

Style O arrives on the job in one integral unit, consisting of heavy steel recess forms and structural lintel support angle,



Construction Details—Style O

roller track and curtains. There is no assembly of loose parts, no adjustments, no "preliminary construction." Just set the screen at the finished hearth level and build around it. If the facing is marble, tile or other thin material, use a 2 or 4-in. backing course of brick in front of the steel recesses for strength and protection against heat. No other insulation is needed. Three screws remove the bar, curtains and moving parts for cleaning or repairs.

Standard Sizes

Width x height of opening, 30 x 28 in., 36 x 30 in., 42 x 30 in., 48 x 32 in.

Special Sizes can be furnished for any width of opening and any height up to 49 in.

OTHER BENNETT PRODUCTS

If these minor accessories are delivered to the job with the unit or damper, it saves the mason time and trouble.

Lintel Bars—Structural angles of proper weight for the span.

Cleanout Doors—Hopper type will not spill ashes. Sizes, 8 x 8 in., 10 x 8 in., 12 x 10 in.

Ash Dumps—Heaviest, most permanent cast iron. Size 9 x 6 in.

Fireplace Cranes—Hand wrought in various old time designs.

Basket Grates—Extra heavy for coal or wood fires.

*FLEXSCREEN Reg. U. S. Pat. Off.

THE H. W. COVERT COMPANY

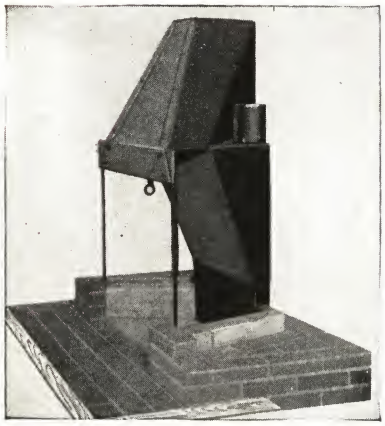
Manufacturers of Fireplace Specialties Since 1896

339 East 48th Street, NEW YORK, N. Y.

For Covert Floor Drains and Scuppers, see File Index

THE COVERT RADIHEATER FIREPLACE UNIT

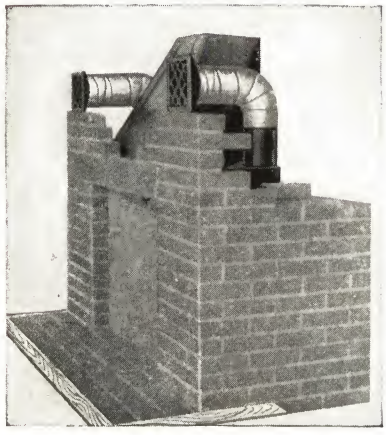
Assures Positive Circulated Heat—Ideal Fireplace Construction—No Smoking



Air Heating Chamber, Damper, Wind Shelf and Smoke Chamber Welded Into a Complete Unit



Simple for Mason to Install. No Smoking Assured. Brick Sides Preserve the Natural Appearance



Outlets May Be Either on Face or Return of Chimney Breast

The Three Positive Functions of the Radiheater Unit

The knowledge of forty years' experience in fireplace construction is incorporated in the design of Radiheater to correct three defects of the ordinary brick fireplace.

First—To prevent the common faults which cause many fireplaces to smoke—by furnishing the mason with a scientifically designed form around which the conventional brick or stone fireplace is built—insurance against possible failure.

Second—To convert the heat ordinarily lost by absorption in the brickwork of the back lining into a steady stream of convected warm air flowing to all parts of the room and adjoining rooms.

Third—To secure an adequate supply of air for combustion and circulation. The trend in home building being toward insulated and airtight construction, infiltration of air is reduced to a minimum. Radiheater fits admirably into this type of construction in that provision is made for the introduction of an independent supply of air to replace the large volume of air exhausted up the flue.

How Radiheater Unit Functions

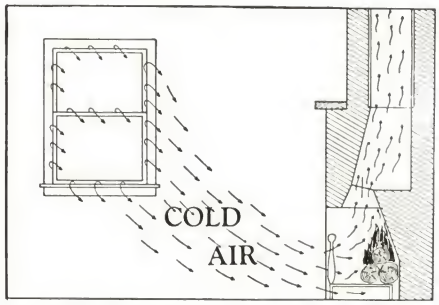
Radiheater consists of a heating chamber forming the rear wall of the fireplace, a four-sided smoke chamber, wind shelf and adjustable throat damper.

Fresh air is conveyed into the lower part of the heating chamber through an opening in the masonry at the rear of the unit. This air is heated by contact with the hot metal back and flanges and delivered into the room through pipes and grills. In the case of an inside chimney, air is drawn from the room in back of the chimney or from the cellar or through a duct along the cellar ceiling to the outside air.

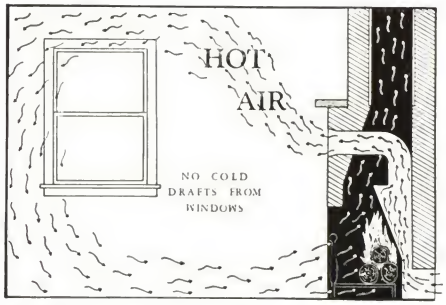
Why Radiheater Is So Efficient

When the usual type fireplace is burning, air required for combustion is carried up the flue, not slowly, but with sufficient velocity to completely exhaust a room of ordinary size several times per hour. This replacement air is drawn through cracks in doors and windows at *outside* temperature, causing cold drafts towards the fireplace and chilling the room, except in the immediate vicinity of the fireplace. With Radiheater, however, the suction created by the exhausting of air up the flue is used to draw into the room a supply of fresh, heated air.

(Many inspections of smoky fireplaces by our service department have disclosed correct masonry construction, but weatherstripped doors and windows prevent the infiltration of adequate air to replace that exhausted by the flue. The partial vacuum thus created has drawn smoke down the flue and rendered the fireplace unusable, except by opening a door or window.)



Air Exhausted Up the Flue in Ordinary Fireplaces Draws Cold Air Through Cracks in Doors and Windows



Radiheater Fireplace Utilizes Suction of Air Carried Up the Flue to Draw a Supply of Fresh Heated Air into Room

The Sturdy Construction and Provision for Expansion of Metal

Lower section of the fire-back, being subjected to the greatest heat, is made of ¼-in. boiler plate. Upper section of the back is $\frac{3}{16}$-in. boiler plate. Damper plate and wind shelf are 12-gauge and other parts 14-gauge rust-resisting steel. Provision for expansion of metal has been taken care of in the construction of the unit.

Flanges Increase Heating Capacity

Flanges welded to the metal back within the heating chamber at the point of greatest heat, provide increased air heating surfaces. These welded flanges result in a given amount of fuel heating a greater amount of air and heating it more quickly.

Stove Pipe Outlets Increase Efficiency and Simplify Construction

To further speed up the flow of heated air into the room, the furnishing of telescoping pipe with adjustable elbow connections enables the mason to quickly form a smooth, efficient air duct from the heating chamber to the outlet grills.

Adds Little to Cost Over Ordinary Construction

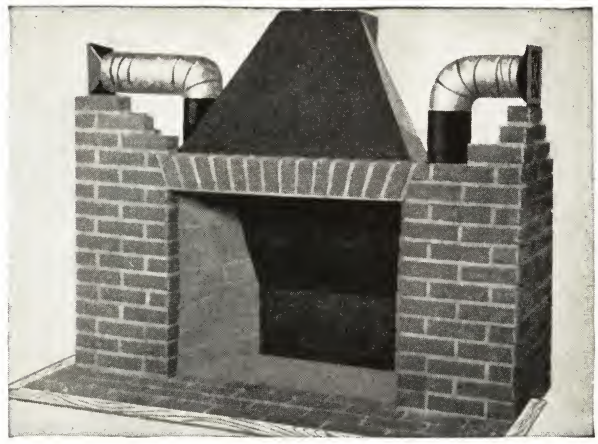
It will be found that the slight additional cost of the Radiheater over that of the ordinary fireplace without one is offset by the saving of the mason's time, as well as the guaranteed Radiheater results.

The Radiheater serves as a form around which the fireplace throat and smoke chamber are easily built. It does not require any special skill, and there is no sloping of the back of the fireplace or special cutting of bricks which are ordinarily required in forming the throat. This means a considerable time saving in the laying up of the fireplace.

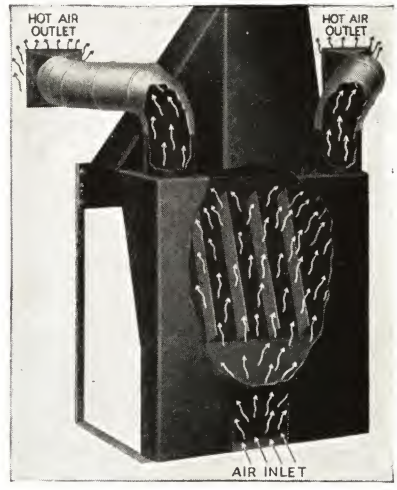
There will be no after costs due to wrong size dampers or faulty fireplace construction which might require remedying. First cost is the only cost.

Preserves Natural Appearance of Fireplace

Radiheater takes advantage of the heat-producing flames concentrated in the center of the back wall, permitting the fireplace to be built with the customary brick sides to preserve the conventional appearance and charm of the fireplace.



Front View Showing Outlets Directed to Sides of Chimney Breast



Illustrated at right:

View from Back

Showing heat circulating system and radiator-like flanges welded to the hottest part of the back, increasing the amount of convected hot air



Illustrated at right:

Actual Fireplace Showing Concentration of Heat at Center of Wall

Remarkable Results Reported by Owners

More than Pleased with Results

"We gave our Radiheater plenty of use last Fall, and we are more than pleased with its performance. If at any time you have anyone who would like to see ours, we would be pleased to show it to them."

(Signed) Martin Fantana,
Hampton Bays, N. Y.

Comfortably Heats Large Room

"Your unit last Fall was installed in a living room, size 23 ft. x 34 ft. While the past Winter was comparatively mild, it heated the room comfortably without additional heat, which I am sure could not be duplicated with an ordinary fireplace. Unit has been satisfactory in every way and I would not build a fireplace without using one. Have recommended it to all of my friends."

(Signed) L. C. Davis,
Parole, Md.

Large Volume of Hot Air

"What surprised me most was the high velocity and large volume of hot air entering the room through the two grilles. . . . Please ship one 36-inch Fireplace for my new cottage to the address enclosed."

(Signed) John J. Schoen,
342 West 47th St., N. Y. C.

Ideal Heating and Ventilating

"Our Radiheater was installed last Fall and has been the only means of heating our cabin.

"It is ideal as a ventilating system. We have never lived in a house where the air seemed as sweet and fresh; no odors can accumulate."

(Signed) James J. Wright,
Fowler, Mich.

Extra Heat Saves Oil

"We notice that we burn far less oil in our burner on days when we have the fireplace burning in the living room. Radiheater supplies *extra* heat, and the thermostat on the wall automatically shuts down the oil burner."

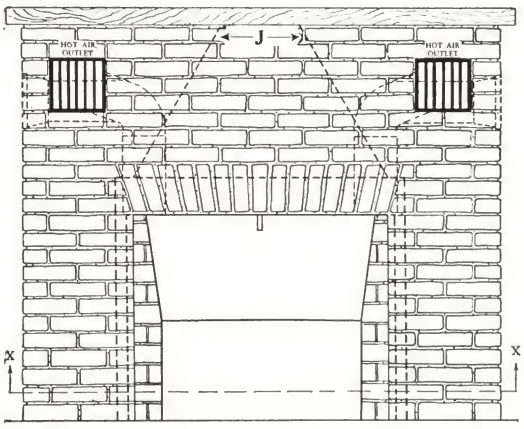
(Signed) Chris. Petersen,
Huntington, N. Y.

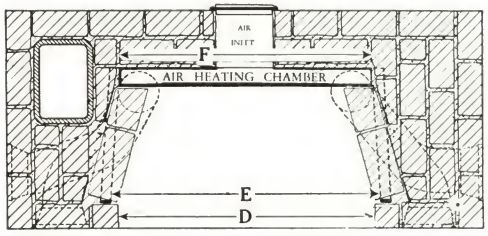
Makes Cottage More Livable

"We enjoy comfort that the ordinary fireplace does not afford . . . more heat without the usual 'toasted face and cold back,' and at the same time continuous fresh air taken in through the unit. We have more enjoyment from our cottage, thanks to Radiheater."

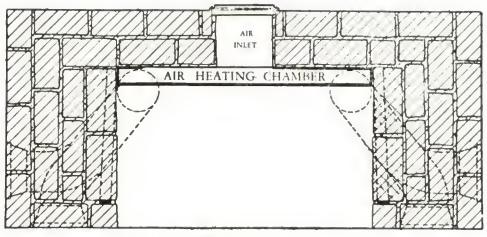
(Signed) E. W. Walters,
Smithtown, N. Y.

CONSTRUCTION DETAILS OF COVERT RADIHEATER FIREPLACE





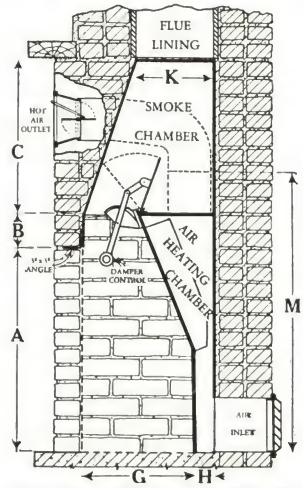
Plan at XX Splayed Jambs



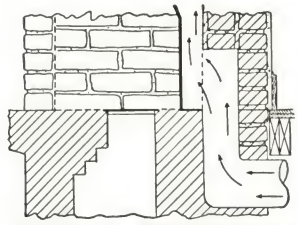
Plan at XX Square Jambs

Square fireplace sides, as shown above, are recommended as they permit burning of longer logs and expose greater surface of the air heating chamber to flames. In laying out fireplace with square sides, maximum finished fireplace openings should be as follows:

RA 34.....33 in. RA 39.....37 in.
RA 44.....42 in. RA 50.....48 in.



SECTION THROUGH CENTER OF FIREPLACE IN EXTERIOR WALL



METHOD OF INTRODUCING AIR TO FIREPLACE WHEN AWAY FROM OUTSIDE WALL AND FOR RECIRCULATING SYSTEM

DIMENSIONS OF RADIHEATER UNITS (IN INCHES)

	No. RA34	No. RA39	No. RA44	No. RA50
A	27½	29½	30	31
B	5½	6	6	6
C	16½	21	26½	27
D	33	37	42	48
E	34	39	44	50
F	30	36	42	48
G	15	15½	16	17
H	2½	3	3	3½
J	11¼	11¼	11¼	16½
K	8	11¼	11¼	11¼
M	41	44	45	46
Flue Size	8½x13	13x13	13x13	13x18

Details of Standard Damper on Following Pages

Specifications

The mason is to furnish and install in the fireplace a Covert Radiheater Unit, No....., complete with two hot air grills No....., one complete set hot air piping and one fresh air intake grill.

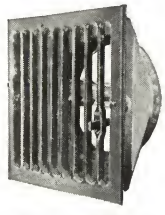
The mason is to build in the unit according to the instructions of THE H. W. COVERT COMPANY, 339 East 48th St., New York, N. Y.

Hot Air Pipe Connections

For the ordinary installation having the hot air outlet grills placed below the mantel height, two 6 in. adjustable elbows and one 4 to 8 in. telescoping length of 6 in. galvanized pipe will be required for each outlet. A complete set furnished by us comprises four elbows and two telescoping lengths.

When the outlet grills are placed higher than the mantel height, or run to other rooms, additional 6 in. diameter, galvanized pipe may be secured.

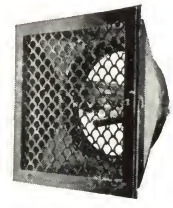
Combinations Grills and Shut Off Dampers for Hot Air Outlets



No. 1—8x8 in.



No. 2—8x8 in.



No. 3—8x8 in.

Each cast iron grill is secured to a frame terminating in a round hub over which the hot air pipe fits. In this frame is a shut off damper controlled by a small push handle. May be installed in front, side, or above mantel.

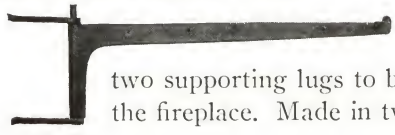
Screened Fresh Air Intake Grill



This fixed louvre grill is made of heavy cast iron with frame and anchors and copper screen at back to exclude flies and other insects.

Size of this screened fresh air intake grill is 8x8 in.

Radiheater Fireplace Crane



A substantial, well designed cast iron crane with two supporting lugs to be built in the brick jambs of the fireplace. Made in two lengths, 24 and 29 in.

COVERT FIREPLACE DAMPERS

A Recognized Standard Since 1896

The durable and satisfactory quality of Covert Fireplace Equipment is the secret of the reputation and standing of THE H. W. COVERT COMPANY among those who have any connection with the building industry. Established in 1896, the business is now conducted by the sons of the founder. They are maintaining the standards set by their father, and constantly striving to preserve the trust placed in them and in Covert products by architects, home owners, dealers, contractors and masons throughout the country whose reputations depend on satisfactory fireplace installations.

COVERT "IMPROVED" FIREPLACE DAMPER



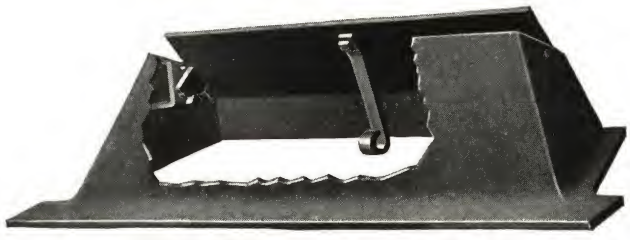
"Improved" Damper
Series D and E

For Fireplaces 20 Ins. or Less at the Hearth

Its curved front and wide, unobstructed smoke opening allows inrushing air to follow curved front up into the smoke chamber with minimum resistance.

Ratchet handle, operated from underneath arch at center of fireplace, provides for five adjustments of damper plate. Operating mechanism is simple and dependable and valve plate is easily removed during construction or for removing accumulations of soot.

COVERT "OLD STYLE" DAMPER



"Old-Style" Damper Series A, B, C and F

For Use in Large and Deep Fireplaces

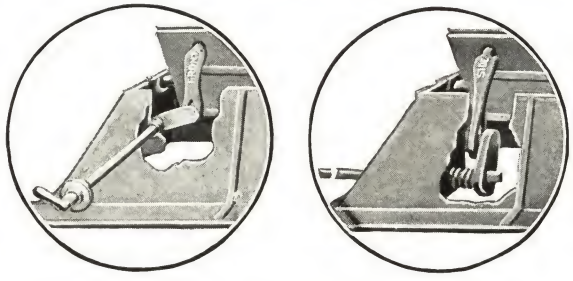
This type is preferred by many architects, especially for use in large and deep fireplaces.

Made in four series, 9, 10, 12 and 16 in. deep in the base opening, of extra heavy construction.

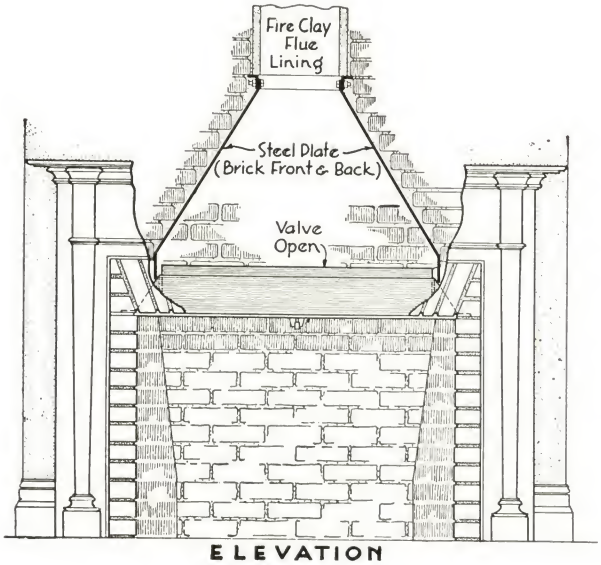
Damper plate, operated by a lever reached with a poker, is adjustable to three positions: open, closed and half closed. Also furnished with chains and indicators if damper is set above arch level.

COVERT "ROTARY" FACE OR SIDE CONTROL DAMPER

Avoiding the usual worm gear (which is likely to become clogged with soot or rusted in), this damper makes use of a simple lever movement, arranged to operate from face or side of fireplace with mechanism accompanying each damper.



Operating parts are made heavy to last as long as the fireplace. Knob and plate are of well finished solid brass. Handle is securely fastened to a heavy steel shaft which runs through brickwork, and then to crank and connecting rod.



ELEVATION

COVERT STEEL SMOKE CHAMBER

This important part of the fireplace should be of smooth construction, with proper capacity and with a centered flue. Such construction is assured by using Covert Steel Smoke Chamber. Saves mason's time.

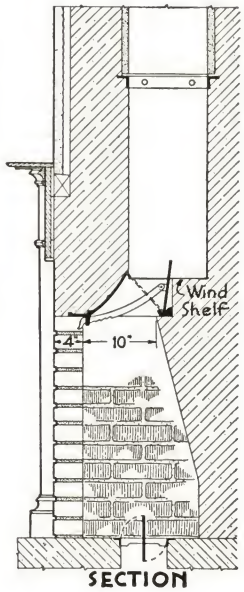
How to Order

If a flue larger than ordinary is to be used, order the smoke chamber by flue size, and state catalog number of damper to be used with it.

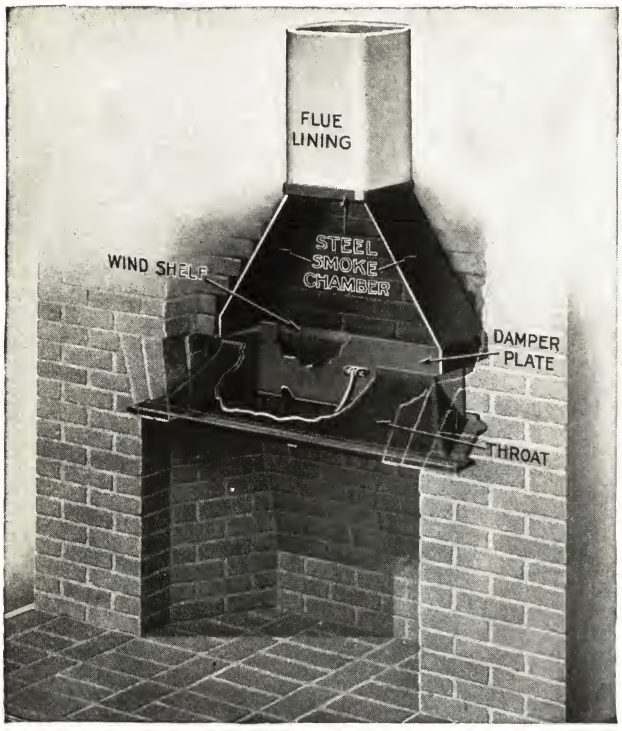
DIMENSIONS, INCHES

To connect with flue	Width of usual size fireplace	To connect with flue	Width of usual size fireplace
8½x 8½	24	13x18	54, 60
8½x13	30, 32, 36	18x18	72
13 x13	42, 48	20x24	84

A smoke chamber may be obtained for any damper to connect with any standard sized flue.



SECTION



Installation Showing "Improved" Damper and Steel Smoke Chamber

Specifications

Furnish for each fireplace a Covert ("Old Style", "Improved" or "Rotary") damper and Steel Smoke Chamber.

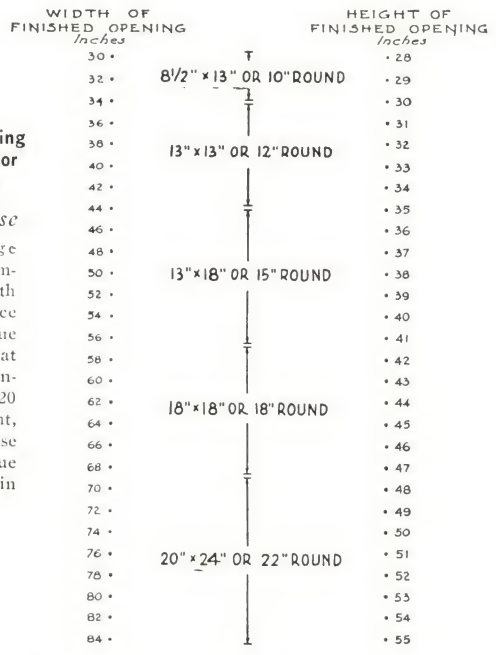
In carrying up the flues, follow up each length of flue-lining with a bag filled with hay or shavings completely closing the flue, to prevent the clogging of the flue by mortar droppings.

The contractor shall consult with THE H. W. COVERT COMPANY regarding the proper selection of dampers, etc., to meet the conditions of these fireplaces and to secure the best results.

Chart for Determining Proper Flue Sizes for Open Fireplaces

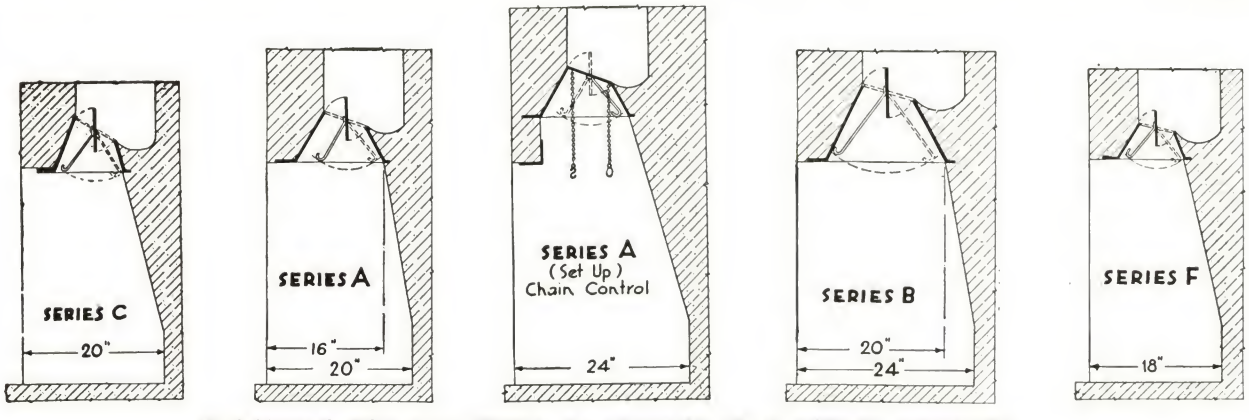
Directions for Use

Lay straightedge through dots at numbers indicating width and height of fireplace opening. Proper flue sizes will be shown at intersection with center line. If flue is 20 ft. or less in height, it is advisable to use next larger size flue than that indicated in table.



DIMENSIONS OF STANDARD FIRE CLAY FLUE LINING

Outside, ins.	Inside, ins.	Inside area, sq. in.	Inside, ins.	Outside, ins.	Inside area, sq. in.
Square and Rectangular Flue			Round Flue		
8½ x 8½	7¼ x 7¼	52.56	8 (diam.)	9½	50.26
8½ x 13	7 x 11½	80.5	10 (diam.)	11¾	78.54
8½ x 18	6¾ x 16¼	109.69	12 (diam.)	14	113.0
13 x 13	11¼ x 11¼	126.56	15 (diam.)	17¼	176.7
13 x 18	11¼ x 16¼	182.84	18 (diam.)	20½	254.4
18 x 18	15¾ x 15¾	248.06	20 (diam.)	22¾	314.1
20 x 20	17¼ x 17¼	297.56	22 (diam.)	25⅛	380.13
20 x 24	17 x 21	357.0	24 (diam.)	27¼	452.3
24 x 24	21 x 21	441.0			



DIAGRAMS FOR SELECTION OF COVERT "OLD STYLE" DAMPERS

Cast Iron Cleanout Doors and Frames



Cleanout Door

DIMENSIONS, INCHES

Width of opening	Height of opening	Brick opening	Width of opening	Height of opening	Brick opening
8	8	8¼ x 8½	20	16	20¾ x 17¾
12	10	12¼ x 10½	20	21	20¾ x 23
12	12	12¼ x 12½	21	32	22 x 33
16	12	16¾ x 14	24	24	25 x 33
16	16	16¾ x 18			

Each frame provided with anchors.

Flush Hearth Dumps

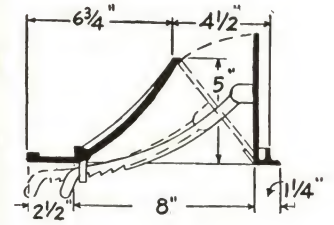


Flush Hearth Dump

This dump has a substantial frame, with flanges about 1 in. deep in which is hung a tight fitting flush cover, overweighted on one side so that it will not dump unless pushed down with a poker.

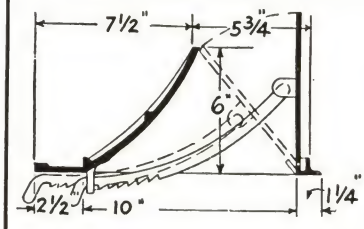
No. 20 has a hearth opening 6 in. x 9 in.

No. 40 has a hearth opening 6 in. x 15 in.



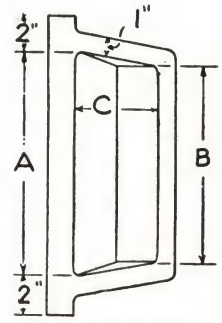
IMPROVED SERIES D

DAMPER NUMBER	FRONT WIDTH OF FIREPLACE OPENING IN INCHES	BASE OPENING OF THROAT IN INCHES		
		A	B	C
424	24	24	18	8
430	30	30	24	8
432	32	32	26	8
436	36	36	30	8
442	42	42	36	8
448	48	48	42	8
454	54	54	48	8
460	60	60	54	8



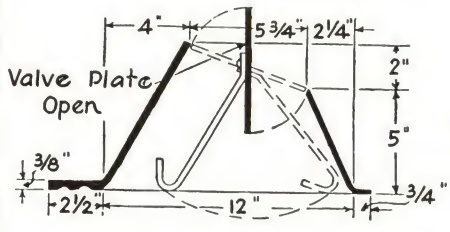
IMPROVED SERIES E

DAMPER NO.	BRICK OPENING	A	B	C
524	24	24	18	10
530	30	30	24	10
532	32	32	26	10
536	36	36	30	10
542	42	42	36	10
548	48	48	42	10
554	54	54	48	10
560	60	60	54	10



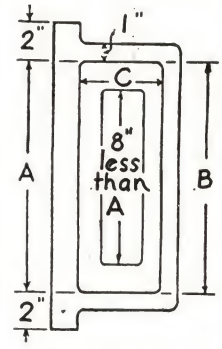
KEY PLAN OF SERIES D & E

FOR FLUE SIZES SEE CHART ON PREVIOUS PAGE. SMOKE CHAMBERS TO MATCH FLUE SIZES FURNISHED WHEN SPECIFIED



OLD STYLE SERIES A

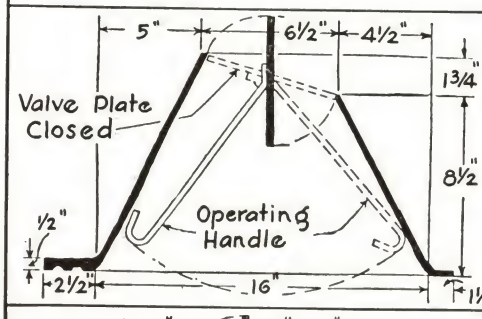
DAMPER NO.	BRICK OPENING	A	B	C
224	24	24	24	12
230	30	30	30	12
232	32	32	32	12
236	36	36	36	12
242	42	42	42	12
248	48	48	48	12
254	54	54	54	12
260	60	60	60	12
272	72	72	72	12



KEY PLAN OF SERIES A & B

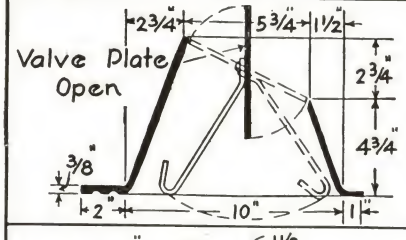
FOR FLUE SIZES SEE CHART ON PREVIOUS PAGE

SMOKE CHAMBERS TO MATCH FLUE SIZES FURNISHED WHEN SPECIFIED



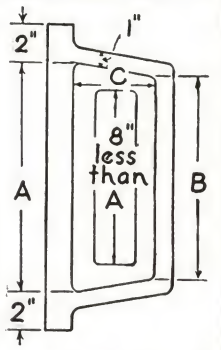
OLD STYLE SERIES B

DAMPER NO.	BRICK OPENING	A	B	C
36½	36	36	36	16
42½	42	42	42	16
48½	48	48	48	16
54½	54	54	54	16
60½	60	60	60	16
72½	72	72	72	16
84½	84	84	84	16



OLD STYLE SERIES C

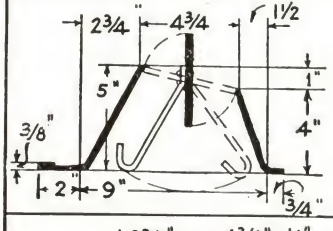
DAMPER NO.	BRICK OPENING	A	B	C
30	30	30	24	10
36	36	36	30	10
42	42	42	36	10
48	48	48	42	10



KEY PLAN OF SERIES C, F AND FACE OR SIDE CONTROL

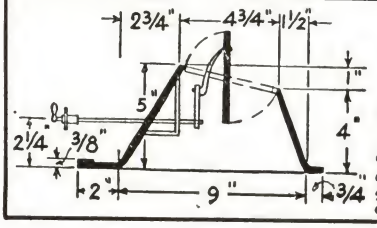
FOR FLUE SIZES SEE CHART ON PREVIOUS PAGE

SMOKE CHAMBERS TO MATCH FLUE SIZES FURNISHED WHEN SPECIFIED



OLD STYLE SERIES F

DAMPER NO.	BRICK OPENING	A	B	C
724	24	24	18	9
730	30	30	24	9
732	32	32	26	9
736	36	36	30	9
742	42	42	36	9
748	48	48	42	9



FACE OR SIDE CONTROL DAMPER

NOTE: A shaft 24" in length is provided with each face or side control damper so that it may be connected to operate thru side of fireplace if front operation is not desired.

DAMPER NO.	BRICK OPENING	A	B	C
624	24	24	18	9
630	30	30	24	9
632	32	32	26	9
636	36	36	30	9
642	42	42	36	9
648	48	48	42	9

COLONIAL FIREPLACE COMPANY

TELEPHONE
Lawndale 0140

4644 West Roosevelt Road
CHICAGO, ILL.

TELEPHONE
Cicero 143

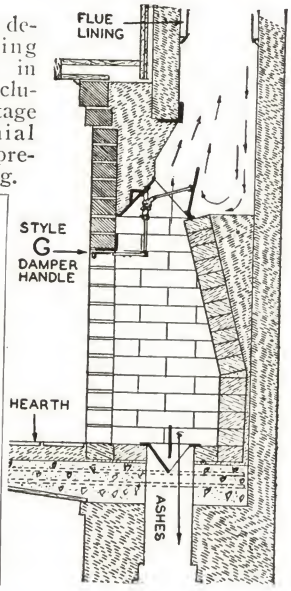
Products

The improved COLONIAL HEAD THROAT and DAMPER for fireplaces. BENNETT HEAT CIRCULATING FIREPLACE—warmed fresh air. The VICTOR ELECTRIC FIREPLACE HEATER. GLO-HOT ELECTRIC FIREPLACE with grate. PERIOD WOOD MANTELS and FIREPLACE FURNISHINGS.

Damper Set 2 Courses Above Opening

Note

See section detail. Setting damper high in throat—an exclusive advantage of Colonial Damper — prevents smoking.



Cast Iron Can Take It

Damper must be made of cast iron to last as long as the house. The Colonial Damper has always been made of the best grey iron castings — never sheet steel.

Colonial Damper "Has No Equal"

Leading architects, experienced builders, and informed home owners recognize "Colonial" as the best damper made. Costs less than any other cast iron damper—all things considered.

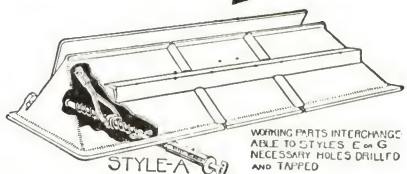
The best guarantee of a successful fireplace is a "Colonial" damper. Avoid substitutes.

Sectional Construction

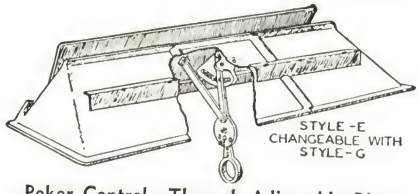
The Colonial damper is made in sections securely bolted together with expansion joints allowing for the expansion of the hottest fire and subsequent contraction. This feature prevents cracking of fireplace facings. For further strength the sections are reinforced with an angle bar that is rigid and able to sustain great weight, yet allow for the movement of expansion and contraction.

It is because of these advantages that the Colonial damper is "Standard" in most specifications.

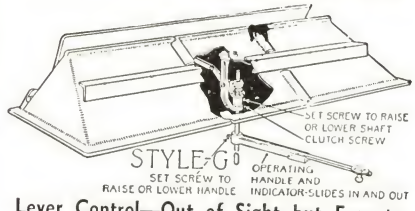
Colonial Damper



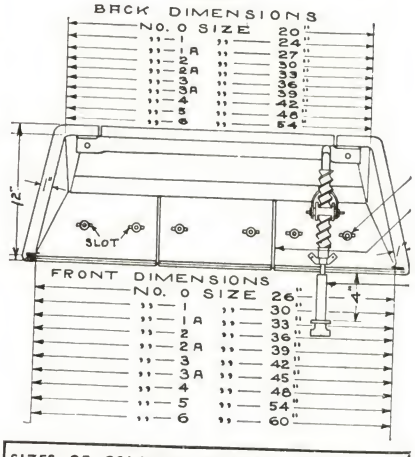
Screw Control—Through Face of Fireplace



Poker Control—Through Adjustable Ring



Lever Control—Out of Sight but Easy to Reach



SIZES OF COLONIAL DAMPER, STYLES A, E AND G

No.	Code word	Width of fireplace opening, in.	Proper size of flue, in.	Weight, crated singly, lb.
00	Count	20 to 23	8x8	30
0	Duke	24 to 28	8x8	35
1	Prince	29 to 32	8x12	40
1-A	Valet	33 to 35	8x12	43
2	Regent	36 to 38	8x16	48
2-A	Butler	39 to 41	8x16	51
3	Queen	42 to 44	8x16	53
3-A	Page	45 to 47	12x12	57
4	King	48 to 51	12x12	63
5	Rex	52 to 57	12x16	68
6	Czar	58 to 64	12x16	75
7	Earl	66 to 72	16x16	90

For Style A, use above code words.
For Style E, add "universal" to code word.
For Style G, add "swing" to code word.

Literature Available

Detailed Colonial Damper construction blueprint. Detailed-Bennett Heat Circulating fireplace unit folder. General catalog of Andirons, firesets, screens, and grates. Catalog No. 132—Period Wood Mantels. Catalog No. 24—Hand Wrought andirons, firesets, and screens. Bennett Flexscreen Booklet.



Colonial Period Mantel No. 756 with Flexscreen Installation

The *Flexscreen* consists of metal fabric curtains suspended on a supporting bar permanently attached to the fireplace. These flexible woven curtains may be drawn together to form complete protection against sparks or separated to provide access to the fire. Sizes for all fireplaces.

Service to Architects

The complete "Colonial" line and ready helpfulness of our engineers affords the architect maximum service in fireplace design and equipment.

Portable Artificial Fireplaces with or without electric heating elements—are popular for apartments or remodeling.

In fullest measure Colonial lives up to its slogan *"Everything* for the Fireplace."

Heat Circulating Fireplace Units

Bennett Model "M"—Outdoor air intake, no drafts across floors, air conditioning benefits. If homes are completely air-conditioned, Model M Bennett will not upset its "Balance."



Bennett Unit Model "R"

Bennett Model "R"—Recirculating unit is recommended when it is impractical to have outdoor air connection. Cold air off floor is drawn into the unit and heated air passes out through registers.

For detailed information, see manufacturer's index for Bennett Fireplace Co.

DONLEY DEVICES



THE DONLEY BROTHERS CO. • CLEVELAND • OHIO

Donley Fireplace Equipment and Building Specialties

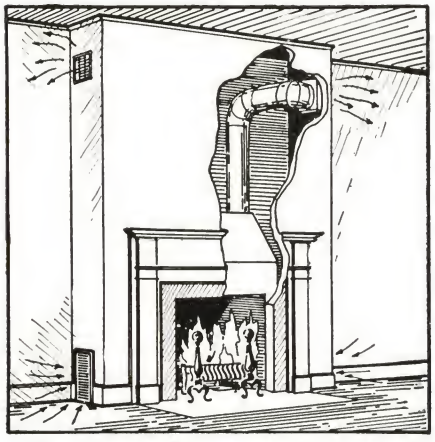
SUCCESSFUL FIREPLACES

A Successful Fireplace is not a matter of chance but the result of careful study and planning. The Donley "Book of Successful Fireplaces" now in its Seventh Edition is a brochure of sixty-four pages of interesting notes on fireplace history with illustrations, fireplace planning and building, portfolio of fireplace designs, outdoor fireplaces and much other helpful information on the subject. It contains the results of their quarter century of study and experience in design and construction of fireplaces and the production of fittings and equipment to insure complete fireplace satisfaction. Pioneers in the field Donley is today the recognized authority and fireplaces built to their plans and specifications with Donley fittings and equipment will not smoke and will give lasting satisfaction and pleasure.

DONLEY DEVICES Complete the Home

This Catalog contains the details on Donley Devices of interest and value to the architect. The Donley Catalog of 44 pages contains more details and describes other items. Sent on request.

Donley Heatsaver Fireplace Unit



The Donley Heatsaver is an improved metal fireplace unit which supplements the radiant heat from the open flame with a generous amount of air "warmed" by conduction through steel plates at back, sides and above the fire and, by convection, circulated throughout the room or adjoining rooms.

The Donley Heatsaver unit is built along the lines of a warm air furnace, having a chamber surrounding the fire. It is constructed for long life, the metal plates in contact with the fire are $\frac{3}{16}$ in. thick with a smoke shelf ¼ in. thick. Casing, designed to be pierced for outlet pipes, as in a warm air furnace, is 26 gauge galvanized steel. Steel mesh excludes vermin from inlet openings. A throat damper, designed for poker control (page 5) is integral with the unit. Designed by experts and made to exact specifications, perfect draft is assured with no danger of a smoky fireplace due to careless workmanship.

Heat Output

The amount of heat from any size Heatsaver is unusually great (see table of B.t.u. output in next column due to four exclusive features.

First, the Heatsaver makes use of the heated surface above the fire as well as the surfaces surrounding it (see diagram on opposite page).

Second, special economizer tubes take air from the hottest areas and pass it through the smoke chamber where it picks up additional heat.

Third, radiating fins on the heating surface insure maximum heat transfer. These fins also reinforce the heating surfaces for added strength and long life.

Fourth, the ingenious convection sheets (an exclusive Donley feature) guide the moving air so that it passes directly over the heated surfaces. These sheets keep all the air in motion, prevent pocketing of heated air and transfer all available heat to the room. They also eliminate the need of an insulating jacket.

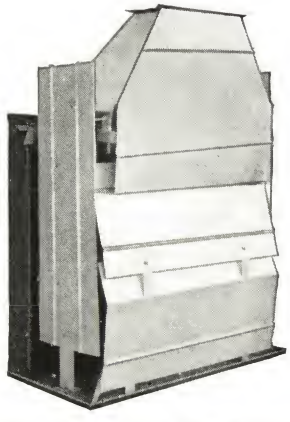
B.T.U. OUTPUT OF HEATSAVER UNITS

Heatsaver No.	Heated surface in square inches			B.t.u. delivered, per hour
	Below smoke chamber	Above smoke chamber	Total	
26	1661	1238	2899	12900
30	1927	1654	3581	18600
34	2103	1756	3859	19800
42	2671	2569	5240	24040
48	2949	2965	5914	26700
54	3574	5573	9147	36020
60	3763	5868	9631	39300

Wide Usefulness

The Heatsaver is a sufficient heating system for small homes, cottages or homes in mild climates when the total heating load is from 12,900 to 39,300 B.t.u. per hour.

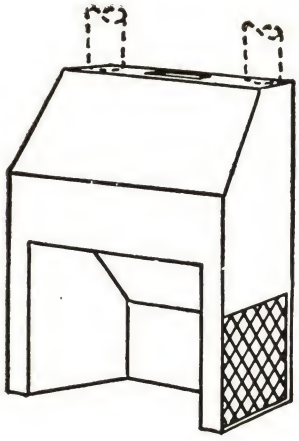
In larger homes with a central heating plant the Heatsaver carries the heating load in spring and fall. In churches, clubs, etc., it heats one or two rooms for committee meetings without heating the entire building at a considerable saving over firing the main heating plant.



Rear of Heatsaver With Casing Removed Showing System of Convection Sheets

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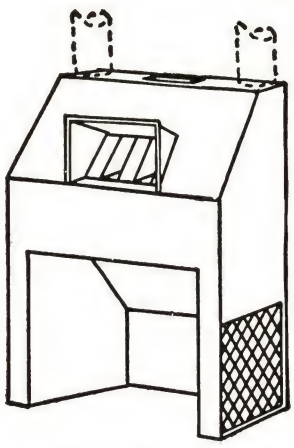
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Installing the Heatsaver Fireplace

For heating only the room in which the fireplace is located, round furnace pipes from openings in the top of the casing lead to grilles—either on the front of the fireplace, or in the sides of the chimney if this projects into the room.

For heating two or more rooms a center outlet below the mantel is provided for the room in which the fireplace is located. This delivers warm circulating air to the fireplace room in addition to radiant heat from the fire. The pipes lead to outlet grilles in the other rooms, either adjoining or on the floor above.



Number of Warm Air Outlets

Regardless of the number of rooms to be heated, provide sufficient outlets. Heat is wasted if air cannot flow freely through the heating chamber. For maximum heat from the Heatsaver Fireplace use number and size of outlets on next page.

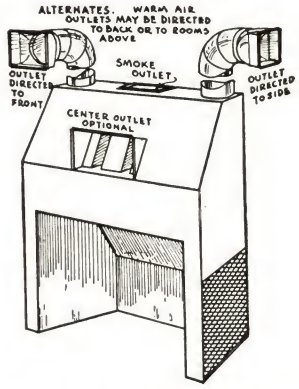
Arrangement of Warm Air Outlets

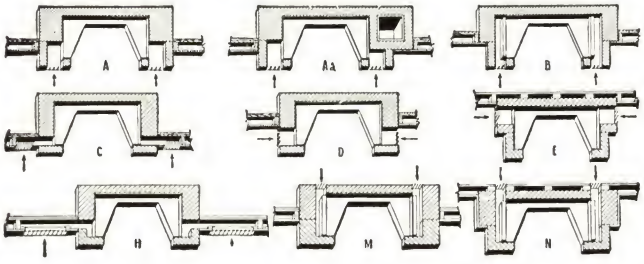
Drawing at right shows various positions and directions of warm air outlet pipes.

Pipes should be round as the required capacity is secured more easily with round pipes. Rectangular ducts with pipe area required for most installations will not fit the top of the Heatsaver, due to limitations enforced by the angle supporting the chimney masonry.

If necessary to use rectangular pipe in meeting some special condition, we recommend that round pipe be run from the Heatsaver to a point where it is necessary to change. Warm air passages may be formed with masonry or other incombustible material, but bright metal ducts are more efficient.

Note—Outlets need not conform to those illustrated as regards location. Flexibility of installation is one of the many advantages of the Heatsaver Fireplace.





Location of Cold Air Inlets

These drawings show the variety of possible locations for cold air inlets. Some locations are visible in the views of actual installations. The only strict requirement for cold air inlets is that they allow sufficient air to enter the unit. Greatest efficiency is attained only when the inlets and outlets are of ample size.

Choosing the Size of Unit

To assist in selecting an appropriate size of Heatsaver Fireplace, we give in the table at right our recommendations for a number of typical rooms.

These suggestions are based principally on appearance. Other factors to be considered are:

Unusual height of rooms.

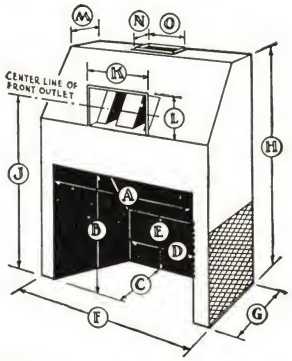
Part of heat directed to other rooms. Adjoining rooms open. Used as main source of heat or for auxiliary heat.

Size of Room in Feet	Heatsaver Size When Located On	
	Short Wall	Long Wall
10x14	No. 26	No. 26 or 30
12x16	" 26 or 30	" 30 " 34
12x20	" 26 " 30	" 34 " 42
12x24	" 30 " 42	" 34 " 42
14x28	" 34 " 42	" 42 " 48
16x30	" 34 " 42	" 48 " 54
20x30	" 42 " 48	" 54 " 60

Climatic conditions. Type of building construction. Fuel to be used. Rate of fuel consumption.

Size of flue available.

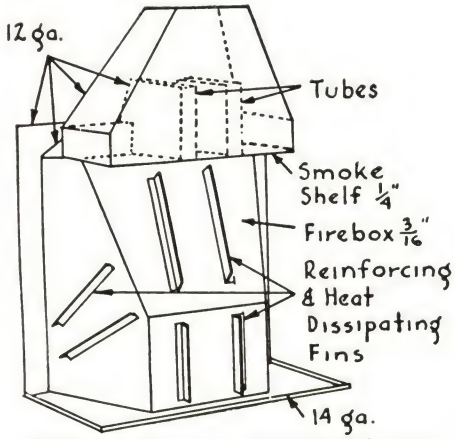
If you are still in doubt about the size fireplace to use, send us complete information about the different factors and we will make recommendations.



Sturdy Construction

The Heatsaver is built to give a lifetime of dependable service and satisfactory performance. Walls of the fire chamber are of steel, $\frac{3}{16}$ inch thick. The smoke shelf, which takes the most abuse, is ¼-inch thick steel. Other structural parts are of 12-gauge steel, reinforced with steel angles and outer casing is 26-gauge galvanized steel.

The joints and fastenings of the Heatsaver are electric arc-welded for maximum strength.



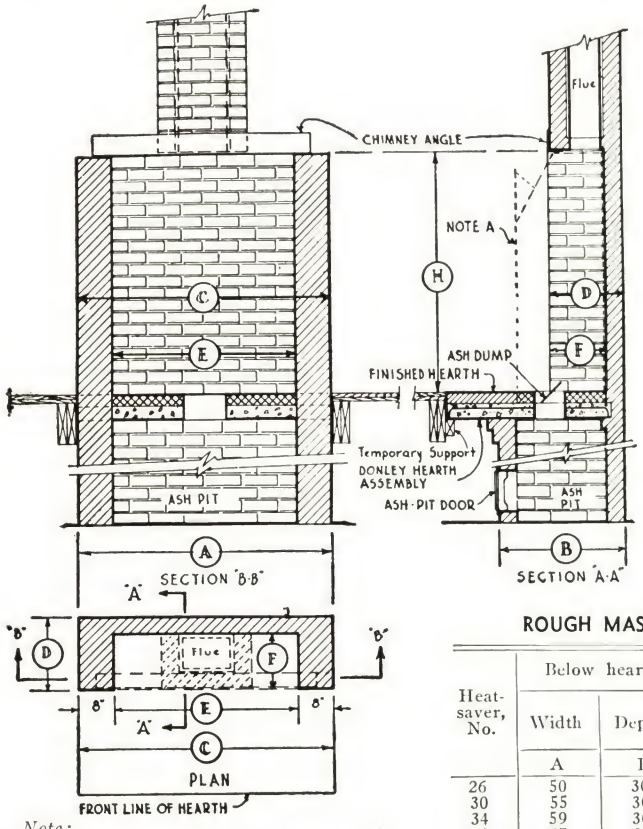
Showing thicknesses of materials used, economizer tubes and position of heat radiating fins.

DIMENSIONS OF HEATSAVER UNITS

Heatsaver No.	Opening Dimensions, in Inches					Casing Dimensions, in Inches									Shipping Weight
	A	B	C	D	E	F	G	H	J	K	L	M	N	O	
26	26	24	17	11 3/4	14	33	21	48	40 1/8	8	12	11 3/4	7 1/4	7 1/4	280
30	30	28	17	15 7/8	14	38	21	55	45 1/8	16	12	11 3/4	7 1/4	11 1/4	320
34	34	28	17	20	14	42	21	55	45 1/8	16	12	11 3/4	7 1/4	11 1/4	355
42	42	30	18	27	14	50	22	62	47 1/8	16	12	16	11 1/4	11 1/4	450
48	48	30	18	33	14	58	22	62	47 1/8	25 1/2	12	16	11 1/4	11 1/4	510
54	54	34	20	37 3/8	16	66	26	80	56	25 1/2	12	16	11 1/4	15 3/4	800
60	60	34	20	43 3/8	16	72	26	80	56	25 1/2	12	16	11 1/4	15 3/4	930

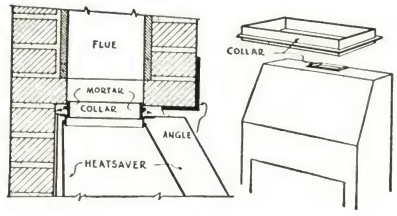
Heatsaver Installation Detail and Data

Floor plan must first be determined in accordance with projection of fireplace into the room, also the presence of adjoining flues, both factors influencing the arrangement of cold air inlets. Nine suggested floor plans are shown on the preceding page.



Note:
†This measurement is 1 in. more than size of unit. Center of flue should be directly above center of dimension.

Diagram of rough masonry should be carefully studied in connection with table of rough masonry dimensions for various sizes of unit. Heatsaver is backed into the rough masonry into position indicated by dotted line. Front of chimney rests on a steel angle, set about one inch higher than the size of Heatsaver used. When unit is in place, the cast iron flue collar is lifted into position and the joint filled with mortar to seal.



Method of Attaching to Flue—To avoid mortar droppings inside the Heatsaver, it may be placed in recess after masonry is roughed in. Cut the openings in the casing for warm air outlets before the unit is set.

The Heatsaver is then set in masonry recess with flange of collar resting in flue opening and directly under the flue. The upper side of the flange of collar is buttered with mortar, then pushed up as shown and mortar filled in below the flange to seal the connection.

ROUGH MASONRY DIMENSIONS IN INCHES—FOR BRICK CONSTRUCTION

Heat-saver, No.	Below hearth		Above hearth		Heatsaver recess dimensions			Flue size	Chimney angle
	Width	Depth	Width	Depth	Width	Depth	Height to lintel	Overall dim.	Set largest leg upright 5 x 3½ x 5/16
	A	B	C	D	E†	F	H		
26	50	30	50	17	34	13	49	8½ x 8½	45
30	55	30	55	17	39	13	56	8½ x 13	50
34	59	30	59	17	43	13	56	8½ x 13	54
42	67	31	67	21½	51	17½	63	13 x 13	62
48	75	31	75	21½	59	17½	63	13 x 13	70
									6 x 4 x 3/8
54	83	35	83	21½	67	17½	81	13 x 18	78
60	89	35	89	21½	73	17½	81	13 x 18	84

Necessary Equipment for Installing Heatsaver Fireplace

DIMENSIONS IN INCHES

Fireplace Opening and No.	Ash Dump No.	Ash Pit Door	Steel Angle for Fireplace Opening	Steel Angle for Chimney	Cold Air Intake Grilles			Upper Warm Air Outlet Grilles		Center Outlet (Optional)		Round Warm Air Ducts from Unit to Outlet Grills	Outlet Boxes at Upper End of Ducts
			C—3x3x3/16 D—4x3x1/4	A—5x3½x5/16 B—6x4x3/8	No. 55 Steel Installed As A, C, D or E	No. 65-L Cast Iron	No. 65-L Cast Iron Installed As B, M or N	No. 53 Steel	No. 65 Cast Iron	No. 60 Cast Iron	No. 65 Cast Iron	*See Note	
26x24 No. 26	58	10x12	C-30	A-45	Use 2 No. 55 9x13 Or 2 No. 65-L 9x 9½			Use 2 No. 53 11x 9 Or 2 No. 65 8x 8		Use 1 No. 60 8x6 Or 1 No. 65 8x6		8	8x10
30x28 No. 30	58	10x12	C-36	A-50	Or 2 No. 55 6x21 Or 2 No. 65-L 6x17			Use 2 No. 53 11x 9 Or 2 No. 65 8x 8		Use 1 No. 60 16x6 Or 1 No. 65 16x6		8	8x10
34x28 No. 34	70	10x12	C-42	A-54	Use 2 No. 55 9x15 Or 2 No. 65-L 9x13			Use 2 No. 53 11x 9 Or 2 No. 65 8x 8		Use 1 No. 60 16x6 Or 1 No. 65 16x6		8	8x10
42x30 No. 42	70	10x12	C-48	A-62	Or 2 No. 55 6x25 Or 2 No. 65-L 6x22			Use 2 No. 53 11x 9 Or 2 No. 65 8x 8		Use 1 No. 60 16x6 Or 1 No. 65 16x6		8	8x10
48x30 No. 48	70	10x12	D-54	A-70				Use 2 No. 53 13x10 Or 2 No. 65 12x 8		Use 1 No. 60 24x6 Or 1 No. 65 23x6		9	9x12
54x34 No. 54	70	12x15	D-60	B-78	Use 2 No. 55 9x19 Or 2 No. 65-L 9x17			Use 2 No. 53 13x10 Or 2 No. 65 12x 8		Use 1 No. 60 24x6 Or 1 No. 65 23x6		9	9x12
60x34 No. 60	70	12x15	D-66	B-84	Or 2 No. 55 6x31 Or 2 No. 65-L 6x25¾			Use 2 No. 53 13x10 Or 2 No. 65 12x 8		Use 1 No. 60 24x6 Or 1 No. 65 23x6		9	9x12

**Note:* Galvanized piping and tinned outlet boxes for warm air outlets regularly supplied. Tinned piping supplied when ordered. If a sketch of proposed installation is sent, we will figure quantity of piping necessary.

On orders where pipe, elbows and outlet boxes are included, but the number of each required is not indicated, the following quantities of appropriate sizes, being sufficient for the average installation, will be shipped:

2—2′0″ Lengths of pipe
2—1′0″ Lengths of pipe
4—Adjustable elbows
2—Outlet Boxes

Donley Fireplace Dampers

Provide efficient draft control and smooth correctly proportioned passage for smoke and fumes. Installed according to instructions, they promote correct construction of other features of the fireplace.

Throat Is Narrow—Up to and including 48-in. size the Donley Damper has 8-in. opening at base and 4 ¼-in. at valve. When correctly placed against the forward wall there is room for the back wall to assume the proper forward slope for efficient heating. Narrowness also enables damper to be set forward of flue so that down-draft is pocketed on smoke shelf, back of uplifted valve plate.

Front Flange—Distinctive turned-up front flange of Donley Dampers permits correct installation at front of fireplace, and at approved height above the opening, regardless of type of facing material or shape of opening.

Construction—Of highest grade cast iron.

THREE TYPES OF OPERATING DEVICE

Rotary Control Type—Valve plate is operated by turning a polished brass knob on front of the fireplace. Regularly supplied in center but also made at right.

Poker Control Type—Valve plate operated by hooking poker in ring hanging down in center and pushing or pulling with slight upward motion. It is less conspicuous than the Rotary Control.

Chain Control Type—Has valve plate pivoted in center. Operated by pulling one of the two chains. Made in 30, 36 and 42-in. sizes only to meet occasional demand.





Rotary Control

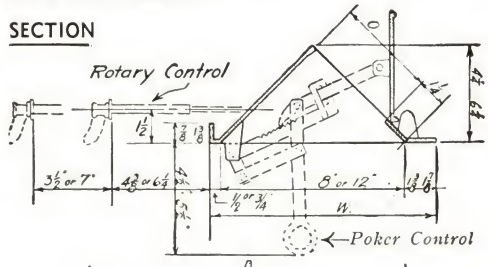

Poker Control

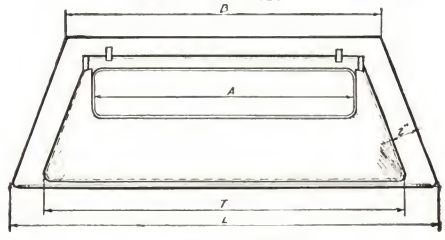
DIMENSIONS OF DONLEY DAMPERS

Donley Dampers are made for fireplaces having openings 2 to 8 feet in width. The size of damper is determined by the maximum width of the fireplace opening. The proper damper to use for each width of fireplace opening is shown in the table below.

The diagram and table enable the designer to calculate the space required for any damper. Where two dimensions are indicated in the same line of the diagram the smaller is for sizes up to and including Nos. 248 and 348, and the larger dimension for Nos. 254 and 354 and greater. Both operating devices are indicated to show dimensions.

SECTION





PLAN

DIMENSIONS IN INCHES

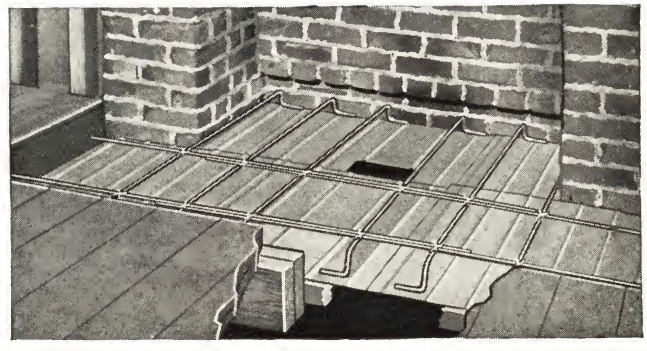
Fireplace Opening Width	Poker Control No.	Rotary Control No.	Throat			Overall		
			Bot. T	Top A	Opng O	Lgth L	Back B	Wdth W
24″	224	324	24	17 5/16	4 1/4	28 1/2	21	9 7/8
30″	230	330	30	23 5/16	4 1/4	34 1/2	27	9 7/8
33″	233	333	33	26 5/16	4 1/4	37 1/2	30	9 7/8
36″	236	336	36	29 5/16	4 1/4	40 1/2	33	9 7/8
42″	242	342	42	35 5/16	4 1/4	46 1/2	39	9 7/8
48″	248	348	48	41 5/16	4 1/4	52 1/2	45	9 7/8
54″	254	354	54	42 1/2	7	58 1/2	46	14 5/8
60″	260	360	60	49 1/2	7	64 1/2	53	14 5/8
72″	272	372	72	60 1/2	7	76 1/2	64	14 5/8
84″	*284	*384	*84	73 1/2	7	88 1/2	77	14 5/8
96″	*296	*396	*96	85 3/4	7	100 1/2	89	14 5/8

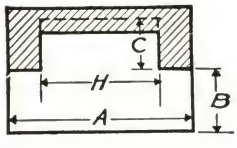
*Two Valve Plates

Donley Cantilever Hearth

A cantilever hearth with the axis of its support the front wall of the ashpit and the rear anchored in the rough brickwork is suggested to prevent cracks which frequently occur when the slab is supported partly by the chimney and partly by the floor structure.

Donley Cantilever Hearth Assembly is a convenient means of forming such a hearth. It consists of a centering of corrugated metal sheets laid parallel from front to rear and overlapped, plus necessary reinforcing rods. Main rods are ½ in. bent at each end to form feet which hold rods at correct height for a 3 ½-in. slab. Fore hearth is further reinforced by 4 lighter crossrods tied to main rods.





No.	For Hearths With Maximum Measurements of				Shipping weight
	A	B	H	C	
72	72″	24″	48″	24″	63 lbs.
84	84″	24″	48″	24″	68 lbs.
96	96″	24″	72″	24″	78 lbs.

Correct Fireplace Construction

For Conventional Masonry Fireplaces

Different features of a fireplace bear such a close relation to each other that disproportion between parts or failure to provide adequately for a single function will result in an unsatisfactory fireplace. The table below gives the proper dimensions for the different parts for fireplaces of various typical sizes.

PRINCIPLES OF CORRECT FIREPLACE CONSTRUCTION

Size of Opening—To insure good draft, the area of flue should be at least one-twelfth that of fireplace opening. Openings in which the relation of height to width is greater than shown in table require flue area, not less than one-tenth the area of fireplace opening.

Separate Flue—A flue of correct size should be provided for each fireplace. It should start above the center and rise not less than 3 ft. above highest point of roof.

Smoke Shelf—Arrests down draft and prevents it from blowing smoke into the room.

Smoke Chamber—Just above the damper, its sides sloping about 7 in. to each foot in height. Smooth unobstructed walls are important.

Hearth Shape—Sides should go straight back for about 4 in. then be splayed at an angle of 5 in. to the foot.

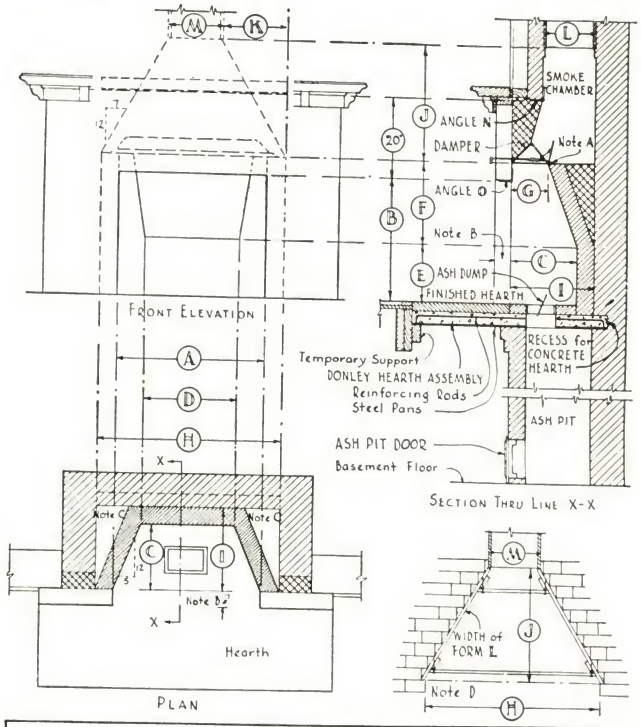
Rear Wall—Should be plumb for 14 to 15 in. then slope forward to form smoke shelf and support damper. This shape deflects heat forward into the room while smoke and gases pass through the damper.

Damper—Explicit attention must be given to damper size and proper placing. Damper should be set with turned-up flange against the front wall and rear flange resting on the smoke shelf. Opening of damper should not be directly under the flue but forward of it. Damper should be 3 to 9 in. above fireplace opening.

Size of Damper—Donley Dampers are made in eleven sizes for fireplaces from 24 to 96 inches wide. A number 230 or 330 damper should be used for fireplaces having openings between 24 and 30 inches wide. For other sizes follow the same rule.

NOTES TO PLAN ABOVE

Note A: Back flange of damper must be fully supported and shielded from intense heat by back wall masonry.
Note B: Drawing shows thickness of brick front as 4 in. This will vary with materials used.
Note C: These hollow spaces should be filled to form solid backing. If desirable to include a flue in either space the outside dimensions should be increased.
Note D: Shows a good way to build a smoke chamber by using four boards held apart by spreaders. Letters correspond with those in table.



DIMENSIONS																EQUIPMENT									
FINISHED FIREPLACE OPENING							ROUGH BRICK WORK						HEARTH ASSEMBLY	ACCESSORIES						FURNISHINGS			
WIDTH	HEIGHT	DEPTH	BACK	VERTICAL BACK WALL	SLOPED BACK	THROAT	WIDTH	DEPTH	SMOKE CHAMBER	SLOPE of SMOKE CHAMBER	STD RECTANGULAR FLUE LINING Outside Dimension	STD ROUND FLUE LINING Inside Dia		DAMPER Rotary Control	DAMPER Lever Control	ASH DUMP	ASH PIT DOOR	STEEL ANGLES "A" "B" "C" LENGTH IN INCHES		FIRE BASKET	FIRE SCREEN	ANDIRONS	FIRE SET
A	B	C	D	E	F	G	H	I	J	K	L M	Φ						N	O				
In	In	In	In	In	In	In	In	In	In	In	In x In	In	No	No	No	No	In x In			No	No	No	No
26	24	16	13	14	14	8¾	39	20	24	15	8¾ x 8¾	10	72	330	230	58	10 x 12	A 36	A 30	24			
28	28	16	15	14	18	8¾	42	20	25	14½	8¾ x 13	10	72	330	230	58	10 x 12	A 42	A 36	24			
30	30	16	17	14	20	8¾	42	20	25	14½	8¾ x 13	10	72	330	230	58	10 x 12	A 42	A 36	28			
32	28	16	19	14	20	8¾	44	20	26	15½	8¾ x 13	10	72	333	233	58	10 x 12	A 42	A 42	28			
34	30	16	21	14	20	8¾	46	20	28	16½	8¾ x 13	12	72	336	236	70	10 x 12	A 48	A 42	30			
36	30	16	23	14	20	8¾	46	20	28	16½	13 x 13	12	72 84	336	236	70	10 x 12	A 48	A 42	34			
40	30	16	27	14	20	8¾	50	20	32	18½	13 x 13	12	72 84	342	242	70	10 x 12	A 48	A 42	34			
42	30	16	29	14	20	8¾	54	20	35	20½	13 x 13	12	84 96	342	242	70	10 x 12	B 54	A 48	34			
48	33	18	33	14	23	8¾	59	22	40	23	13 x 13	15	96	348	248	70	10 x 12	B 60	B 54	40			
54	36	20	37	14	26	13	67	24	42	24½	13 x 18	15	96	354	254	70	12 x 15	B 66	B 60	40			
60	39	22	42	14	29	13	71	26	45	26½	18 x 18	18	96	360	260	70	12 x 15	B 66	B 66	57			
72	40	22	54	14	30	13	83	26	56	32½	18 x 18	18	Special	372	272	70	12 x 15	C 80	C 80	57			

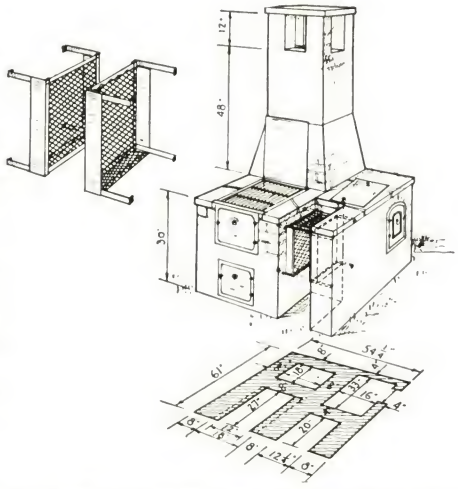
Donley Equipment for Outdoor Fireplaces



The outdoor fireplace, where meals may be prepared under the trees, has been growing in popularity for suburban and country homes. At the right is shown one suggestion with dimensions for such a fireplace, others will be supplied on request. As with the indoor fireplace, Donley equipment adds to the satisfaction and usefulness.

Donley outdoor fireplace unit consists of steel grate frame 18 x 27 x 13 in. deep with grates, hinged cover and fire door. Frame is arranged for adjusting height of grates according to fuel used.

In the diagram are shown also
Donley Duplex Steak Grille with grate and hinged cover
Ash pit door
Dutch oven door.



Donley Fireplace Equipment

DONLEY ASH DUMPS

Iron trap doors placed in the hearth for convenient disposal of ashes. Doors in all models are locked into frames to prevent dropping into ashpit. Locking device is below and does not mar smooth top surface. Made of stove grade cast iron to resist warping. Nos. 58 and 70 have single doors pivoted off center so they may be opened and closed with poker. No. 57 has two slightly recessed doors which close themselves. The No. 70, for floor opening 10¼x7¼ in., has anchoring flange 2-in. deep.



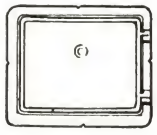
No. 57 Ash Dump No. 58 Ash Dump No. 70 Ash Dump

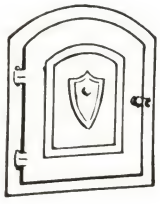
DONLEY ASHPIT CLEANOUT DOOR

Three smaller sizes are used as flue cleanouts at base of chimneys. The 10x12-in. size is a convenient shovel size for removing ashes from ashpits. Neat in appearance, close fitting and has anchoring lugs on inner flange. Except as noted, all are made of rust-resisting cast iron.

Hght.-Width	Shipping weight	Hght.-Width	Shipping weight
§6x 8″	48 lbs. doz.	12x15″	160 lbs. doz.
7x 9″	74 lbs. doz.	‡24x18″	50 lbs. each
8x 8″	74 lbs. doz.	30x24″	120 lbs. each
8x10″	80 lbs. doz.	*30x24″	70 lbs. each
10x12″	125 lbs. doz.	30x30″	175 lbs. each

§Steel. *Steel door. ‡Available with baffle plate.



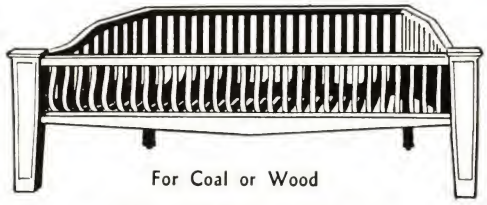


DONLEY DUTCH OVEN DOOR

An ornamental door made by expert molders from highest grade cast iron. Used to reproduce Early American Kitchen fireplace or as an ornamental cleanout door beside basement fireplace. Regularly supplied with art black finish, also available in plated antique brass. Fits wall opening 12½x15½ in. Over-all size 15x18 in.

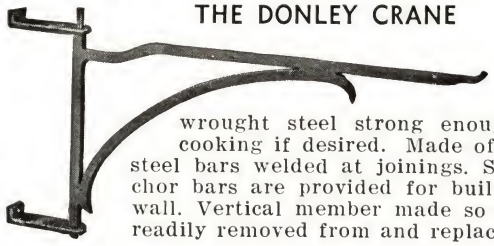
DONLEY FIRE BASKETS

Simple, graceful and correct in design and sturdy enough to stand years of hard use. It is a product of the Donley policy to co-ordinate every feature of the fireplace for efficient operation. Sides splayed inward to coincide with angle of properly designed fireplace. Made of best quality of iron it will not warp. Back legs have rollers to facilitate movement. Removable ends make it possible to burn logs of any length.



For Coal or Wood

THE DONLEY CRANE



Ornamental crane, in 4 standard sizes, of wrought steel strong enough for actual cooking if desired. Made of ⅝-in. square steel bars welded at joinings. Substantial anchor bars are provided for building into side wall. Vertical member made so crane may be readily removed from and replaced in anchors.

DONLEY FIREPLACE FURNISHINGS

Andirons—In a variety of models to harmonize with any interior decoration. Made of cast brass and cast iron with plated antique brass or heat-resisting black painted finish.

Fire Sets—Consist of shovel, poker, tongs, brush and holder. Made of cast brass or iron in a variety of models.

Screens—Made in close-fitting flat and folding types.

Fuel Containers—Wood carriers and coal hods in attractive shapes and finishes.

Complete Catalog of Donley Fireplace Furnishings on request.

Donley Incinerators

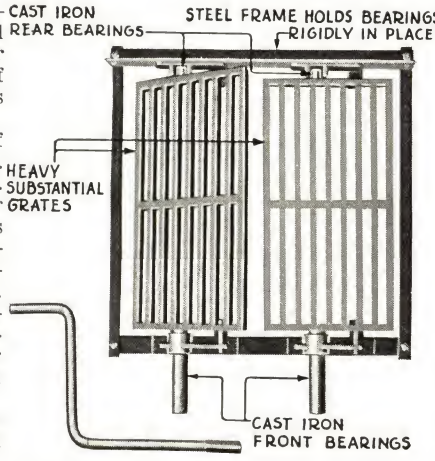
Donley Incinerators are of the built-in type of brick with metal parts furnished by The Donley Brothers Co. These consist of Hopper Type Receiving Door with frame and trim for each floor, Dumping Grates, supporting frame and handle, Fire Door, Ash Door and Spark Screen. Sizes are available for every requirement. All parts are designed and built substantially to give years of trouble-free service.

Combustion chamber connects with a smooth straight flue which acts as a chute for wastes and combustion outlet.

Donley Receiving Door Unit—Easily operated, attractive in design and finish and excludes all odor or smoke from upper floors. Wall Sleeve frame is made of heavy sheet metal. Wide flanges anchor it securely in the masonry.

Trim frame and hopper door are of cast iron ground to fit within .005 in. Accurate bearings insure tight closing. Exterior has Krincle finish with center panel white enamel. Special finishes supplied at moderate extra cost. Hopper door opens from the top and is balanced to close itself from any position. A special quiet door check can be provided as an extra. Hopper is of 14-gauge sheet metal attached to the door and designed to close the stack when door is open.

Donley Dumping Grates—Heavy, staunch and trouble-free. They can be removed and replaced through the fire door. Removal will rarely be necessary. Grates rest on iron frame easily installed on a course of masonry of proper height without special fitting.



Installation Data—Accompanies every incinerator including prints of full construction details.

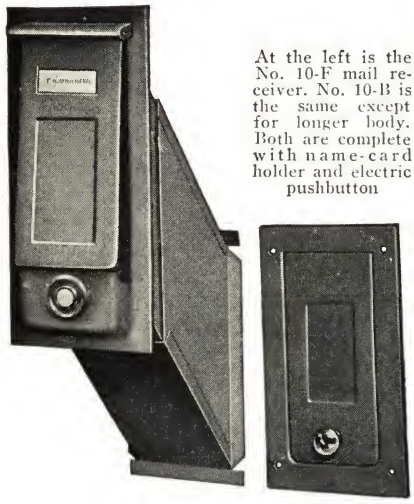
Footings should extend 6 in. beyond incinerator walls. Top of footing 4 in. below finished floor level.

Walls of combustion chamber are of common brick lined with fire brick above grates, including header course.

Flues—Up to 16x16 in. may be lined with standard flue lining. Larger flues must be lined with fire brick for 20 to 30 ft. above combustion chamber.

Gas Burner—Available as an extra for places where garbage is unusually moist, such as fruit or vegetable stores.

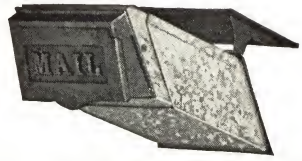
Donley Mail Receivers



At the left is the No. 10-F mail receiver. No. 10-B is the same except for longer body. Both are complete with name-card holder and electric pushbutton



Illustration at the left is No. 3-F box type receiver. No. 3-B has a larger, deeper body and an outer door like that shown below at right



No. 1-F above, chute type, has a mail opening 5″ x 2½″. No. 2-F is similar, but opening is 8¾″ x 2½″



No. 2-B at right, also chute type, with mail opening 8¾″ x 2½″. No. 1-B is similar but opening is 5″ x 2½″

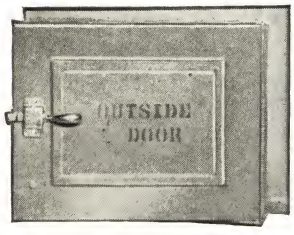
Substantial outer doors and frames offer complete weather resistance. No. 10 Receiver, shown at left has attractive, bronze door in deep finish and large, straight line chute, communicating with inner door of steel, primed for any decorative treatment. Push button for door bell, with sufficient wire to carry to point convenient to electrician, is mounted below receiving door. Card pocket above has celluloid pane. Two types of horizontal opening receiver. Telescoping, two piece chute provides method of adapting receivers to various wall thicknesses.

F INDICATES FOR FRAME CONSTRUCTION; B FOR BRICK

No.	For wall thickness	Mail opening		Shipping weight
		Width	Height	
*10-F	5″ to 9″	3″	6″	6 lbs.
*10-B	9″ to 14″	3″	6″	6 lbs.
1-F	5″ to 9″	5″	2½″	6 lbs.
1-B	9″ to 14″	5″	2½″	6 lbs.
2-F	5″ to 9″	8¾″	2½″	8 lbs.
2-B	9″ to 14″	8¾″	2½″	8½ lbs.
3-F	5″ to 9″	8¾″	2½″	10 lbs.
3-B	9″ to 14″	8¾″	2½″	11 lbs.

*No. 10-F and 10-B are complete with name-card holder and Electric Push-Button. On other numbers there is an extra cost for these attachments.

Donley Package Receivers





A necessity in the modern home. They permit deliveries at any time and protect articles against pilfering and cats or dogs. Delivery people need not enter the kitchen.

Insulated, Ventilated—Outer door is insulated to protect against heat and cold. Inner door is ventilated to keep the interior at approximately the room temperature.

Locks Automatically—Closing the outer door on Nos. 1 and 2 locks it automatically. Lock is released by opening inner door. Locking device may be rendered inoperative if desired. It is omitted on Nos. 3 and 4 on which the direction of opening of the inner door is reversible. Pull type catches of nickeled brass on both doors.

Staunch and Attractive—Made of heavy gauge steel, welded at joints. Both doors attractively paneled. Inner door surrounded by frame. Outer door has no projecting frame behind which moisture can collect and cause rust. This construction permits recessing if desired. Holes are provided for nailing. Hinges are concealed.

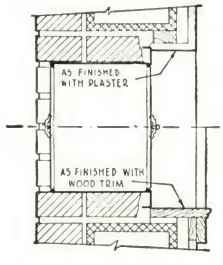
Installation—In different types of walls is illustrated in the drawings. Note that different practice with regard to trim is shown at top and bottom.

Apartment House Receivers—Designed for access through inside corridor wall where insulation is not a factor. Body made in two pieces to fit any wall thickness and with telescoping adjustment of ½-in. to allow for variations. Installed after plastering by nailing to a frame of ⅞-in. lumber built into the opening.

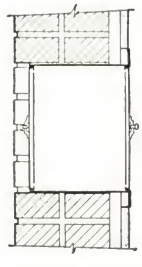
PACKAGE RECEIVER DIMENSIONS

No.	Body		Over all front to back	Inside frame	Facing inside door, with hinge	Shipping weight
	Width	Height				
1	13⅞″	11⅛″	9″	16¾″x14″	On Left	20 lbs.
2	13⅞″	11⅛″	9″	16¾″x14″	On Right	20 lbs.
3	13⅞″	11⅛″	6″	16¾″x14″	Reversible	16 lbs.
4	13⅞″	11⅛″	9″	16¾″x14″	Reversible	20 lbs.

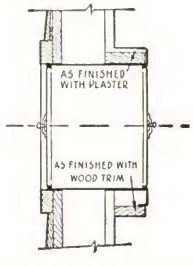
Note: Return of flange on inside, ¾ in. Nos. 1 and 2 have automatic lock; Nos. 3 and 4 no automatic lock.



9″ size in 13″ Masonry Wall



9″ size in 9″ Masonry Wall



9″ size in 6″ Frame Wall. If 6″ size is used, finish inside is similar to 9″ size in 9″ Masonry Wall

Donley Coal Chutes

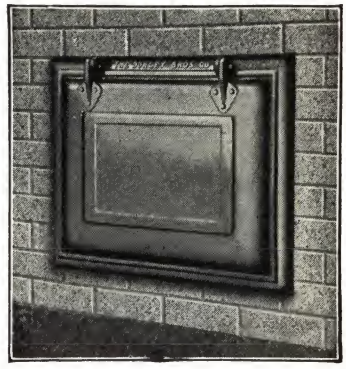


Highly durable, these chutes withstand the most battering service without defacement. The door when open for service is held upright by the formation of the hinges and protects wall of building from injury by flying fuel. Glass paneled doors have a shield which drops over glass when door is open but does not obstruct light when door is closed.

Automatic latch secures the door firmly when door is closed. No exposed locking device on which burglar can work.

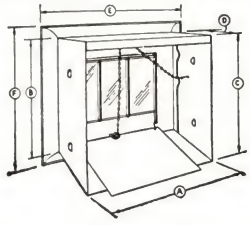
Donley Chutes have copper steel rust-resisting body, reinforced by steel angles. Frame and hinges are of malleable iron, or copper-bearing steel.

Automatic lock, released from inside only, with chain release which may be carried outside the bin.



FOUNDATION CHUTES

For installation in the foundation wall they are made in twelve types which differ in regard to the doors, straight or slanting bottom and availability of hoppers. Clear glass is bedded on cork and held in place by clips (see page 10).

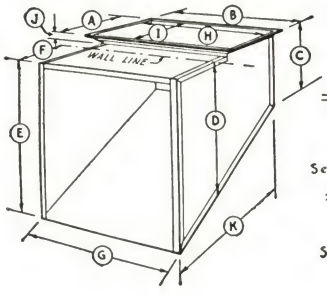


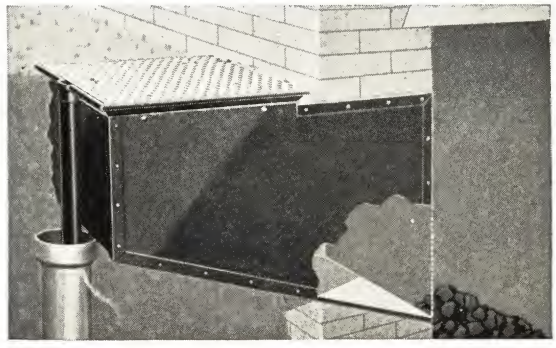
Order by No.	Description		Rough Wall Op'ngs			Bottom of Chute	Shp'g. W'ght	Hoppers
	Door	Frame	Wide	High	Deep			
19	Solid Steel	Copper Steel	24″	17″	8″	Straight	31 lbs.	None
29	Solid Steel	Malleable	24″	17″	8″	Straight	41 lbs.	None
48	Clear Glass, 3 Lts.	Copper Steel	24″	17″	8″	Straight	40 lbs.	None
39	Clear Glass, 3 Lts.	Malleable	24″	17″	8″	Straight	50 lbs.	None
213	Solid Steel	Malleable	24″	17″	12″	Slanting	47 lbs.	Optional
313	Clear Glass, 3 Lts.	Malleable	24″	17″	12″	Slanting	55 lbs.	Optional
613	Solid Steel	Malleable	32″	22″	12″	Slanting	81 lbs.	Optional
713	Clear Glass, 3 Lts.	Malleable	32″	22″	12″	Slanting	88 lbs.	Optional
612	Solid Steel	Copper Steel	32″	22″	12″	Straight	60 lbs.	None
712	Clear Glass, 3 Lts.	Copper Steel	32″	22″	12″	Straight	65 lbs.	None
617	Solid Steel	Malleable	32″	22″	17″	Slanting	90 lbs.	Optional
717	Clear Glass, 3 Lts.	Malleable	32″	22″	17″	Slanting	97 lbs.	Optional

Chute No.	A	B	C	D	E	F
19, 29, 39 and 48....	22″	16″	16″	8″	25″	19″
213 and 313.....	22″	16″	18½″	12″	25″	19″
612 and 712.....	30½″	21″	21″	12″	34½″	24½″
613 and 713.....	30½″	21″	23″	12″	34½″	24½″
617 and 717.....	30½″	21″	25½″	17″	34½″	24½″

GRADE LINE CHUTES

For use where the foundation wall is too low to receive the foundation chute. Horizontal opening is set level with the lawn or walk. Door opens against building to protect it from flying fuel. Automatic lock released from inside only. Frame on Nos. 1 and 2 is heavy malleable iron with gutter to prevent water entering cellar. Gutter has outlet outside the chute for connection to drain. Frame on No. 10 is a special steel section, welded at corners, which door overlaps. Lip prevents water entering cellar. Door of checkered steel, is non-slip and capable of supporting sidewalk traffic. Hinge of Nos. 1 and 2 of malleable iron, No. 10 of steel, all with brass hinge pin.





No.	A	B	C	D	E	F	G	H	I	J
10	19	19	14	19	24½	15	19	19	19	1¾
1	21	26¼	14¾	19½	24½	14¼	24½	25¼	20	2½
2	27	32¼	17¾	24¾	30½	16¼	30½	31¼	26	2½

In ordering the Donley Grade Line Coal Chute please consult dimensions in the above table and order by number.

Donley Garbage Receivers

Advantages—(1) Hidden from sight, only inconspicuous green top being visible. (2) Protected from frost. (3) No hammering of container to free contents. (4) Two-piece top prevents garbage falling between containers and outer shell. (5) Opened by foot lever, so (6) dogs cannot open it and spill the garbage. (7) Tight lid minimizes odors.

Construction—Outer shell made of 16-gauge copper-alloy steel strengthened by corrugations at top and bottom. Bottom open to permit drainage and stiffened by galvanized cross rods on which pail rests. Heavily painted with asphaltic paint.

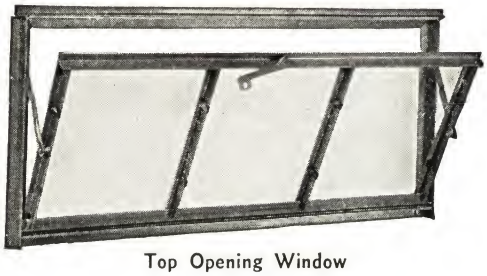
Container or pail made of copper alloy steel galvanized after fabrication. Ample clearance for lifting out pail which is slightly tapered to facilitate removal and return. Service lid made to close fit to larger cover which is hinged to outer shell and opened only when pail is removed. Made in 4 sizes, 9, 12 15 and 21-gal. capacity.



Donley Basement Windows

OFFERED IN TWO TYPES

Glazed With or Without Putty



Top Opening Window



Bottom Opening Window

These windows meet all conditions of easy installation, convenient use, and maintenance, long service and unusual weather protection.

Made in Two Types—Top opening and bottom opening. Top opening has the advantage that no ordinary intruder can enter even when open. Top opening type held in open position by slotted side arms with two stages of opening.

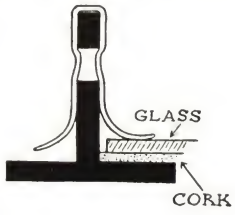
Sash Can Be Removed—From the inside in either type. This allows bulky objects to be brought through the window and makes re-glazing simple and convenient. Glazing clips described below simplify replacing glass. They may be used alone or putty may be added for extra weather-proofing.

Substantially Made— By welding ⅛-in. thick hot-rolled steel members. Outer frame is of double angle construction with a projecting flange which anchors the frame securely in the masonry just back of the facing. Frame has sufficient breadth to meet both face and back-up masonry in close contact that makes pointing unnecessary.

Ventilating Unit—Interior glazed. Glass bears against an exterior flange at top and two sides where it is bedded on a cork strip. At the bottom the flange and cork are on the inside so that water is shed directly on the steel apron providing complete weathering.

Glass in Standard Sizes—Donley Basement Windows are furnished unglazed. Glass used is standard sizes.

Glazing With Jiffy Clip—Insert the lower edge of glass inside the flange at bottom of opening, then lay it against the other three sides. The clip is sprung into place and held by grooves in the T-section that coincide with the projections in the clip. The clips are of tempered spring steel and rustproofed by the Parker process.



No. Top opening	No. Bottom opening	Glass size	Masonry openings	Over-all dimensions	Shipping weight
1	11	2 light—10″x12″	22¾″x15″	23¾″x15½″	14 lbs.
2	12	2 light—10″x16″	22¾″x19″	23¾″x19½″	15 lbs.
3	13	2 light—14″x20″	30¾″x23″	31¾″x23½″	21 lbs.
4	14	3 light—10″x12″	33¼″x15″	34¼″x15½″	19 lbs.
5	15	3 light—10″x14″	33¼″x17″	34¼″x17½″	21 lbs.
6	16	3 light—10″x16″	33¼″x19″	34¼″x19½″	22 lbs.
7	17	3 light—10″x20″	33¼″x23″	34¼″x23½″	23 lbs.
8	18	3 light—12″x18″	39¼″x21″	40¼″x21½″	24 lbs.

Glazing With Jiffy Clip



Put glass in place



Take a jiffy clip



And just snap it on

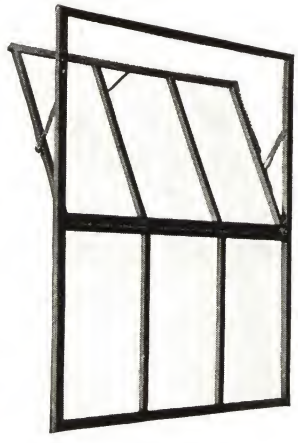
Donley Utility Windows

A general purpose, metal framed window of sturdy construction and simple design. Same general construction as Donley Basement Window.

The 6 light type is made in 2 sizes with upper 3 lights forming ventilator as illustrated. The 9 light type has 3 fixed lights above and 3 below the ventilator.

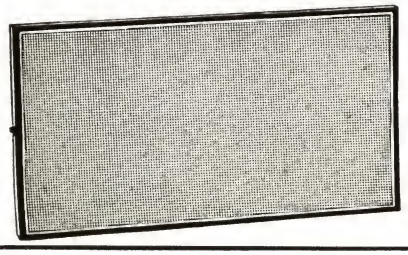
Widely used for garages, shops, store rooms, basement recreation rooms, studios and any place where a spacious, strongly built window is required.

Operation of ventilator same as for top opening basement window. Made for putty glazing only. Wire glazing clips with each window.



No.	Number of lights	Nominal glass size	Over-all dimensions
21	6	10″x16″	34″x35½″
22	6	12″x20″	38½″x43½″
32	9	12″x20″	38½″x64″

Screens for Donley Windows



Close mesh bronze screens with metal frames are available to fit any size window listed. Screen is complete, ready to install, no drilling or fitting is necessary. Simply insert two screws from the inside and the screen is securely fastened in place.

Miscellaneous Donley Devices

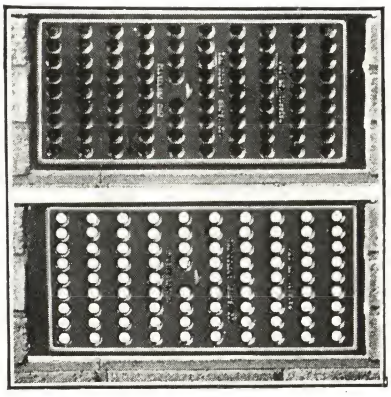
DONLEY LAUNDRY CHUTE DOORS



Inward opening, self-closing. Door and frame are a complete unit easily installed with concealed nailing. Inconspicuous but always ready for use. Frame extends only ¼ in. beyond wall line. Wide inward flange for attachment to laundry chute eliminates sharp edges which might catch clothes. Regularly finished with gray priming coat. Also available in chromium finish. Wall opening 9x12 in.; over all, 11x14 in.

DONLEY VENTILATORS

Provide fresh air under porches, under buildings without basements, in attic or closed lofts, vegetable cellars, soffit spaces, etc. Made in adjustable and continuously open types.

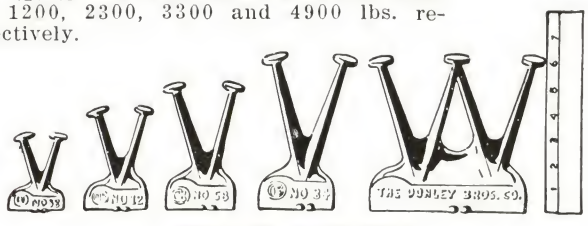


Adjustable Ventilator—Made in one size—16 in. wide by 8 in. high, of cast iron or cast bronze. It is made of two pieces fastened together with brass connections. One part has anchoring legs holding it firmly in the wall. The other part is movable. A push to the left adjusts the openings as desired. Bronze screen furnished at slight extra cost. Patented.

Continuously Open Ventilators—Made in diagonal and bar type. Size 4x8 to 24x12 in.

DONLEY CONCRETE INSERTS

Anchored in concrete ceilings or walls they provide dependable support for any suspended fixtures. Made of malleable iron. Exposed face has a slot for bolt head. Design of insert and anchorage in concrete was tested to develop full strength of bolt. Made in 5 sizes for ⅜, ½, ⅝ and ¾-in. bolts, with safe loads of 1200, 2300, 3300 and 4900 lbs. respectively.



DONLEY ANCHORS

Joist Anchors—Provide secure anchorage for joists supported by brick walls. Nailed to top of joist and embedded in masonry with vertical crossrod. Sizes: $1 \times \frac{3}{16} \times 14$ in.; $1 \times \frac{3}{16} \times 18$ in.; $1\frac{1}{2} \times \frac{1}{4} \times 18$ in.

Wall Plate Anchors—For anchoring sill to foundation and roof plate to brick wall. Made from ½-in. rod 18 in. long with 2-in. angle at one end and 2-in. thread at other. Furnished with nut and washer.

Stone Anchors—For attaching stone to backup wall. Made of flat steel $\frac{3}{16} \times 1$ in. with reversed offsets at the two ends. Hot galvanized. Standard length $6\frac{5}{16}$, $8\frac{5}{16}$, $10\frac{5}{16}$, $12\frac{5}{16}$ in.

Door Buck Anchors—For securing jambs or rough bucks to masonry walls. Made of $2 \times \frac{3}{16}$-in. flat steel, 12 in. long with 2-in. turned up end perforated for nailing. Perforations in horizontal arm engage mortar in joint. Space 2 ft. apart.

DONLEY ACCESS DOORS

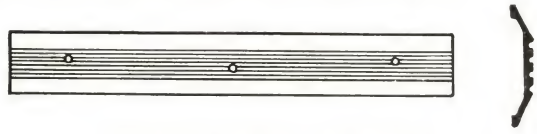
Save the need of tearing out plaster to reach hidden plumbing, wiring or steam pipes. Absolutely flush with the wall they may be caulked and painted or papered.

Unit consists of a frame and door. Frame is made from two welded angles, its outer edge perforated for plaster key and easy nailing. Door is held in place by two lugs at bottom and interior button catch at top. Catch is operated by inserting screwdriver and turning. Door is of furniture type steel and will hold its shape. It is finished in gray priming coat. Made in 5 sizes with door openings 8x10, 12x16, 16x20, 18x24 and 20x30 in.



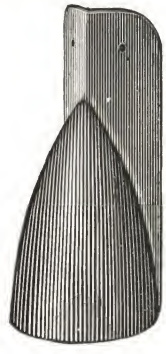
DONLEY METAL THRESHOLDS

Made of cast iron, extruded brass or aluminum, they give long wear, assure a close fitting door and make a neat, attractive joint where contrasting materials meet. Cast iron $3\frac{1}{2}$ and $4\frac{1}{2}$ in. wide, brass and aluminum 4 in. wide. Height ½ in., except aluminum, which is ⅝ in.



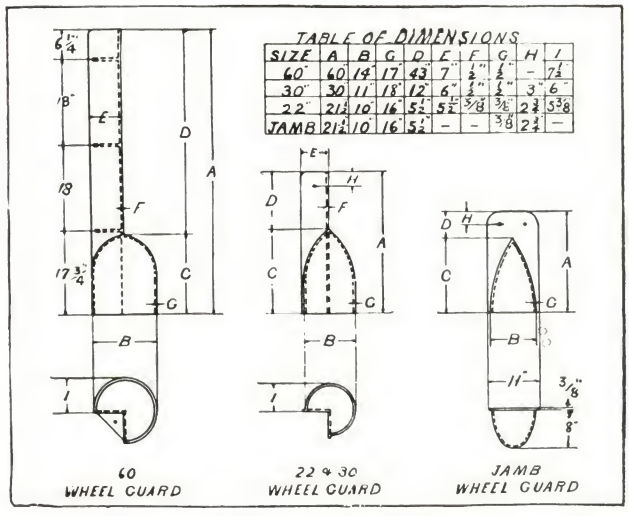
DONLEY WHEEL GUARDS

Made for corners and jambs. Cast iron, heavy enough to deflect any wheel and prevent damage by the hub. Secured by two ½x8-in. bolts provided with each guard.



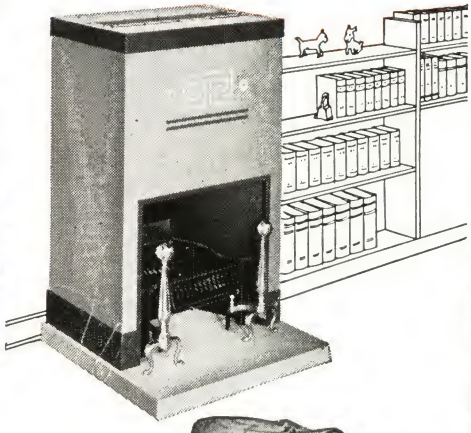
Corner Guards—Made in three sizes, 22, 30 and 60 in. in height. Sixty-inch type protects against projecting truck bodies or loads.

Jam Guards—Bolt against flat surface of the door jamb giving positive clearance in entrance and exit of vehicles. Indispensable in public garages, service stations, warehouses and terminals. Does not diminish effective width of door.



DONLEY DEVICES
Complete the Home

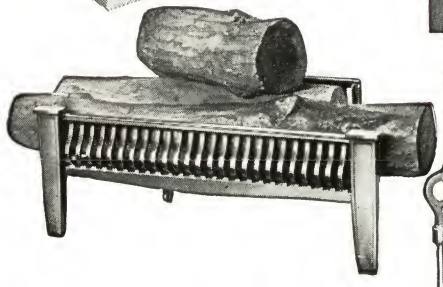




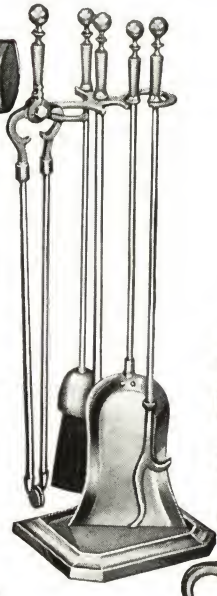




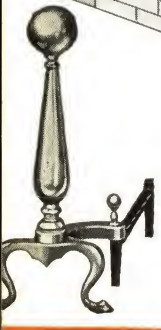


















THE DONLEY BROTHERS COMPANY
13932 MILES AVENUE • CLEVELAND, OHIO

SECTION 26

CONTINUED ⟶

HEATILATOR COMPANY

SYRACUSE, N. Y.

FACTORY REPRESENTATIVES

ALBANY, N. Y., W. M. Jenkins, 131 Homestead Avenue
ATLANTA, GA., Jos. S. Cook, 8 Ridgeland Way, N. E.
BALTIMORE, MD., H. P. Supplee, 530 No. Charles Street
BIRMINGHAM, ALA., O. H. Harris, 204 52nd Place, No.
BOSTON, MASS., C. A. Todd, 83 Withington Road, Newtonville, Mass.
CARTHAGE, MO., Putnam & Jones
CHARLOTTE, N. C., E. M. Norteman, 615 E. Kingston Avenue
CHICAGO, ILL., John C. Gustafson, 6310 Wentworth Ave.
CLEVELAND, OHIO, N. B. Scott, 1588 Ansel Road, Devon Hall
COLUMBIA, MO., Putnam & Jones
DETROIT, MICH., George M. Scott, Box 115, Franklin, Mich.
HELENA, MONT., Raymond C. Grant, 634 Mound Street, P. O. Box 774
HUTCHINSON, KAN., Putnam & Jones
LOS ANGELES, CALIF., F. S. Lee, 923 E. Third Street
LOUISVILLE, KY., Equipment & Supply Co., 420 Baxter Avenue
MIAMI, FLA., Jos. H. Nauss, 59 N. W. Tenth Street
NEW YORK, N. Y., R. L. Wright, 49 Baltusrol Way, Short Hills, N. J.
OKLAHOMA CITY, OKLA., Putnam & Jones
PHILADELPHIA, PA., W. R. Jouett, 530 Oxford Rd., Brookline, Pa.
ST. PAUL, MINN., Wm. McNamara, 2694 University Avenue
SAN ANTONIO, TEX., F. L. Sweet, 265 W. Thorain Boulevard
SEATTLE, WASH., E. W. Erwin, 1990 Alaskan Way
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Convenient Warehouse Stocks Carried in Principal Cities—Distributed by Leading Building Supply Dealers

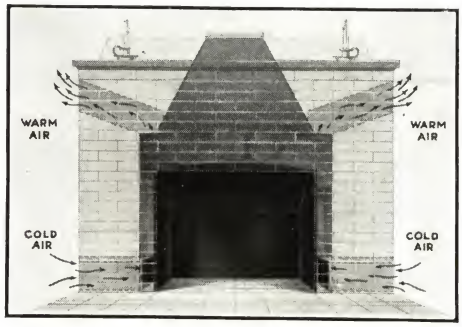
The Heatilator Fireplace

Description

The Heatilator combines two functions which have been desired by architects, owners and builders for many years.

First—It is a welded steel form scientifically designed to assure perfect fireplace construction and a fireplace which will not smoke. It acts as a form around which all masonry is built to the flue, eliminating the necessity of constant supervision so often required for the ordinary fireplace construction. Any mason can lay up the fireplace around it, easily and quickly.

Second—The Heatilator improves the heating efficiency of the fireplace by adding a new source of circulated heat to the usual radiated heat. Designed on warm air furnace principles, it extends the zone of comfort to every corner of the room and even adjoining rooms. As a result, the open fireplace becomes a useful as well as decorative feature of the modern home.



Arrows indicate the passage of air through the heating chamber of the Heatilator. Here it is heated and then returned and circulated to every corner of the room and even adjoining rooms.

Increases Heating Efficiency

In the ordinary type of fireplace 90% of the heat is lost up the chimney. The only warmth is that radiated directly from the fire and even that is scarcely noticeable a few feet away. Not so with the Heatilator Fireplace. For by saving and circulating the heat previously wasted up the chimney, the Heatilator extends the zone of comfort throughout the room and adjacent, connecting rooms.

The double-walled firebox of the Heatilator is really a heating chamber which surrounds the fire at sides and back. Cold air is drawn into this chamber at floor level, or from below the floor. Here it is heated by contact with the chamber walls —then returned to the room. Where maximum warmth is desired, the volume of heat can be doubled by forcing the circulation of air through the Heatilator with small electric fans.

A Form for the Masonry

The Heatilator is not an addition to the fireplace—it is the fireplace itself. Only the decorative masonry is needed to complete the installation. Complete from floor to chimney flue, it forms the firebox, throat, downdraft shelf, and smoke dome, and includes a built-in damper. The fireplace opening is in correct proportion to the flue area—an unusually large downdraft shelf is provided—and the proper flue size is regulated by the Heatilator dome. No firebrick lining is required for the firebox.

Ideal for Homes, Camps, Basement Rooms

In mild climates, the Heatilator Fireplace is usually the only heating equipment necessary during the cooler seasons. For northern homes, it supplements the regular heating system with a real saving in spring and fall heating costs. For summer camps and cabins, it is almost indispensable. The Heatilator permits enjoyment of camp life weeks longer each year—and even on winter week ends. It also solves the difficult problem of heating basement recreation rooms—eliminating unsightly heating pipes and ceiling radiators and providing a quick source of heat when needed.



Simple Moulding Replaces the Mantel in this Symmetrical Plan



The Heatilator Is Adaptable to Any Design—Traditional or Modern

No Limit to Mantel Design

Heatilator construction does not limit the architectural style of the fireplace or type of masonry that is used. The unit itself is practically hidden in the masonry. Only the intake and outlet grilles are visible and these may be made a decorative feature blending into the general design, or concealed in such a way as to leave the mantel face unchanged. Likewise the fireplace can be built flush with the wall, projecting into the room, across a corner or in any other location possible with the ordinary construction. use brick, stone, tile or other masonry as desired.

While the Heatilator provides a new degree of comfort and efficiency, it adds but comparatively little to the cost of the completed fireplace. There is a saving in materials that covers a large part of the unit cost. Less masonry is required; the mechanical designing is done and the builder is ready to start work with an actual saving in time and labor.

Heatilator Specifications

The Heatilator is made of the same high grade steel used in the manufacture of the best steel furnaces. The one-piece formed firebox and down-draft shelf, as well as all heating surfaces, are $\frac{3}{16}$-in. boiler plate to insure maximum durability. All welded seams have been eliminated at points of greatest service and the heavy construction makes extra reinforcing unnecessary. A simple, positive control for the damper eliminates mechanism or fixtures in the mantel.

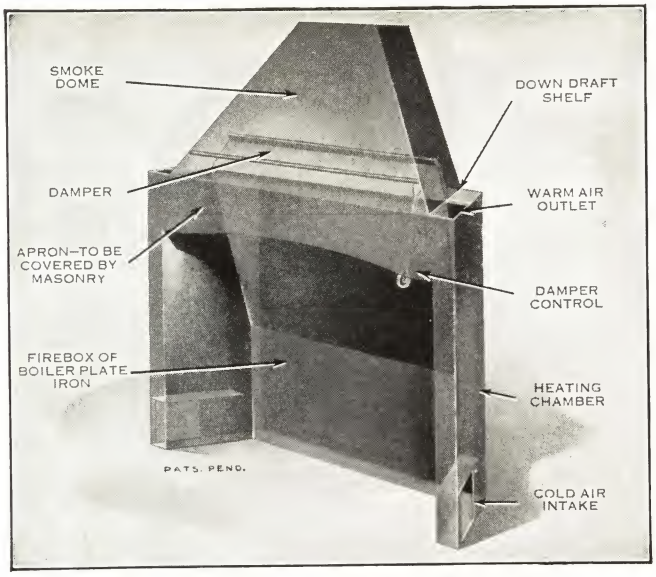
A complete blanket of rock wool insulating material is furnished with each unit for placing between the Heatilator and the masonry. This eliminates the waste of heat in the masonry or through crevices around the chimney. Its use speeds up construction and, by keeping the heat out of the masonry, helps to prevent drying checks or cracks to which all masonry is subject.

The insulating material also serves as an expansion cushion—absorbing any pressure that might be set up by the slight expansion of the metal when heated. There is less possibility of cracked masonry with the Heatilator than without it.

Wide Range of Sizes

No.	Finished width, in.	Opening †height, in.	Flue sizes, in.	Fuel capacity in.	Weight, lbs.
24H	23	24	8½x13	up to 16	166
28H	27	25	8½x13	up to 20	182
34H	33	26	8½x13	up to 27	245
39H	37	28	13 x13	up to 30	287
44H	42	31	13 x13	up to 33	404
50H	48	33	13 x18	up to 38	459
62H	60	36	13 x18	up to 50	701
74H	72	38½	18 x24	up to 62	920

†See dimension table on next page for arched opening height.



Phantom View Illustrates Heatilator Construction

Heating Capacity Ratings

Ratings are based on a 40° rise in temperature which will be easily obtained and maintained in the ordinary type of construction. No account has been taken of radiated heat. Heating capacity may be doubled by inserting electric fans in intake openings.

Heatilator size	Room capacity (natural circulation)	Room capacity (forced circulation)
24H	2250 cu. ft.	3700 cu. ft.
28H	3000 cu. ft.	6000 cu. ft.
34H	3500 cu. ft.	7000 cu. ft.
39H	4200 cu. ft.	8400 cu. ft.
44H	5000 cu. ft.	9500 cu. ft.
50H	5900 cu. ft.	10600 cu. ft.
62H	7000 cu. ft.	12600 cu. ft.
74H	9000 cu. ft.	16200 cu. ft.

Example: A 34H unit rated for 3500 cu. ft. room capacity would be equivalent to recommendation for a room 30x14x8 ft. or total room capacity of 3360 cu. ft.

Note: The above heating capacity ratings do not alone determine the size Heatilator to be used. Other factors, such as relation of fireplace to size of room, space available for mantel, etc., should also be considered.

Architectural Service

Our Engineering Department will be glad to assist at any time with special Heatilator Fireplace designs and information, without obligation of course. Or write or telephone our representative in your territory, as listed on preceding page.

Heatilator Fireplaces are sold by leading building supply and lumber dealers everywhere. If your local dealer does not carry a unit in stock, ask him to order one for inspection. Prompt shipment will be made from factory or nearby warehouse.



This Fireplace's Circulated Heat Lengthens the Camp Season



Heatilator Fireplace with Grilles Located in the Mantel Ends

Heatilator Grilles for Intake and Outlet Openings


No. 16, 5x8


No. 20, 8x8

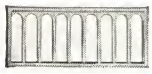

No. 21, 8x8


No. 22, 8x8
No. 40, 10x10

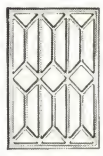

No. 23, 8x8


No. 25, 8x8

Grilles include metal frame to set in masonry to which grille face is attached.


No. 30, 12x5


No. 31, 5x12


No. 51, 8x12

Above grilles have cast iron faces except No. 25 which is stamped.

These grilles are designed for use with the Heatilator. In some fireplaces it is desirable to use the same style grille at both intakes and outlets. In others, a combination of two designs adds to the attractiveness of the installation. Specify 5x8-in. grilles for 24H unit; 8x8-in. or 5x12-in. for units 28H to 44H; 8x12-in. for 34H and larger; 10x10-in. for a 50H and larger.

The heating capacity of a Heatilator Fireplace can be doubled by forcing the circulation of air through the unit with electric fans. For homes and camps where the maximum heat is desired, grilles can be furnished with fans for installation at the cold air intakes. Grille and fan are completely assembled with electrical outlet connection. 60-cycle A.C. motors are standard equipment. Special motors on order.

Where special grille designs are desired, quotations and assistance will be gladly furnished on request.

HEATILATOR INSTALLATION DATA

Size of Fireplace and Foundation

Width of Fireplace—Add the width of the fireplace opening to the combined width of the two side posts or columns to obtain the over-all width of the fireplace and foundation.

Example: The 34H has a finished opening width of 33 in. Two side posts of 16½ in. each total 33 in. Thus the 33-in. opening + 33 in. for posts = 66 in. over-all fireplace width. This is the minimum width when space must be provided for an extra flue 8½x8½ in. An extra flue 8½x13 in. requires posts of 21 in. each, making the over-all fireplace width 75 in.

Depth of Fireplace—To the over-all depth of the Heatilator unit, add 4 in. for a single course of brick at back, 8 in. for a double course or 6 in. to 8 in. for stone. Add also 4 in. minimum facing for brick, 6 in. to 8 in. for stone. In addition, space for ½ in. of rock wool between metal and masonry at front and back must also be allowed.

Example: Depth of the 34H Heatilator from front to back is 20 in. + 4 in. for a single row back wall or brick + 4 in. brick facing + ½ in. for insulation wool at front and ½ in. at back = 29 in. minimum over-all depth of fireplace.

Location of Intake and Outlet Openings

Intakes—May be placed in the ends of the mantel, if mantel projects sufficiently; in the front of fireplace at floor level; in baseboards at sides of fireplace; or in adjoining rooms.

The most satisfactory plan is to take the cold air supply from inside the house in order to avoid drafts and unfavorable winds which might interfere with circulation. An outdoor supply is not recommended for this reason.

Outlets—May be located in the face or ends of the mantel, either above or below the mantel shelf; near the ceiling at front or sides; in the mantel shelf; or through the rear of the chimney to adjoining or upper rooms.

Where outlet grilles are placed some distance from outlets in the Heatilator, use asbestos covered metal pipes to conserve the heat and speed up circulation. In every case the warm air outlets in the masonry should be somewhat higher than the openings in the Heatilator itself. Passages for warm air should be equal in area to the Heatilator outlets. They should also be free of pockets, sharp turns or level runs.

Grilles Determine Post Size

Where 5x8 or 5x12-in. grilles are placed in the front of a brick fireplace, the minimum post size will be 12½ in.; for 8x8-in. grilles, the minimum post size will be 16½ in.; and for 10x10-in. grilles, 21 in. When stone or other materials are used, post size will vary accordingly. To locate 8x8-in. grilles in the ends of the fireplace, it is necessary to project the fireplace mantel 12½ to 13 in. into the room. To use 5x8 or 5x12-in. grilles in the ends requires 9½-in. projection into the room.

Size of Fireplace Flue

Opening at top of Heatilator dome indicates size of rectangular chimney flue required and is in correct proportion to area of fireplace opening. For chimneys less than 20 ft. in height or if unfavorable conditions exist, an oversize flue is recommended. Where round or oval flues are used, flue area should be at least as great if not greater than flue opening area in the Heatilator itself.

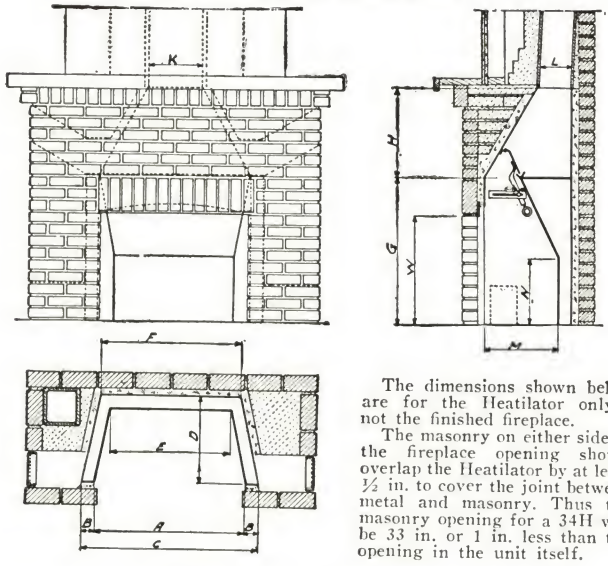
A separate tight flue with no other connections into it should be provided for each fireplace. Angles or turns of over 30° must be avoided. Where flues from heating plant or fireplace on a lower floor use the same chimney they should be so placed as to prevent interference with Heatilator air passages.

To Rebuild Fireplace Around Heatilator

The Heatilator can be installed in an existing fireplace if the construction of the mantel and chimney will permit an opening in the masonry large enough to admit the unit. At the same time, the chimney flue must be as large as required by the Heatilator to be used.

If the unit is to be installed from the front, the mantel and face of the masonry should be taken down, old firebrick and damper removed and the rough masonry cleaned up. Any obstructions should be removed and weak or uneven parts filled with cement. Allowance must be made for the rock wool. Air passages can then be provided, the unit set in place and the fireplace masonry rebuilt.

Heatilator Unit Dimensions



The dimensions shown below are for the Heatilator only—not the finished fireplace.

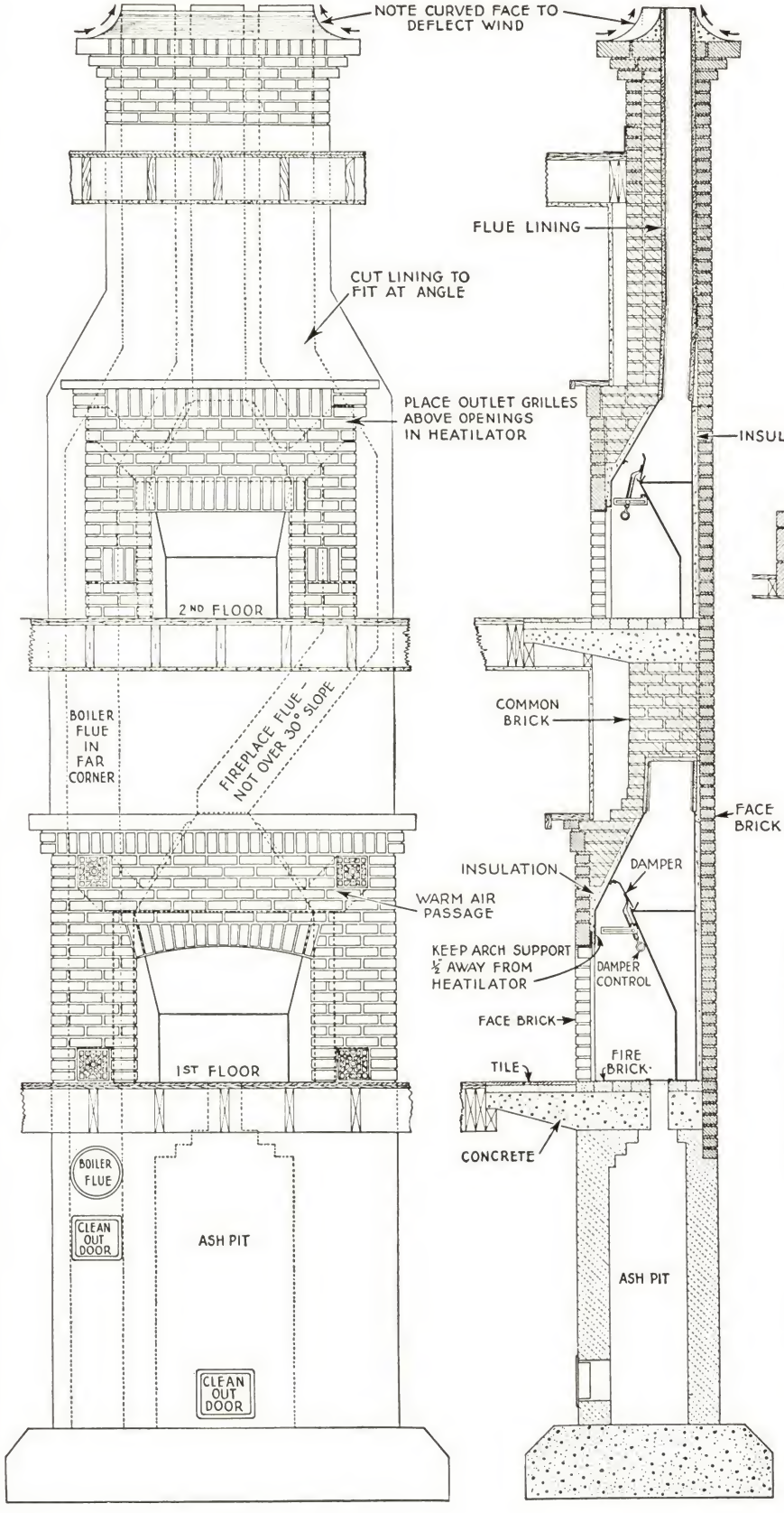
The masonry on either side of the fireplace opening should overlap the Heatilator by at least ½ in. to cover the joint between metal and masonry. Thus the masonry opening for a 34H will be 33 in. or 1 in. less than the opening in the unit itself.

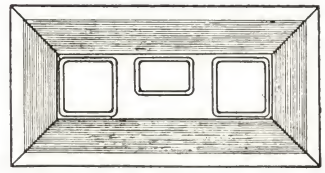
DIMENSIONS IN INCHES

Model	A	B	C	D	E	F	G	H	K	L	M	N	W
24H	24	3	30	18	16	21	31	16	12	8	15	13	24
28H	28	3	34	18	20	25	32	16	12	8	15	14	25
34H	34½	3	40½	20	27	32	33½	20	12	8	17	15	26
39H	39	4	47	21	32	38	36	20	12	12	17	17½	28
44H	44	5	54	25	32	40	42	24	12	12	20	17	31
50H	50	6	62	26	38	46	44	26	16	12	20	19	33
62H	62	8	78	28	50	64	48	28	16	12	22	22	36
74H	74	10	94	30	62	79	52½	28	24	16	24	22	38½

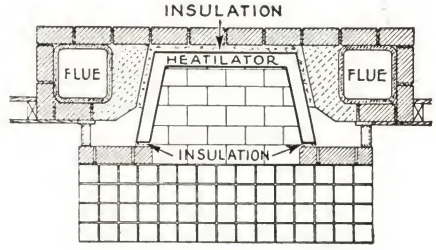
To obtain over-all height for arched opening, add the following to dimensions "W": 24H—⅞"; 28H—1¼"; 34H—1¼"; 39H—1½"; 44H—2⅛"; 50H—2⅝"; 62H—3⅛"; 74H—4⅞". Arched opening is slightly lower at sides than dimensions "W" above.

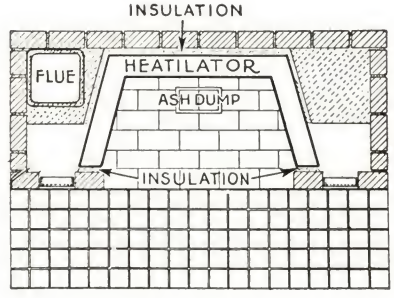
HEATILATOR FIREPLACE INSTALLATION DETAILS





DETAIL OF CHIMNEY TOP





Additional Heatilator information or assistance on special installations will be furnished upon request.

INDIANA FOUNDRY COMPANY

Manufacturers of Fireplace Dampers and Cast Iron Builders' Specialties

INDIANA, PA.

"SUTTON" DOME DAMPERS



With Underslung Short Ratchet (Poker) Control

In cases where face of mantel is tile or marble, or where owner does not wish to have the handle rod through front of the fireplace, it is advisable to install a "Sutton" Damper with ratchet control. Shutter is controlled by inserting a poker through opening in end of the ratchet lever, either pulling forward or pushing backward to open or close the shutter. Control is positive. Lever does not at any time extend beyond front of the fireplace



With Underslung Long Ratchet (Poker) Control

If a ratchet control type is preferred, we recommend the "Sutton" Damper with long ratchet control. Damper can then be set higher in fireplace, which is the best fireplace construction. On this type of damper, shutter is opened or closed by moving lever forward or back, by inserting a poker through opening in end of lever. Lever does not extend beyond front of the fireplace. Control of draft is positive and accurate

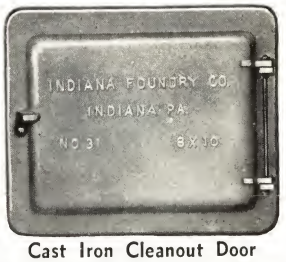
The "Sutton" Dome Damper is the type of damper you would choose if you were building a home of your own. It is truly a quality product. It is correct in design; the castings are full weight, clean and smooth; the domes are full height. The flanges on the front and sides are of ample width, and of sufficient strength to carry one course of brick. The high dome provides a smooth, properly formed metal throat for the fireplace. Being made of cast iron throughout, there are no sheet steel parts to rust through in a short length of time. Accurate control of the draft is insured by the positive action of the shutter, which will remain in the exact position in which it is placed.

Made with worm gear, short ratchet (poker control), and long ratchet (poker control) to meet any desired condition of fireplace construction.



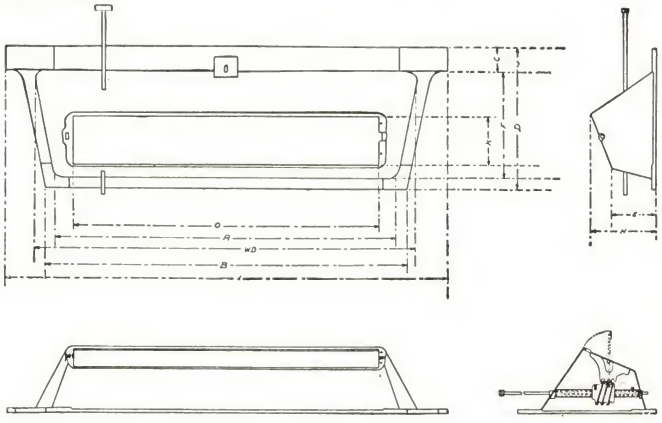
With Worm Gear Control

With this type of control, shutter is operated by a highly polished cast brass handle, which extends through front of the mantel, turning either to right or left to close or open the shutter. Handle is plainly marked which way to turn. If preferred, entire control can be located in center of damper instead of in right-hand side, as shown. Worm and gear never bind, as both are of open construction, with ample clearance allowed for expansion and contraction; they are self-cleaning, and cannot become fouled with soot



Cast Iron Cleanout Door

No.	Exact opening, in.	Weight, lb.
30	5x 7	4¼
300	8x 8	7
31	8x10	7½
32	10x12	11
325	12x12	13
33	12x16	15½
34	14x20	28½
35	18x24	47
36	24x24	57½





Tilting Type Ash Dump

Will close automatically after the ashes are dumped

No.	Frame, in.	Opening, in.	Weight, lb.
1	7 x 8¾	4⅝x 6⅜	2½
2	7 x10	5 x 8	3½
3	7¼x11¾	5½x10	5¼
5	9 x12	6¾x 9⅝	5⅜



Automatic Ash Dump No. 4

A sufficient weight of ashes, falling from above, causes tilting doors to open automatically, dropping ashes through to ash pit.

Frame, 6½x8½ in., opening, 5⅛x7¼ in., weight, 5 lb.

SPECIFICATIONS OF "SUTTON" DOME DAMPERS

No.	L, width of frame at front	*WD, width of dome at front	D, depth of frame	F, depth of dome	H, height of dome at front	B	R	O	C	K	E	Proper flue lining, exterior dimensions	Equivalent round flue, inside dimensions
124-W	30″	24″	13⅛″	10″	6¼″	21⅞″	20″	16⅞″	2¼″	4¾″	4¼″	8½″x8½″	8″
128-W	34″	28″	13⅛″	10″	6¼″	25¾″	24″	20¾″	2¼″	4¾″	4¼″	8½″x13″	10″
130-W	36″	30″	13⅛″	10″	6¼″	27¾″	26″	22¾″	2¼″	4¾″	4¼″	8½″x13″	10″
132-W	38″	32″	13⅛″	10″	6¼″	29¾″	28″	24⅝″	2¼″	4¾″	4¼″	8½″x13″	10″
134-W	40″	34″	13⅛″	10″	6¼″	31¾″	30″	26⅝″	2¼″	4¾″	4¼″	8½″x13″	10″
136-W	42″	36″	13⅛″	10″	6¼″	33¾″	32″	28⅝″	2¼″	4¾″	4¼″	13″x13″	12″
139-W	45″	39″	13⅛″	10″	6¼″	36¾″	35″	31½″	2¼″	4¾″	4¼″	13″x13″	12″
142-W	48″	42″	13⅛″	10″	6¼″	39½″	38″	34½″	2¼″	4¾″	4¼″	13″x13″	12″
146-W	52″	46″	13⅛″	10″	6¼″	43½″	41½″	38⅛″	2¼″	4¾″	4¼″	13″x13″	12″
148-W	54″	48″	13⅛″	10″	6¼″	45¼″	43⅜″	40¼″	2¼″	4¾″	4¼″	13″x18″	15″
154-W	60″	54″	13⅛″	10″	6¼″	52⅜″	50″	47⅛″	2¼″	4¾″	4¼″	13″x18″	15″
160-W	66″	60″	13⅛″	10″	6¼″	58½″	56″	53⅛″	2¼″	4¾″	4¼″	18″x18″	18″
166-W	72″	66″	13⅛″	10″	6¼″	64½″	62″	59″	2¼″	4¾″	4¼″	18″x18″	18″
172-W	78″	72″	13⅛″	10″	6¼″	70½″	68″	65″	2¼″	4¾″	4¼″	18″x18″	18″

*When selecting damper of proper size for use in a fireplace, refer to column "WD," and select damper which has the WD dimension nearest to width of fireplace opening. For instance, if width of fireplace opening is 36 in., select a No. 136 W damper. However, if width of fireplace opening falls between any two WD dimensions shown above, select damper with WD dimension *next larger* than width of fireplace opening—for instance, for fireplace opening which measures 40 in. wide, select a No. 142 W damper.

ESTABLISHED 1827

WM. H. JACKSON COMPANY

Mantels and Fireplace Equipment

32 East 57th Street
NEW YORK, N. Y.

"Everything for the Fireplace"

Company

For more than 100 years—since 1827—Wm. H. Jackson Company has specialized in fireplace design, manufacture, installation and adornment. We offer a choice of products in this field, unsurpassed both as to quality and variety. These pages but hint at the range and scope of the Wm. H. Jackson Company's services. All items shown are regularly carried in stock.

Services

Wm. H. Jackson Company is ready at all times to co-operate with architects. Photographs of all items in our showrooms are available on request. We make up special mantels to the architect's design. We always have on hand a distinguished collection of genuine antiques. Whatever your fireplace problem, let us help you solve it.

Mantels

Our stock of marble, wood and stone mantels includes designs representative of the best work done in all the history of fireplace treatment. From Early Italian Renaissance, the continuity is complete through Louis XV, Regency, Louis XVI, Directoire, Empire down to modern design, and also includes the English Georgian, Adam and Regency. Our Antique items are carefully selected by experts, and our reproducts are wholly authentic. Only the choicest marbles are used. The illustrations at right center and bottom of the page following indicate the range and authenticity of our products.

Facings and Hearths—Can be furnished in selected stock marble, soapstone or slate cut to suit any size and condition. Also Antique Dutch Tile.

Linings—*Soapstone, brickettes* and plain or ornamental *iron* can be furnished to fit the individual opening.

Cretan Stone Mantels

Cretan stone is a hard, close-textured, durable stone, developed by and exclusive with Wm. H. Jackson Company. The perfect medium for the reproduction of fine antique stone mantels, it can be carved, tooled and chiseled. Cretan Stone contains *no* portland cement or plaster. Its moderate price is far below that of quarried limestone or caen stone. Our designs are authentic to the minutest detail, in most cases reproductions of originals in our collection. The Cretan Stone mantels shown on the following page are but two of more than 50 designs we offer.

Franklin Stoves

Wm. H. Jackson Company carries a complete line of Franklin Stoves. Consult us on any special problem where any fireplace unit is desired.

Fire Screens

Regular screens in various sizes and styles are stock items. Fire Veil Curtain Screens made to fit each fireplace.

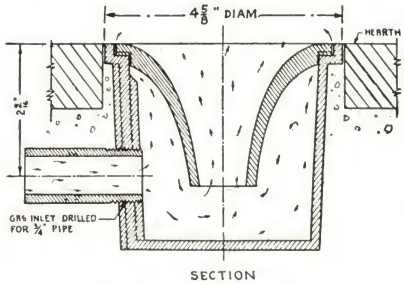
We have developed and continually improved a patented rolling screen for more than a decade. This screen is made of flexible transparent brass wire mesh which allows clear vision of the fire. It is operated by the manipulation of a noiseless chain. The screen rolls into an inconspicuous metal container, compact as a window shade. Each Jackson Rolling Screen is custom-built to fit the individual fireplace and can be concealed if desired.



Franklin Stove No. 964



Curtain Screen



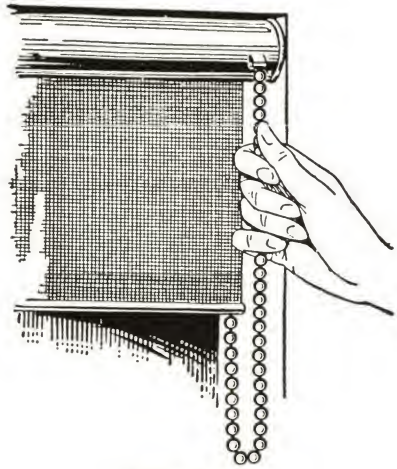
Jackson Log Lighter

Shown above is a sectional scale drawing of a fireplace accessory that is popular wherever gas is available. Generally flush-set in rear of the hearth, this small cast iron unit eliminates bother of kindling fire.

Other Products

Fireplace Fixtures — Andirons, coal hods, electric fires, fenders, fire tools, grates, hob grates, iron plaques and linings, wood holders and cove frames.

Garden Furnishings — In Marble and Stone: Benches, urns, well heads, fountains, pergolas, sundials, columns. Also Wrought Iron, Lead and Bronze pieces. We specialize in indoor and outdoor swimming pools of tile.



Rolling Screen



SIZES
Shelf—61½ in.
Height—51½ in.
Mantel Opening—46½x40 in. high.

Antique Wood Mantel, No. S.O. 46



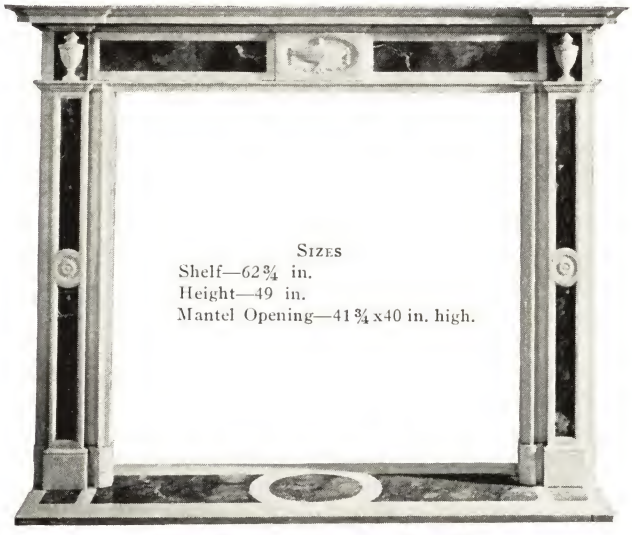
SIZES
Shelf—49 in.
Height—41 in.
Mantel Opening—37⅜x35¾ in. high.

Louis XV Cretan Stone Mantel, No. 257



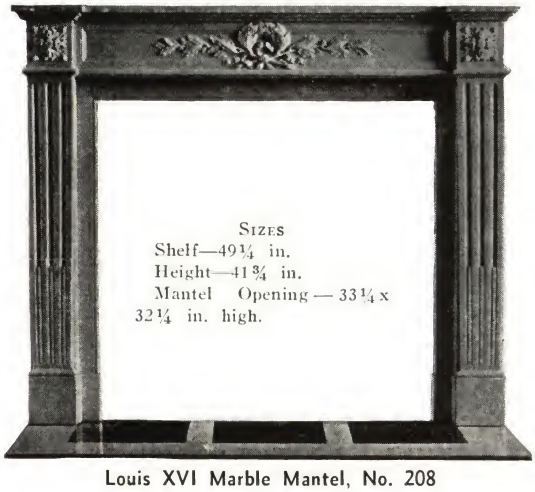
SIZES
Width—50¾ in.
Height—37⅞ in.
Mantel Opening—42x34 in. high.

Cretan Stone Mantel, No. 232



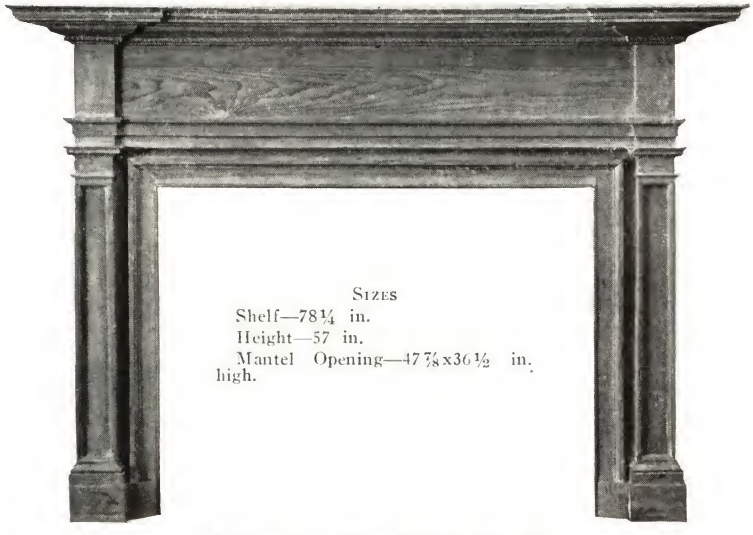
SIZES
Shelf—62¾ in.
Height—49 in.
Mantel Opening—41¾x40 in. high.

Adam Marble Mantel, No. 201 D.S.



SIZES
Shelf—49¼ in.
Height—41¾ in.
Mantel Opening — 33¼ x 32¼ in. high.

Louis XVI Marble Mantel, No. 208



SIZES
Shelf—78¼ in.
Height—57 in.
Mantel Opening—47⅞x36½ in. high.

Antique Pine Wood Mantel, No. 127

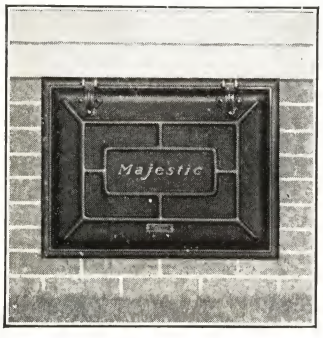
THE MAJESTIC COMPANY

HUNTINGTON, IND.

Manufacturers of Majestic Foundation Coal Chutes, Grade Line and Store Chutes, Circulator Fireplaces, Fireplace Dome Dampers, Fireplace Smoke Domes and Smoke Chambers, Kitchen Ventilating Fans, Garage Doors, Garage Door Hardware, Radiator Cabinet Covers, Access Doors, Ash Pit Doors, Ash Dumps, Bell Traps, Cistern Rings and Covers, Flue Thimbles, Foundation Grates, Steel Basement Sash and miscellaneous metal building specialties and Heating Equipment.

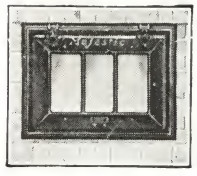
Through almost a half century of rendering high quality service at a reasonable cost, Majestic Products have won the preference of discriminating architects, and are distributed through all leading hardware jobbers, hardware dealers and lumber and building supply dealers.

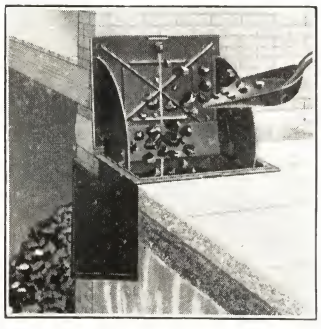
For Majestic Underground and Built-In Garbage Receivers, Built-In Mail Boxes, Portable Incinerators, Milk and Package Receivers see File Index.



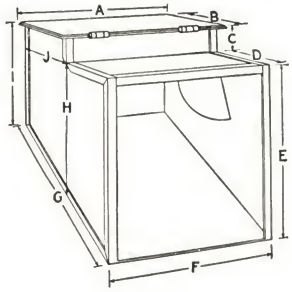
Majestic Coal Chute Nos. M101 and M203

Nos. M10 and M20

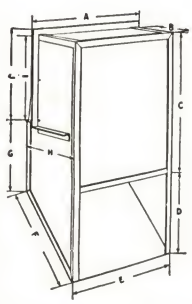




Majestic Grade Line Chutes



Dimension Diagram of Majestic Grade Line Coal Chutes



Dimension Diagram of Majestic Store Chute

Majestic Coal Chutes

Majestic Coal Chutes give needed protection to the building when coal is being delivered. Their sightliness, sturdy construction, permanency and convenience enhance the value of any building, and save their initial cost many times. They are made in solid steel and glass panel door styles, with straight or sloping bodies and in two sizes. A Majestic for every need. Consult tables.

Construction—Doors are pressed from heavy steel and treated to resist rust. Frames are made of malleable iron, except for No. 550 frame, which is rolled steel electric welded and the No. 50 which is cast semi steel. (No. 550 and No. 50 are the same dimensions as No. M500 but built for low cost housing market.) Bodies are formed of sheet steel reinforced at points of strain and electric welded.

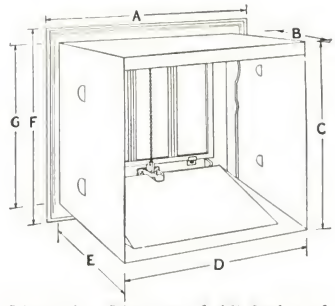
Glass panel styles have ¼-in. plate glass set in ½-in. angle iron frame, and packed with rubber strips instead of putty. All chutes receive thorough painting with black asphaltum.

SOLID DOORS

No.	Hopper	Rough wall opening		
		Wide, in.	High, in.	Deep, in.
M101B	yes	23	18	12
M101D	no	23	18	12
M203B	yes	32	23	17
M203D	no	32	23	17
M500	no	23	17	8
M520	no	32	22	12

PANEL DOORS

No.	Hopper	Rough wall opening		
		Wide, in.	High, in.	Deep, in.
M10A	yes	23	18	12
M10C	no	23	18	12
M20A	yes	32	23	17
M20C	no	32	23	17
M600	no	23	17	8
M620	no	32	22	12



Dimension Diagram of All Styles of Majestic Coal Windows

DIMENSIONS IN INCHES

No.	A	B	C	D	E	F	G
M101	24⅜	12	18¼	21¾	12½	18⅛	15½
M203	33	17	24¾	29½	17½	23½	20½
M500	24⅜	8	15½	21¾	8	18⅛	15½
M520	33	12	20½	29½	12	23½	20½
M 10	24⅜	12	18¼	21¾	12½	18⅛	15½
M 20	33	17	24¾	29½	17½	23½	20½
M600	24⅜	8	15½	21¾	8	18⅛	15½
M620	33	12	20½	29½	12	23½	20½

Majestic Grade Line Chutes

Majestic Grade Line Chute is designed for buildings having little or no foundation above the ground. A door protects building when open and hopper and shield keep coal from scattering. Locks automatically when closed.

GRADE LINE CHUTES

With Malleable Iron Doors and Frames

No.	Door opening, in.	Rough wall opening, in.	
		Wide	High
M16	23¼ x 18¼	25	25
M18	29 x 24	31	31

With Pressed Steel Door and Cast Semi-steel Frame

M14	20½ x 14½	23	23

Construction—Frame, door and hinges are of certified malleable iron, with rust-proofed pins; body of heavy steel, reinforced with angle iron. Door fits snugly over top of frame when closed. Waterproofing ridge around the inside edge of frame, gives an absolutely watertight job.

No. M-14—This is an inexpensive model, designed especially for small residences, where there is little chance of heavy trucking or where coal chute is desired in the attached garage. The door, which provides an ample opening, is heavy pressed steel, frame is of durable cast semi-steel and body of 16-gauge sheet steel reinforced with angle iron.

DIMENSIONS IN INCHES

No.	A	B	C	D	E	F	G	H	I	J
M16	26	21	6	15½	24½	24¼	46½	19	18¾	19¼
M18	31¾	27	6	17	31	31	45	24	21½	25¼
M14	24	18	6	15½	22½	22½	34¼	16	15¾	16

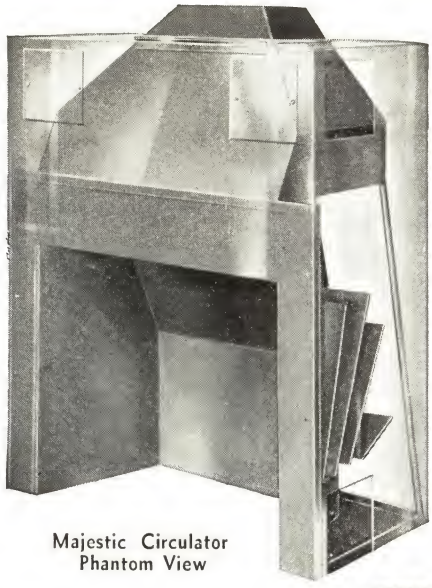
Majestic Store Chutes

The Majestic Store Coal Chute is designed particularly for store and office buildings, where first floor is on a line with sidewalk or an alley. Eliminates dangerous sidewalk coalhole and troublesome areaway.

Construction—Same as Grade Line Chute, except pressed steel door. Can be supplied on special order with duplex bodies so that coal can be discharged either under the sidewalk or in the basement.

DIMENSIONS IN INCHES

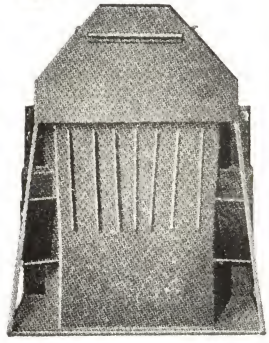
No.	A	B	C	D	E	F	G	H	I	J
M12	25	11½	26⅜	15¼	23	19½	13	15½	17	18
M15	33½	11½	30	16	30⅞	19½	13	15½	21¼	22½



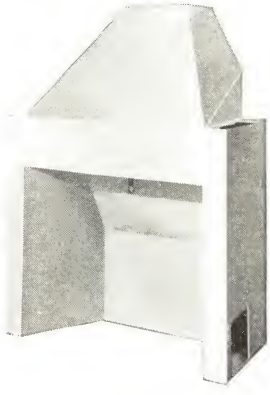
Majestic Circulator
Phantom View

Continuous welded steel "Radiant Blades" insure heat conductivity and increase heating surface area as well as serve as ducts in positively directing cool air inflow at varying rate over the different heat-generating surfaces.

Paneled openings provide for air intake and outlets at either front, side or top. Note also how heat of smoke chamber is utilized.



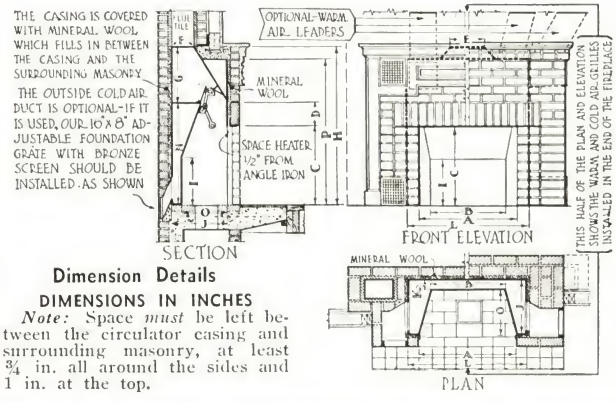
Majestic Circulator. Rear View with Casing Removed Showing "Radiant Blade" Construction



(Left)

The New Majestic "Special" Circulator Fireplace

Design and operation are similar to De Luxe Model, but without the enclosed smoke dome and "Radiant Blades."



Dimension Details

DIMENSIONS IN INCHES

Note: Space *must* be left between the circulator casing and surrounding masonry, at least ¾ in. all around the sides and 1 in. at the top.

Size	A	B	C	D	E	F	G	H	I	J	K	L	N	O	P	Size of circulator	No. and size of warm and cold air grilles
28	28	20	26	8	12	8	16	50	15	19	4	36	34	15	46	28 and S 280	4— 8x 8
34	34	25	28	8	12	8	19	55	16	20	4	42	36	16	51	34 and S 340	4— 8x 8
40	40	31	30	8	12	12	22	60	17	21	4	48	38	17	56	40 and S 400	4— 8x10
46	46	36	32	8	12	12	25	65	18	22	4	54	40	18	61	46 and S 460	4—10x10
52	52	42	34	8	16	12	27	69	19	23	4	60	42	19	65	52 and S 520	4—10x12

Majestic Circulator Fireplaces

Designed to Heat Like a Furnace

In a new adaptation of "convectional heating" as used in the modern warm air furnace, Majestic Engineers have provided the Majestic Circulator Fireplace with approximately 91% more heat generating surface by means of "Radiant Blades" solidly welded to the firebox.

Features—Adapted to any mantel design. Provides absolute freedom from smoke. Up to 400% more heat from any fuel than old type fireplace. Circulates warm air in every part of the room. May be piped to other rooms and provides sufficient heat for whole house where climate is mild. Cold air taken from room or outside.

All-steel construction, electric welded. Easily installed by any experienced mason in new or old fireplaces.

SPECIFICATIONS OF "MASTER" CIRCULATOR

Size	Opening, in.		Over-all dimensions, in.			Flue size, in.	Room capacity average construction	B.t.u. rating
	Wide	High	Wide	High	Deep			
28	28	26	36	50	19	8½x13	4060 cu. ft.	25,700
34	34	28	42	55	20	8½x13	5040 cu. ft.	31,000
40	40	30	48	60	21	13 x13	6025 cu. ft.	36,600
46	46	32	54	65	22	13 x13	7000 cu. ft.	42,100
52	52	34	60	69	23	13 x18	7990 cu. ft.	47,700

Majestic "Special" Circulator—A low cost, completely prefabricated fireplace that brings this advanced principle of construction within the appropriation for a modest home. Fire chamber is made of $\frac{3}{16}$-in. steel plate to withstand intense heat. Damper is built in. Grille openings can be placed anywhere—even in other rooms.

SPECIFICATIONS OF "SPECIAL" CIRCULATOR

No.	Finished opening, in.		Flue connection, in.	Room capacity cu. ft.
	Wide	High		
S 280	28	26	8½x13	3200
S 340	34	28	8½x13	3800
S 400	40	30	13 x13	4500
S 460	46	32	13 x13	5200
S 520	52	34	13 x18	6000

Grilles—Grilles for Majestic Circulators are cast semi-steel. Finished in antique bronze lacquer. All have steel boxes to be built in masonry. Designed to harmonize with any style of mantel. All Circulators may be equipped with crane.

How to Figure Size of Circulator Needed

First, measure outside doors and windows of the room in which Circulator is to be built (include frames). Then measure surface of outside walls and subtract from this area of windows and doors, leaving net wall. Finally, measure the area ceiling, provided there are unheated rooms, or no rooms above, and determine cubical contents by multiplying area of ceiling by height of ceiling. Next make the following computations:

(1) Multiply square feet of glass and door surface by 44.
(2) Multiply square feet of net wall surface by factor in table.
(3) Multiply square feet of ceiling area by factor in table.
(4) Multiply cubical contents of room by 2.

Add together results as found above and select Circulator that has a B.t.u. rating closest to the total. For checking and quick calculation the room capacity rating in specifications may be used.

Table of Construction

Wall	Factors
(1) Frame construction, siding, sheathing, lath and plaster	10
(2) Frame construction as above, insulated	3
(3) Frame, brick, veneer, lath and plaster	11
(4) 8-in. brick wall, plastered inside	18
(5) 12-in. brick wall, plastered inside	14
Ceiling	**Factors**
(6) Ceiling, lath and plastered, no floor above	13
(7) Ceiling, lath and plastered, tight floor above	11
(8) Roof, rafters exposed sheathing, shingles	23

These factors based on 40° temperature rise.

Note to Architects

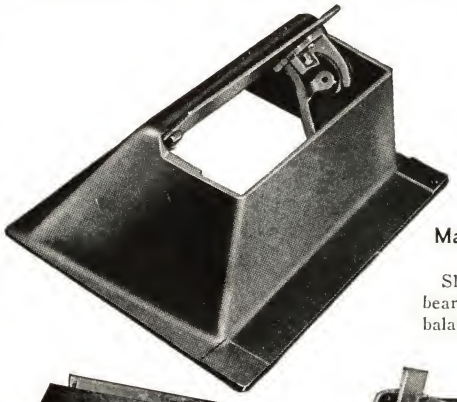
The ratings of Majestic Circulator Fireplaces shown in tables are based on accurately controlled tests under actual heating conditions. Due to the wide variation in types of house construction, the ratings are necessarily broad, but on the safe side.

The room where tests were conducted had cubics of 3476. Heat loss was 18,750 B.t.u. at 0° F. outside and 70° inside. 80 c.f.m. of additional infiltration was provided and measured through controlled openings. Wood with B.t.u. content of 9000 was used as fuel, carefully weighed. An average combustion rate of 12 lbs. was maintained during the test.

Velocities at warm air outlets reached 300 f.p.m. maximum at a temperature of 290° F. Average velocities were calculated to be 210 f.p.m. at 190° F. During the test room temperature was raised 30° F. per hour. 9420 cu. ft. of air was discharged at the grilles giving an air change of 2.7.

Formula used:

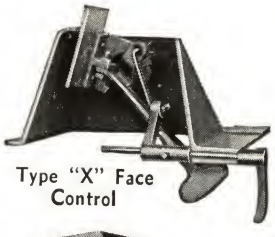
$$\text{c.f.m.} = \frac{\text{B.t.u.} \times 55}{\text{tr} \times 60} \qquad \text{B.t.u.} = \frac{\text{tr} \times \text{c.f.m.} \times 60}{55} \qquad \text{tr} = \frac{\text{B.t.u.} \times 55}{\text{c.f.m.} \times 60}$$



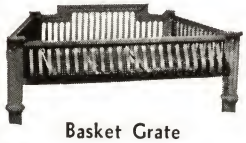
Majestic Fireplace Damper
Showing valve, large bearings and counterbalance arm



Chain Control Damper Series "C"



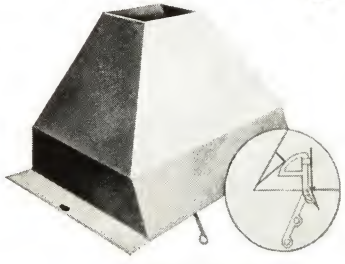
Type "X" Face Control



Basket Grate



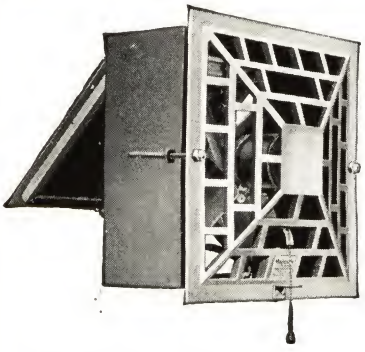
Chimney Ornament



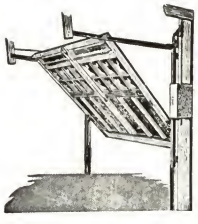
Majestic Smoke Dome
Combines the advantages of a properly proportioned smoke chamber and an accurately designed damper in a rugged, prefabricated steel unit. Send for complete details

SPECIFICATIONS

Dome No.	For opening, width, in.	Flue required, in.
28	26 to 30	8½x13
34	32 to 36	8½x13
40	38 to 42	13 x13
46	44 to 48	13 x13
52	50 to 54	13 x18



Majestic Kitchen Ventilating Fan
Outside insulated door is automatically opened when the fan is operating. Door is tightly closed and motor stopped by pulling chain down and inserting in the catch on inside grille.
Adjustable bodies. No. 31 for 6 to 10-in. wall; No. 32 for 10 to 14-in. wall. Rough wall opening—12½ in. x 12½ in. Capacity 600 c.f.m.



(Above)
Majestic Garage Door Hardware



(Left)
Majestic Roll-N-Fold Garage Door

Majestic Fireplace Dampers

The Quality Line—The Majestic Damper facilitates construction, operates easily and provides perfect draft control. The lintel is integral with damper frame, establishing the correct damper placement and height of fireplace throat.
Variable adjustment. Valve is held in place by a simple friction bearing. Operating lever is out of sight on standard models but is easily reached with poker. Face operation by means of a lever is available in "Type X" at no extra cost.
Valve is hinged at back, which provides greatest effective throat area, aiding the smoke shelf in turning the down-draft back up the chimney.
Drawings and instructions for insuring construction of perfect fireplace furnished with each damper.

SIZES AND DIMENSIONS OF MAJESTIC FIREPLACE DAMPERS

Damper No.	24-26	28-30	32-34	36-38	40-42	44-46	48-50	52-54	58-60
Length of lintel, in.	28¾	32¾	36¾	40¾	44¾	48¾	52¾	56¾	62¾
Length at back, in.	25¾	29¾	33¾	37¾	41¾	45¾	49¾	53¾	59¾
Length of valve, in.	20	24	28	32	36	40	44	48	54
Finished opening:									
Width, in.	26	28 30 32	34 36	38 40	42 44	46 48	50 52	54	58 60
Height, in.	28	29 30 30	30 31	31 31	31 32	32 32	32 32	32	32 32
Firebox depth, in.	16	16 17 17	18 18	19 19	20 20	21 21	22 22	23	23 24
Flue size, in.	8½x8½	8½x13			13x13		13x18		

The Special Line—Series S—For low-cost needs. Durable cast semi-steel body. Furnished with or without integral lintel. Tight fitting heavy steel plate valve. Poker control standard. This damper also furnished without lintel for existing fireplaces. Face or chain control furnished at extra cost.

SIZES AND DIMENSIONS OF MAJESTIC "SPECIAL" FIREPLACE DAMPER

Length of lintel, in.	½ in. less than schedule given above
Length at back, in.	¼ in. less than schedule given above
Length of valve, in.	1½ in. more than schedule given above

Majestic Chimney Ornament

This artistic ornament is made of cast semi-steel finished with clear rust resisting finish. Length, 36 in.

Majestic Basket Grate

The Majestic Basket Grate is a well-designed grate, especially made for Circulator Fireplaces. May, of course, be used in any fireplace.

No.	Width, in.		
	Front	Back	Depth
128	26	16	15
134	32	22	15
140	38	28	15
146	44	34	15
152	48	40	15

Majestic Kitchen Ventilating Fan

Provides an efficient means of pulling odors and fumes and excessive heat from the kitchen or other small rooms. Square telescoping body is adjustable to wall thickness and easy to install. No radio interference.
Construction—Four blade 10-in. fan. Especially designed G.E. Motor, sealed and can be washed beneath the faucet. Outside door is insulated and closes weather-tight. Square telescoping body is of steel. Grille and motor assembly are attached by two thumb nuts, and can be removed easily and quickly. Grille is porcelain enameled in white, chromium plated, or can be furnished with baked on ground coat. Pull chain turns motor on or off and works outside door. Wired direct or to plug.

SPECIFICATIONS

No.	For wall thickness, in.	Capacity, c.f.m.	Size of hole required, in.	Current
31	6 to 10	600	12½x12½	110 V. 60 C.
32	10 to 14			

Bodies for extra wall thickness made on specification.

Majestic Garage Doors

Majestic Roll N-Fold Garage Door provides modern upward-action—out-of-the-way, clears ice and snow—saves space. Operates easily. Opens automatically either by manual control or inexpensive electric release. Control switches may be placed on drive or in house. Smooth trouble-free counterbalance insures easy closure. Built throughout for long, carefree service and in sizes for residential and small commercial applications.
Full details upon request.

Majestic Garage Door Hardware

Majestic Garage Door Hardware converts old or new garage doors into the modern, convenient upward-action at a moderate price. Operated by counterbalance weights—boxes furnished may be filled with sand or sash weights and located any place in the garage.
Set will handle any door up to and including 8 ft. wide, 8 ft. high, and includes everything but stops.

Detailed bulletins on all items described sent upon request.

W. & J. SLOANE

MANTEL DIVISION

575 Fifth Avenue, NEW YORK, N. Y.

For Sloane Partitions and Redy Ref Book Racks, see File Index



Reproduction Adam Wood Mantel

The Mantel Division of W. & J. SLOANE produces a complete line for the fireplace. Mantels in marble, stone and wood . . . antiques and reproductions are available.

Also an unusual collection of portable mantels, andirons, fire sets, screens, fenders, gates, coal hods, electric coal and log fires. All of the finest craftsmanship.

Wood mantels from $35.00
Marble mantels from $95.00



Reproduction Georgian Wood Mantel Stock



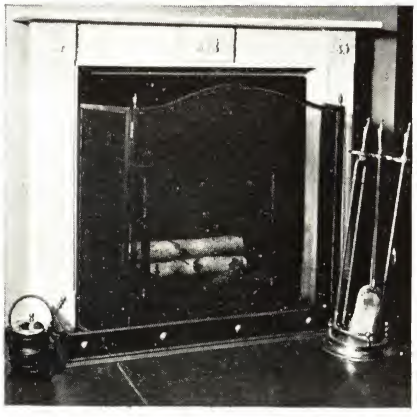
Antique Georgian Wood Mantel

CO-OPERATIVE SERVICE

We create new designs and manufacture mantels from drawings and specifications —of any size and in any material. Descriptive literature and estimates furnished upon request.



Antique Stone Louis XV Mantel



Antique White Marble Mantel English Regency



Antique Georgian Marble Mantel

Photographs by Dorsay Studio



Louis XVI Mantel Fleur de Peche Marble

SUPERIOR FIREPLACE CO.

1046 South Olive Street, LOS ANGELES, CALIF.
DISTRIBUTORS IN ALL PRINCIPAL CITIES
Consult Local Telephone Directory; if not Given, Write or Wire for Nearest Distributor's Address



THE SUPERIOR FIREPLACE HEAT CIRCULATOR
FOR COAL, WOOD OR GAS
More Heat — Less Fuel — Smokeless Operation

Description

The Superior Heat Circulator is a double-walled metal unit, built to proper angles and dimensions, around which you build your own designed fireplace, knowing *before* you build that it will heat your home without smoking. 10,000 to 15,000 cu. ft. of air per hour is drawn from the floor into the lower sides of the heavy metal heating chamber. Here the air is heated and discharged into the home through decorative grilles located in the front or side of the fireplace, either above or below the mantelpiece. Warm air from the Heat Circulator flows to all corners of the room and into adjoining rooms, returning along the floor. In this manner an even temperature is maintained.

Left: **Air Intake and Outlet Grilles in Room Behind Fireplace**





Right: **Air Intake and Outlet Grilles in Side of Fireplace**

Advantages To Your Clients

Efficient—The Heat Circulator conserves and sends into the room a great amount of heat usually lost up the chimney in ordinary fireplaces. It draws cold air from floor level into lower part of the heating chamber where it is heated and returned to room—creating a circulation of warm air and comfortably heating *all* room corners.

Smokeless Operation — A smoky fireplace is usually the result of faulty construction in the throat and firebox. The Superior Heat Circulator includes a properly designed firebox, throat form and a correctly located damper, which forms a natural down draught shelf of masonry; there is no metal shelf to rust out.

Economy—It costs less to operate a Superior Fireplace than a basement furnace. In many localities it provides sufficient year-round heat. In colder climates it is a valuable auxiliary to the central heating plant, particularly in spring and fall when it often makes it unnecessary to operate the basement furnace.

Heats Rooms at the Back or Sides — Where the fireplace is located on an inner partition wall, heat outlet and cold air intake grilles may be placed in the room at the back or sides of the fireplace, comfortably heating four or five rooms. The warm air may also be piped to rooms above.

Appearance — The unit does not alter the appearance or detract from the beauty of design, nor does it interfere with the view of the open fire. The latticed grilles through which the warm air passes, may be placed in the front or at the sides, either above or below the mantel and finished to harmonize with surrounding decorations.

Low Cost—The Superior Heat Circulator being a complete form around which to build, replaces firebox, throat form and damper. It improves fireplace performance. The fuel saved in one season will pay for its small extra cost.

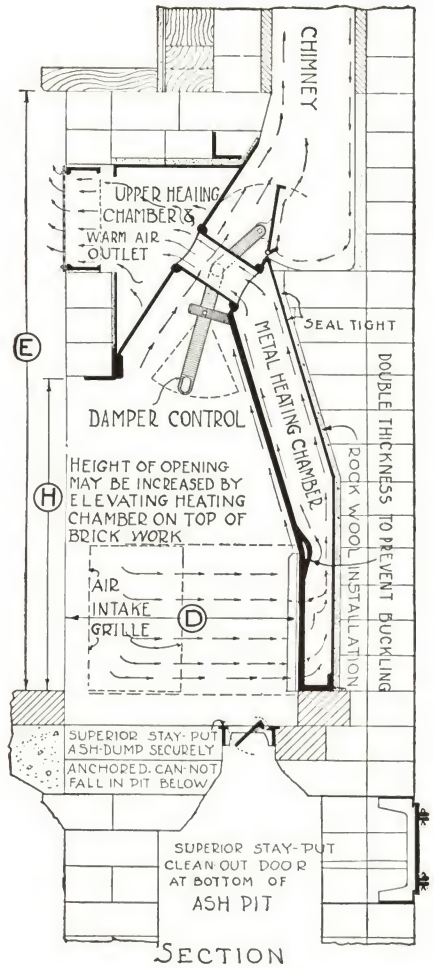
Construction

The Superior Heat Circulator is rigidly constructed. Heavy rust-resisting plate iron $\frac{3}{16}$ in. thick is used for the inner back lining of the firebox. All seams are electric arc welded. Double-reinforced thickness the full width of the back, strengthens the metal where the bend occurs, and equalizes the expansion. The lower portion of the back wall is also reinforced with a series of vertical T-shaped angle irons, providing an air space between the fire and the back wall. This prevents excessive heat and protects metal from warping. The large volume of air which is drawn through the heating chamber and evenly distributed over the back and side walls of the heating chamber prevents the metal from getting red hot and scaling. This insures long life to the unit.



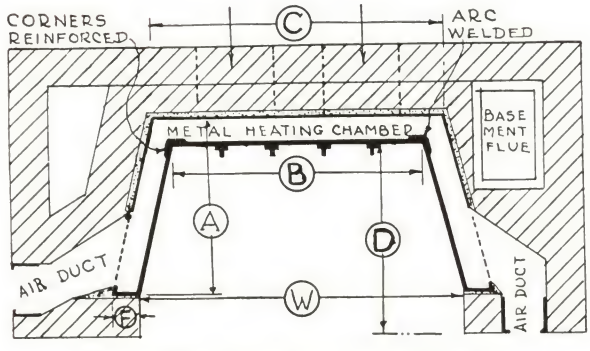


Typical Fireplace Construction with the Superior Fireplace Heat Circulator



SECTION

Model "A" Unit



Use either side or front intake, preferably the side

Model "A" Unit

MODEL "A" SUPERIOR HEAT CIRCULATOR—NUMBERS AND KEY TO ABOVE PLAN AND SECTION GIVES DIMENSION IN INCHES

No.	A	B	C	D	E	F	H	W	Flue Size
24	16½	17	22	18	46	3½	24	24	9x9
29	19½	21	26	21	51	3¼	27	29	9x13
34	19½	26	31	21	51	3¼	27	34	9x17
34D	23½	24½	29	25	54	3¼	27	34	9x17
40	22½	31	36	24½	54	3¼	30	40	13x13
48	25¼	38	43	27½	60	4½	33	48	13x17
59	30¼	48	55	31½	64	4½	39	59	17x17

Other sizes made to specifications. Prices upon request.

Note: Each Model "A" unit is provided with a rear cold air inlet which can, if desired, be used for drawing cold air from hall and rooms back of fireplace, if located on an inner partition wall. If warm air is discharged into more than one room, outlet grilles should be equipped with shutter controls. Shutters are available for all sizes and designs of grilles.

Cast Aluminum Grilles



No. 1 — 6 x 12 in.
No. 2 — 8 x 12 in.
No. 2A—12 x 16 in.
No. 2B—48 x 8 in.

No. 3 —30 x 6 in.
No. 3A—25 x 6 in.
No. 3B—36 x 8 in.

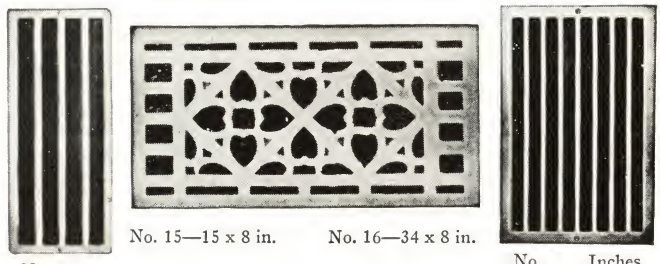


No. 23—28½ in. x 8 in.



No. 24—25 in. x 6½ in.

No. 25—30 in. x 6½ in.

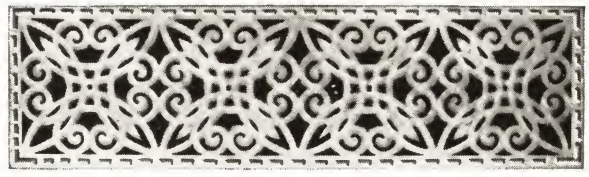


No. 17—
6 in. x 14 in.

No. 15—15 x 8 in.

No. 16—34 x 8 in.

No.	Inches
21	— 8 x 8¼
22	— 8 x12
22A	— 8¼ x16¼
22B	—36 x 8
22C	—48 x 8
22D	—12 x16



No. 18 —8 x 8 in.
No. 18A—8 x 16 in.

No. 20—28½ x 8 in.
No. 19— 8 x 14¾ in.

Model Numbers, Size and Number of Grilles Required

No. 24—Heat Circulator requires for front or side air intakes from living room, two No. 1's or two No. 21's. For front air outlet grilles, one No. 3A or one No. 24. Where side outlets are substituted for front outlets, use two No. 1's or two No. 21's.

No. 29—Heat Circulator requires for front or side air intakes from living room, two No. 1's or two No. 17's or two No. 21's. For front air outlet, one No. 3A or one No. 23 or one No. 24. Where side outlets are substituted for front outlets, use two No. 1's or two No. 17's or two No. 21's.

No. 34—Heat Circulator requires for front or side air intakes from living room, two No. 2's or two No. 17's or two No. 22's. For front outlet, use one No. 3 or one No. 23 or one No. 25. Where side outlets are substituted for front outlets, use two No. 2's or two No. 17's or two No. 22's.

No. 40—Heat Circulator requires for front or side air intakes from living room, two No. 15's or two No. 17's or two No. 22's. For front outlet, one No. 16 or one No. 23 or one No. 25. Where side outlets are substituted for front outlets, use two No. 15's or two No. 17's or two No. 22's.

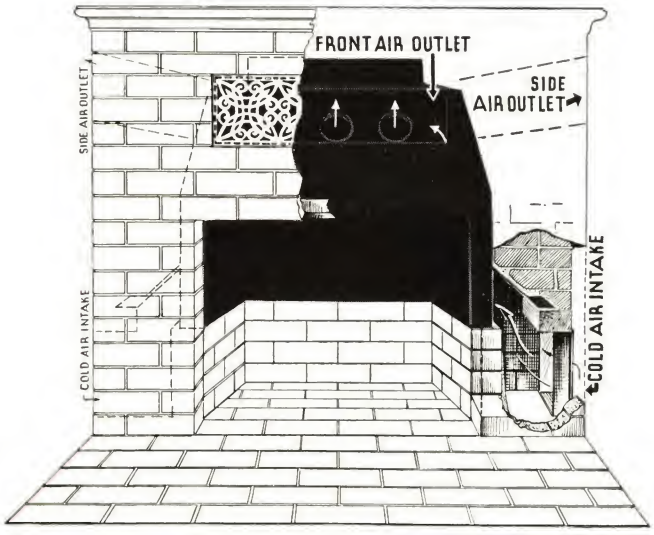
No. 48—Heat Circulator requires for front or side air intakes from living room, two No. 15's or two No. 2A's or two No. 22A's. For front air outlet, one No. 16 or one No. 3B or one No. 22B. Where side outlets are substituted, use two No. 15's or two No. 2A's.

No. 59—Heat Circulator requires for front or side air intakes from living room, two No. 2A's or two No. 22D's. Front air outlet one No. 2B or one No. 22C. No substitute for front air outlets on this model.

SUPERIOR FIREPLACE UNIT MODEL "B"

Where warm air circulation is required in one room only, we recommend the use of our Model B Circulator. If the fireplace is located on an inner wall and warm air outlets used to heat additional rooms, use the Model A Circulator because it has greater heating capacity and more warm air circulation.

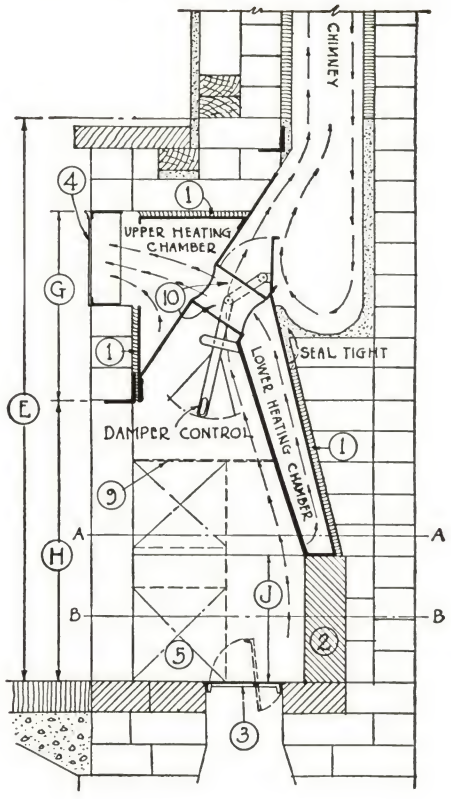
Model B Circulator is constructed identically like the Model A except for the lower portion of the firebox. The unit is elevated twelve inches above the hearth on bricks. To avoid cold floors, air intake grilles must be placed at floor level as shown on elevation plan.



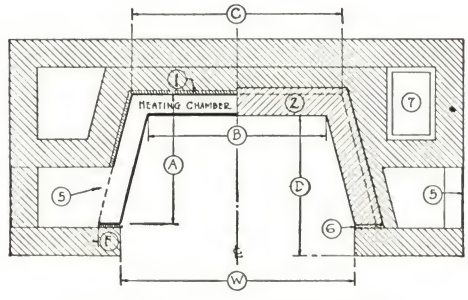
Fireplace Heat Increased

The average fireplace has a heat delivery of approximately 15%. This means 85¢ of every dollar spent for fuel is lost up the chimney. The Superior Heat Circulating Fireplace delivers more than 60% of the heat into your home which is on a par with furnace efficiency.

In computing the size of fireplace to use, other factors such as the type of construction, insulation, if any, etc., must be considered. If more than 50° rise in temperature should be necessary, a larger unit must be used. If a sketch of your floor plan is sent to the factory, we will be glad to make recommendations and suggestions.



·SECTION·
Model "B" Unit



·½ PLAN-A·A· ·½ PLAN-B·B·

KEY TO DRAWINGS

1. ½ in. Rock Wool.
2. Firebricks.
3. Superior Stap-Put Ash Dump.
4. Warm Air Outlet and Grille.
5. Cold Air Intake and Grille.
6. Mortar Joint.
7. Basement Flue.
8. Side Warm Air Outlet.
9. Baffle Plate in Side of Heating Chamber forcing greater portion of cold air into back heating chamber.
10. Air Flues.

HEATING CAPACITY RATINGS MODEL "A" AND "B" UNITS BASED ON 20° ABOVE ZERO

Superior unit size No.	Cold air inlet sq. in.	Warm air outlet sq. in.	Room capacity Model A cub. ft.	Heating surface Model A sq. in.	Room capacity Model B cub. ft.	Heating surface Model B sq. in.
24	83	96	3000	1786	.....	.....
29	93	110	4000	2320	3280	1600
34	120	126	4750	2668	3800	1888
34D	120	126	5000	2874	4000	2006
40	140	142	6000	3587	4800	2675
48	160	162	7500	5004	6000	3936
59	175	182	8500	6093	6800	4791

SPECIFICATIONS FOR MODEL B (Dimensions in Inches)

No.	A	B	C	D	E	F	G	H	J	W	Flue size
29	19½	21	26	20¾	54	3¼	18	27	12	29	9x13
34	19½	26	31	20¾	54	3¼	18	27	12	34	9x17
34D	23½	24¾	29	24¾	54	3¼	18	27	12	34	9x17
40	22½	31	36	24	57	3¼	18	30	12	40	13x13
48	25¼	38	43	27	60	4½	17¾	33	15	48	13x17
59	30¼	48	55	31	64	4½	18¾	39	15	59	17x17

Other sizes made to specifications. Prices upon request.

PEERLESS MANUFACTURING CORP., INC.

LOUISVILLE, KY.

PEERLESS BUILDING SPECIALTIES

Peerless Fireplace Dampers—Dome Type

The open fireplace is increasingly popular in the homes of today. With the demand for fireplaces, the demand for efficient dampers becomes increasingly necessary. The Peerless Dome Damper eliminates guesswork in assuring the proper throat opening to eliminate smoke and provide proper draft control.

Choice of Three Types of Control

Rotary—Damper door is opened and closed from the face of the mantel by a small, easy to turn handle—the only visible part of the operating mechanism. This handle is connected to an iron rod 24 inches long (may be cut down if necessary) on which a worm attachment is fastened engaging a lug on the door which controls the amount of opening needed. (Rotary Control Damper illustrated to right.)

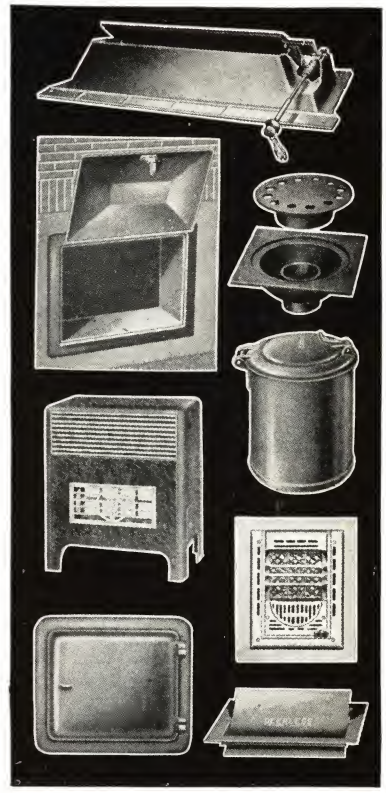
Poker—Cast iron with a "loop" end which allows the use of a poker for opening or closing. Gives six different "open" positions. The lever does not extend out in front of the fireplace, thus permitting this type of damper to be used in "arch top" or "stone projecting" fireplaces. Adjustable handle for locating "loop" in best position.

Chain—Consists of two chains fastened to door. One has letter "O" fastened to end, the other has letter "S." Pull "O" to open; "S" to shut.

Features—Peerless Dome Dampers

(1) Peerless dampers are correctly proportioned and scientifically designed.
(2) The paneled front flange is made sufficiently strong and wide enough to support the fireplace arch without the use of angle iron or lintel.
(3) Time and labor saved; eliminates necessity of building up brick throat.
(4) The Peerless Dome assures correct throat shape and size.
(5) Damper door is removable, permitting access to the flue for cleaning.
(6) Damper door is securely held in position, open or closed, by improved simple, rugged and foolproof rotary or poker control.
(7) Operating mechanism is such that it may be adjusted either before or after the damper is installed.
(8) Treated with a battleship gray coating of rust-resisting materials.

If you have not already tried a Peerless Damper install one on the next job. You will be extremely satisfied with the results—Because: →



At right:
Dome Dampers
Coal Window
Bell Floor Trap
Underground Garbage Receiver
Gas-Fired Circulator
Gas Wall Type Heater
Ash Pit Door
Ash Dump

There are no back-drafts. Perfect operation cuts out all unhealthful drafts. Heat loss and smoke are eliminated. Air conditioning demands Peerless Dampers as an aid to the efficient operation of the air conditioning installation. Seals the chimney when not in use.
Peerless Dampers wear a lifetime—and their cost is repaid many times by saving in fuel, due to proper burning.

SPECIFICATIONS OF PEERLESS DOME DAMPERS—All TYPES OF CONTROLS
(*Important:* Specify Type of Control Desired, when Ordering)

No. and size of damper	Width of fireplace opening, inches	Over-all dimensions at base of damper, inches			Dimensions of throat opening at base of damper, inches			Height of dome at front, inches	Size of flue recommended, inches	Equivalent in round flue construction, inches	Approximate shipping weight each, pounds
		Width at front	Width at rear	Depth	Width at front	Width at rear	Depth				
B-24	24	28	24	13¾	24	21	9¾	5	8½ x 8½	8	32
B-28	28	32	28	13¾	28	25	9¾	5	8½ x 13	10	37
B-30	30	34	30	13¾	30	26	9¾	5	8½ x 13	10	38
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B-36	36	40	36	13¾	36	34	10	5	13 x 13	12	47
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B-54	54	58½	51	15¼	54	48	12	6½	13 x 18	15	76
B-60	60	64	55½	16½	59	53	12	6½	18 x 18	18	100
*B 68	68	72	70	19¼	67	67	14¾	8½	18 x 18	18	200

*Chain control only.

Be Safe—Satisfy your client—Specify "Peerless"

OTHER ITEMS IN THE PEERLESS LINE

Ash Dumps

Made in two types, No. 8 Plain, dumped by means of a poker and No. 9 Automatic on which the weighted doors open automatically. Both types available in sizes 7 x 10 inches and 9 x 11 inches outside measurements. Finished with a heavy coat of battleship gray enamel.

Ash Pit Doors

Made in a variety of standard sizes from 5 x 7 inches to 16 x 42 inches for all applications. Finished with a heavy coat of battleship gray enamel.

Coal Window

Affords protection, lasting service and harmonious appearance.

Constructed of heavy gauge steel with malleable iron hinges and brass hinge pins. Heavy cast iron latch that can be opened only from the inside. Slotted hinges hold door securely in position when open—cannot drop.

For rough wall openings 23 inches wide, 17 inches high, and walls 9 inches deep or more. Outside of frame 26½ inches wide, 20¼ inches high. Supplied in black japan finish.

Peerless Wall Insert Gas Heaters

An ideal heater for bathrooms, halls, or other places where floor space is limited. Easily installed in new or existing buildings without costly preparation—no floor space required. Approved by American Gas Association.

Finished in any shade of enamel to match Standard or Crane colors. Made in 2, 3, 4, 5 double radiant capacities. Complete details on request.

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Armored Concrete Corp. 13/44
Blake Specialty Co. 27/20
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Covert, H. W., Co. 27/23
Crampton-Farley Mfg. Co. 27/24
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Dehn's PeerlesS 27/22
Dehn's Pioneer 27/22
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Everson Mfg. Co. 21/69
Fiat Metal Mfg. Co. 27/66
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Compound Injector & Specialty Co. 27/22
Covert, H. W., Co. 27/23
Dehn's AcmE 27/22
Dehn's PeerlesS 27/22
Dehn's Pioneer 27/22
Economy 27/20
Fiske, J. W., Iron Works 13/20
FlocontroL 27/22
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Armored Concrete Corp. 13/44
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Josam Mfg. Co. 27/26

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Josam Mfg. Co. 27/26
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Blake Specialty Co. 27/20
Boosey, Norman, Mfg. Co. 27/21
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Dehn's GeM 27/22
Dehn's Hygienic 27/22
Dehn's PeerlesS 27/22
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Josam Mfg. Co. 27/26
Kaustine Co., Inc. 27/16
Zurn, J. A., Mfg. Co. 27/28

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Blake Specialty Co. 27/20
Compound Injector & Specialty Co. 27/22
Crampton-Farley Mfg. Co. 27/24
Dehn's AcmE 27/22
Dehn's DeeP-SeaL 27/22
Fiske, J. W., Iron Works 13/20
Josam Mfg. Co. 27/26
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Sani-Dri 27/112

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Duriron Co., Inc. 27/13

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Dayton Pump & Mfg. Co. 27/29
Deming Co. 27/30
Drain-Dri 27/38
Duro Co. 27/46
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Penberthy Injector Co. 27/35
Shone 27/38
Taber Pump Co. 27/36
Weil Pump Co. 27/37
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Shone 27/38
Taber Pump Co. 27/36
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Aten Sewage Disposal Co., Inc. 27/17
Kaustine Co., Inc. 27/16

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Water Filtration and Cooling

Filtrine Mfg. Co. 27/47

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(For Removing Iron—Sediment, Taste, Odor, Color, etc.)
Duro Co. 27/46
Everson Mfg. Co. 21/69
Filtrine Mfg. Co. 27/47
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Durion Co., Inc. 27/13

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Knight-Ware 27/14
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Alcoa 13/1
Aluminum Co. of America 13/1

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Grinnell Co., Inc. 26/46; 26/116; 26/117
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Taco Heaters, Inc. 27/44
Taco-Trol 27/44
Taco-Venturi 27/44
Toncan 27/4
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B.B. 6/37
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Pipe—Copper
Hussey, C. G., & Co. 13/4

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American Brass Co. 26/115; 27/7
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Ebco Mfg. Co. 27/83
Filtrine Mfg. Co. 27/47
Puro Filter Corporation of America 27/84
Taylor, Halsey W., Co. 27/85

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Bradley Washfountain Co. 27/81
Century Brass Works, Inc. 27/82
Crane Co. 27/56
Ebco Mfg. Co. 27/83
Taylor, Halsey W., Co. 27/85
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Ebco Mfg. Co. 27/83
Filtrine Mfg. Co. 27/47
G-E 28/9
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Puro Filter Corporation of America 27/84
Streamline 23/16
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Kewanee Boiler Corp. 26/98
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Crescent 27/45
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DeSoto 27/45
Dictator Clipper 26/1
Monel 27/54
Regular-Rio 26/1
Ruud Mfg. Co. 27/45
Surface Combustion Corp. 26/20
Thrift 26/20
Whitehead Metal Products Co. Inc. 27/54

Water—Gas—Instantaneous—Continuous Flow
Ruud Mfg. Co. 27/45
Surface Combustion Corp. 26/20
Thrift 26/20

Water—Gas—Manual or Automatic
(Including Copper or Multi-Coil)
AGP 26/1
American Gas Products Corp., Div. American Radiator & Standard Sanitary Corp. 26/1
Cemline Corp. 27/53
Combo Corp. 28/52
Crane Co. 27/56
Monel 27/54
Ruud Mfg. Co. 27/45
Stonesteel 27/53
Whitehead Metal Products Co., Inc. 27/54

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Fre Flo 27/41
G & C 27/40
Gerstein & Cooper Co. 27/40
Kewanee Boiler Corp. 26/98
Patterson-Kelley Co., Inc. 27/42
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Gerstein & Cooper Co. 27/40
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Oil-O-Matic 26/103
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See Bathroom Accessories

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Duriron Co., Inc. 27/13

JUTE

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Porcelain Enameled or Vitreous China

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Avon 27/57
Bradley Washfountain Co. 27/81
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Coronada-Lavinet 27/56
Corwith-Compeer 27/56
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Tubing

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Anaconda 26/115; 27/7
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Faucets

See Faucets

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Jennings 26/50
Micro-Westco, Inc. 27/33
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Motorpump 26/32
Myers, F. E., & Bro. Co. 27/34
Nash Engineering Co. 26/50
Weil Pump Co. 27/37
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Deming Co. 27/30
Duro Co. 27/46
Economy Pumps, Inc. 27/31
Floatless 27/32
Imperial Brass Mfg. Co. 27/32
Jennings 26/50
Myers, F. E., & Bro. Co. 27/34
Nash Engineering Co. 26/50
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Deming Co. 27/30
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Ingersoll-Rand Co. 26/32
Jennings 26/50
Micro-Westco, Inc. 27/33
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Dayton Pump & Mfg. Co. 27/29
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Duro Co. 27/46
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Cameron 26/32
Dayton Pump & Mfg. Co. 27/29
Duro Co. 27/46
Economy Pumps, Inc. 27/31
Electropump 27/37
Everson Mfg. Co. 21/69
Floatless 27/32
Hot-Shot 27/38
Imperial Brass Mfg. Co. 27/32
Ingersoll-Rand Co. 26/32
Jennings 26/50
Micro-Westco, Inc. 27/33
Motopump 27/38
Motorpump 26/32
Myers, F. E., & Bro. Co. 27/34
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See Pumps—Bilge; Ejectors—Sewage

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Dayton Pump & Mfg. Co. 27/29
Deming Co. 27/30
Duro Co. 27/46
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Myers, F. E., & Bro. Co. 27/34
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Deming Co. 27/30
Economy Pumps, Inc. 27/31
Everson Mfg. Co. 21/69
Micro-Westco, Inc. 27/33
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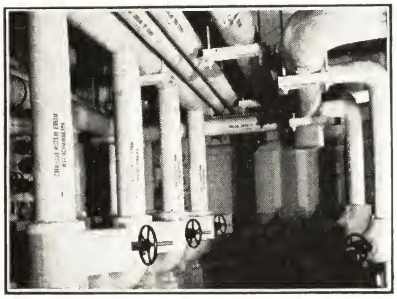
A. M. BYERS COMPANY

Genuine Wrought Iron Tubular and Flat Rolled Products
Steel Tubular Products

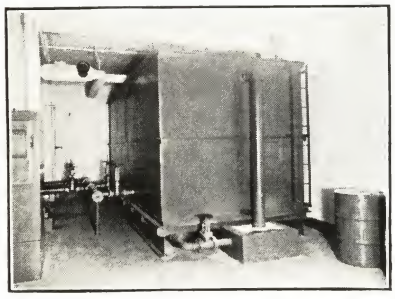
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Air conditioning system piping must withstand severe corrosion. Under these conditions Byers Wrought Iron Pipe will last longer



Tanks made of Byers Wrought Iron Plates will duplicate the long life of the wrought iron piping to which they are connected

BYERS PRODUCTS

Byers Genuine Wrought Iron Pipe—Byers Genuine Wrought Iron Pipe is available either black or galvanized in the following weights and sizes: Standard Weight ⅛ to 12 in., inclusive; Extra Strong ⅛ to 12 in., inclusive; Double Extra Strong ½ to 8 in., inclusive.

Large Diameter Genuine Wrought Iron Pipe—May be secured in practically any outside or inside diameter size and wall thickness. It can be produced either by fusion welding or forge welding.

Genuine Wrought Iron Welding Fittings for Pipe—Welding fittings made of Byers Genuine Wrought Iron Pipe are available in a wide range of sizes.

A request will bring the names of the companies manufacturing these fittings together with copies of descriptive literature.

Genuine Wrought Iron O.D. Heat Exchanger Tubes—For use in tubular refrigeration condensers and other unfired heat exchanger equipment. Sizes furnished upon request.

Byers Steel Pipe—Byers Steel Pipe is available either black or galvanized in the following weights and sizes: Standard Weight ⅛ to 12 in., inclusive; Extra Strong ⅛ to 12 in., inclusive; Double Extra Strong ½ to 8 in., inclusive.

Genuine Wrought Iron Plates and Sheets—Byers Standard Sheared Plates are available in widths up to 84 in. and in thicknesses $\frac{3}{16}$ to 1 in., inclusive. Extra Long Sheared Plates are produced in widths up to 80 in. and in thicknesses $\frac{7}{16}$ to 1 in., inclusive. Universal Mill Plates and Special Forming Plates are also readily available. Special Forming Plates are intended for applications, such as flanged and dished tank heads, where severe fabrication requirements must be met.

Byers Genuine Wrought Iron Sheets are available in a complete range of sizes, 28-gauge and heavier, either flat or corrugated, hot rolled, blue annealed or galvanized. Roofing and Siding Sheets, 16 to 28-gauge, are furnished, either black or galvanized, with 1¼, 2½, or 3-in. corrugations.

Tables of sizes for both plates and sheets are contained in the general catalog. Copies are available on request.

Genuine Wrought Iron Tank Heads—A stock of Standard Flanged and Dished Tank Heads in standard sizes is maintained at our mill for quick delivery.

For range of sizes and complete dimensional data, see general catalog.

Genuine Wrought Iron Bars, Angles and Channels—Byers Genuine Wrought Iron Bars, including rounds, squares, universal mill products, light and heavy bands, hexagons, bevel edge iron, half rounds, half ovals, and ovals are available in a wide range of sizes.

The sizes of Byers Genuine Wrought Iron Equal Leg Angles range from ¾x¾x⅛ in. to 6x6x⅞ in. Unequal leg angles can be furnished in sizes ranging from 2x1½x$\frac{3}{16}$ in. to 6x4x⅞ in. Channel sizes that can be furnished include ¾x⅜x⅛ in. up to 10 in.—35 lbs.

Sizes and weights for Byers Genuine Wrought Iron Bars, Angles and Channels are contained in general catalog sent on request.

Genuine Wrought Iron Billets—Byers Genuine Wrought Iron Billets are available in a complete range of sizes in rectangular, square or round sections.

DEFINITION AND ANALYSIS OF GENUINE WROUGHT IRON

Wrought iron is a two-component metal consisting of high purity iron and iron silicate—an inert, non-rusting, glasslike slag. These two materials are in physical combination, as contrasted to the chemical or alloy bond that exists between the constituents of other metals.

In finished wrought iron the iron silicate or slag content amounts to about 3% by weight, and is distributed throughout the iron base metal in the form of threads or fibres which extend in the direction of rolling. The slag fibres are so thoroughly distributed throughout the metal that there are approximately 250,000 to each cross-sectional square inch. These fibres embedded in the metal give wrought iron a tough fibrous structure similar to that of hickory wood. This similarity can be seen easily by comparing a piece of each material that has been nicked and fractured. Wrought iron differs from all other metals since none of them contain siliceous slag.

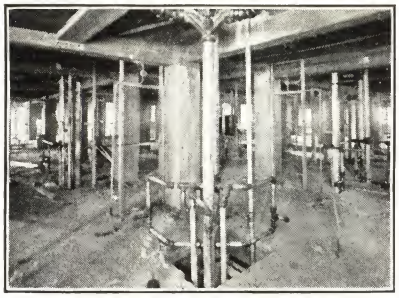
A typical analysis of Byers Genuine Wrought Iron showing distribution of the metalloids in the two constituents is given as follows:

	Combined analysis	Separate analysis showing Distribution of Constituents	
		Iron base metal	Slag
Carbon	.02	.02	..
Manganese	.03	.01	.02
Phosphorus	.12	.10	.02
Sulphur	.02	.02	..
Silicon	.15	.01	.14
Slag	3.00	..	..
	Total Metalloid ..	.16	.18

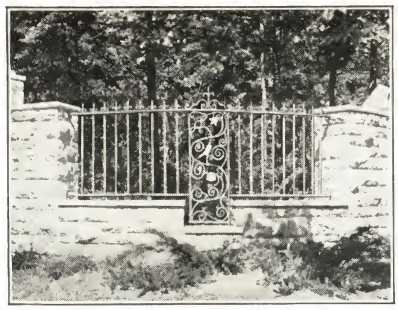
Tensile properties of wrought iron vary with the different products. However, to illustrate typical properties, following are minimum requirements of A.S.T.M. Specifications, Designation A-42, for ½-in. standard wrought iron plate:

Tensile strength, lb. per sq. in.	48,000
Yield point, lb. per sq. in.	27,000
Elongation in 8 in., per cent	14

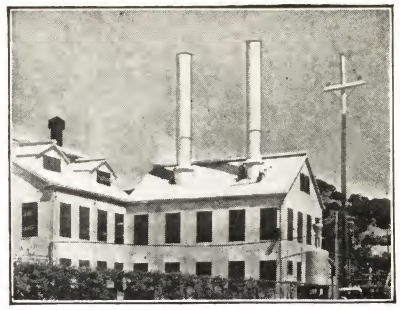
Tensile strength and yield point values can be increased materially for applications where greater strength is necessary.



Byers Wrought Iron Pipe in buildings more than pays its way through long life and low maintenance charges



Fine buildings deserve fine fences, balconies, grilles, and hardware. This fence is made of Byers Wrought Iron Bars



Byers Wrought Iron is used generally for smoke stacks and breechings, because it resists corrosion caused by flue gases

PRINCIPAL CHARACTERISTICS OF GENUINE WROUGHT IRON

Resistance to Corrosion—Durability of wrought iron is attributed in part to purity of the iron component and freedom from segregated impurities, but of far greater importance are the siliceous slag fibres embedded in the metal. The slag fibres are present in such great numbers that they serve in one capacity as an effective mechanical barrier against corrosion and, under most conditions, force it to spread over the surface rather than pit or penetrate into body of the metal. They also have a definite influence upon the chemical composition, density and adherence to the metal surface of any corrosion products that might be formed. As a result, the film or layer of corrosion products on the surface, although of microscopic thickness in many cases, affords a high degree of protection to the underlying metal in much the same way that a scab protects a wound. This, of course, is highly desirable because it tends to make corrosion uniform rather than permit it to localize and thereby cause premature failure.

Resistance to Vibration and Shock Fatigue—Wrought iron is used extensively by railroads and the marine industry because of its inherent ability to withstand conditions of shock or constant vibration that frequently cause fatigue failure in other metals. The slag fibres, which confer on the metal a tough, fibrous structure somewhat analagous to that of a stranded wire cable, are responsible for this desirable property. They serve to minimize stress concentration and deflect the path of the slip planes which develop in a metal under the influence of conditions that ordinarily result in fatigue failure.

Adherence and Weight of Protective Coatings—Under many corrosive conditions the useful life of metals can be increased somewhat by the application of a protective coating, such as paint or galvanizing. The value of the coating depends largely upon its adherence to the metal surface and its weight or thickness. However, the durability of the installation will be influenced primarily by the corrosion resistance of the metal itself because, after the coating is destroyed, the relatively thicker metal must withstand the brunt of the corrosive attack.

Experience proves that either paint or galvanizing will adhere better and last longer on wrought iron than on other ductile metals. The natural surface of wrought iron is microscopically rougher than that of other metals and provides a better "tooth" or anchorage for paints. In galvanizing, the natural roughness of a wrought iron surface is accentuated by the acid pickling operation used to clean the metal before it is dipped into molten zinc. The slag fibres are responsible for this increased roughness. As a result, wrought iron will take on a natural zinc coating which is 25% to 40% heavier than that on other metals and this makes the coating itself longer lived.

Weldability—Wrought iron has excellent welding characteristics and any of the commonly used welding processes, such as oxy-acetylene, electric fusion, electric resistance or forge welding, may be employed when welding the material.

Bendability of Tubular Products—The use of bends in pipe fabrication ordinarily results in saving labor, time, and material; reduces resistance to flow; and makes fewer couplings and fittings necessary. All Byers Genuine Wrought Iron Pipe possesses exceptional "bendability," due to uniform slag distribution coupled with special care in finishing to avoid cold straining of the metal. This is an exclusive Byers feature—not available in any other wrought iron pipe.

Identifying Markings

Pipe—(1) All Byers Genuine Wrought Iron Pipe, both black and galvanized, has the name BYERS IRON in raised letters on the metal surface every few feet for permanent identification. Also, for quick identification on the job, a RED SPIRAL STRIPE is painted on each length.

(2) All Byers Steel Pipe has the name BYERS STEEL in raised letters on the metal surface every few feet for permanent identification. Byers Steel Pipe does not have the spiral stripe marking.

Couplings—All Byers Genuine Wrought Iron Couplings are permanently marked with a "B" within a keystone rolled into the metal surface.

Nipples—Byers Genuine Wrought Iron Close Nipples are marked with a RED BAND around the center. Short and long nipples are stamped with the name BYERS and the weight.

Plates and Sheets—Byers Genuine Wrought Iron Plates and Sheets are stenciled with the marking "Byers—1864—Genuine Wrought Iron," within an oval.

AVAILABLE PUBLICATIONS

Following is a list of publications covering products, applications, and specifications, any of which may be obtained by writing on your business letterhead direct to the Engineering Service Department, A. M. BYERS COMPANY, Pittsburgh, Pa.

Wrought Iron, Its Manufacture, Characteristics and Applications, by J. Aston and E. B. Story—A handbook of useful, up-to-date information on wrought iron. Will be sent free if requested on business letterhead. To all others, price $1.00 per copy.

The Bending of Wrought Iron Pipe—A service manual on the theory and practice of bending Byers Genuine Wrought Iron Pipe. Tables of hot and cold bend diameters and a section on Van Stoning are included.

The Threading of Wrought Iron Pipe—A service manual covering the theory and practice of producing good pipe threads.

The Bending of Wrought Iron Plates—Discusses principles, practices, and equipment employed in plate bending. Of interest to both the designer and the shop man.

The Welding of Wrought Iron—Deals specifically with information of interest to the welder, fabricator, and designing engineer. Illustrated with examples of welded installations.

Byers Genuine Wrought Iron Plates—Provides complete tables of sizes for both plates and sheets.

Byers Genuine Wrought Iron Billets—Gives a description of methods employed in manufacturing Byers Billets and a table of sizes.

Engineering Data on Byers Genuine Wrought Iron Oil Well Tubing and Casing—A series of comprehensive tables giving length of string, bursting and collapsing values for standard and A.P.I. oil country tubular products.

101 Uses for Wrought Iron—An illustrated review of the more prominent uses for wrought iron products in modern construction.

Wrought Iron in Sanitary Systems—A technical bulletin on corrosive conditions and applications for wrought iron products in modern sewage treatment and disposal work.

Wrought Iron for Flue Gas Conductors and Coal Handling Equipment—A special report of particular value to those interested in obtaining longer service life from their flue gas and coal handling equipment.

Wrought Iron in Refrigeration and Air Conditioning Systems—An illustrated discussion of corrosive conditions in modern refrigeration, air conditioning and skating rink installations and practical suggestions for minimizing the effects of corrosion.

Wrought Iron in Bridge Construction—A special report on applications and designs that is of particular interest to engineers responsible for the construction and maintenance of bridge structures.

Wrought Iron in Salt Water Services—An understandable discussion of salt water corrosion and experience data on wrought iron installations subjected to its action.

Wrought Iron in Tank Construction—A technical bulletin that contains information of particular interest to those charged with specifying or maintaining tank equipment.

Wrought Iron for Piping Systems—Contains a fund of helpful information on piping materials and their selection; corrosive conditions in water, drainage and heating systems, and methods for reducing the severity of corrosion.

Specifications—Byers Genuine Wrought Iron Products and Byers Steel Pipe meet the requirements of specifications promulgated by all recognized standards organizations. Copies of the most commonly used specifications will be sent upon request.

Catalog—Contains complete mechanical information on all wrought iron products manufactured by A. M. BYERS COMPANY.

MEMORANDA

ESTABLISHED 1854

COHOES ROLLING MILL CO.

INCORPORATED 1901

MAIN OFFICE AND WORKS

COHOES, N. Y.

GENUINE WROUGHT IRON PIPE, COUPLINGS AND NIPPLES

COHOES GENUINE WROUGHT IRON PIPE

Genuine Wrought Iron, highly resistant to both submerged and atmospheric corrosion, is used exclusively in producing Cohoes *Genuine* Wrought Iron Pipe. The iron that has endured throughout the centuries (designated *Genuine* Wrought Iron) is rolled by experts in a modern, well-equipped mill into Cohoes Pipe.



GUARANTEE

Cohoes Pipe is unqualifiedly guaranteed to be *Genuine* Wrought Iron in every sense of the word, and conforms with the most exacting requirements outlined in all specifications covering *Genuine* Wrought Iron Pipe.

USES

The use of Cohoes Pipe is recommended for all supply or waste line piping where long life, freedom from premature corrosion failure, and resistance to fatigue failure caused by vibration or shock, are essential. Cohoes *Genuine* Wrought Iron Pipe is especially recommended for electrical conduit installations which are subject to extreme corrosive action.

INSTALLATION ADVANTAGES

Of outstanding importance in a Cohoes Pipe installation is the saving in labor. The softness of *Genuine* Wrought Iron which makes it the exclusive pipe for resisting shock or vibration—is the quality that saves labor and tool costs in cutting and threading, and in leakproof joints—savings that deserve sincere consideration where comparative costs are studied.

BLACK PIPE OR GALVANIZED

Cohoes Pipe is offered in two finishes—Natural or Galvanized, in all sizes and weights. In Natural finish it is called black pipe and is specified for general utility. But for plumbing lines, in or around salt water, and under severe corrosive conditions, the Galvanized finish is recommended. *Genuine* Wrought Iron, when pickled, exhibits a deeply etched surface that permits a heavy and closely bonded galvanized coating. This characteristic, belonging only to *Genuine* Wrought Iron, explains why Cohoes Galvanized *Genuine* Wrought Iron pipe gives greater life and serviceability.

INSPECTION, TESTING AND IDENTIFICATION

Cohoes Pipe is constantly inspected during fabrication. Hydraulic machines test every length at a pressure of several hundred pounds greater than ever needed in actual service. Cohoes *Genuine* Wrought Iron Pipe is identified by the name CoHoS rolled into the metal, and is distinctly marked by a bright red stripe running the entire length of the pipe.

PIPE EXPERTS AT YOUR SERVICE

Over eighty years of manufacturing pipe have given us a background of knowledge and experience in the uses for pipe. In that time we have observed most theories and ideas go through the gruelling test of time. Our chemists and metallurgists, through laboratory study and actual use, are constantly investigating new applications for *Genuine* Wrought Iron Pipe. These experts are available without cost to anyone requiring information or assistance on the subject of pipe.

NO SUBSTITUTE FOR COHOES

Cohoes Pipe has demonstrated in actual use, under every conceivable condition, that it does stand up where ordinary pipe will deteriorate. Its use for locomotives, railroad cars, signal pipe, as well as for the conveyance of gas, water, air, ammonia, salt water and other acid-bearing material, has demonstrated beyond doubt that there is no substitute for Cohoes *Genuine* Wrought Iron Pipe.

***STANDARD FULL WEIGHT GENUINE WROUGHT IRON PIPE**

Size, in.	List price, per ft.	Diameters, in.		Thickness, in.	Weight, per ft., lb.	Threads per in.
		External	Internal			
⅛	$ .05½	.405	.269	.068	.245	27
¼	.06	.540	.364	.088	.425	18
⅜	.06	.675	.493	.091	.568	18
½	.08½	.840	.622	.109	.852	14
¾	.11½	1.050	.824	.113	1.134	14
1	.17	1.315	1.049	.133	1.684	11½
1¼	.23	1.660	1.380	.140	2.281	11½
1½	.27½	1.900	1.610	.145	2.731	11½
2	.37	2.375	2.067	.154	3.678	11½
2½	.58½	2.875	2.469	.203	5.819	8
3	.76½	3.500	3.068	.216	7.616	8
3½	.92	4.000	3.548	.226	9.202	8
4	1.09	4.500	4.026	.237	10.889	8
5	1.48	5.563	5.047	.258	14.810	8
6	1.92	6.625	6.065	.280	19.185	8
8	2.88	8.625	7.981	.322	28.809	8
10	4.12	10.750	10.020	.365	41.132	8
12	5.07	12.750	12.000	.375	50.706	8
13	5.60	14.000	13.250	.375	55.824	8
14	6.10	15.000	14.250	.375	60.375	8
15	6.50	16.000	15.250	.375	64.500	8

***EXTRA STRONG GENUINE WROUGHT IRON PIPE**

Size, in.	List price, per ft.	Diameters, in.		Thickness, in.	Weight, per ft., lb.
		External	Internal		
¼	$ .07½	.540	.302	.119	.535
⅜	.07½	.675	.423	.126	.738
½	.11	.840	.546	.147	1.087
¾	.15	1.050	.742	.154	1.473
1	.22	1.315	.957	.179	2.171
1¼	.30	1.660	1.278	.191	2.996
1½	.36½	1.900	1.500	.200	3.631
2	.50½	2.375	1.939	.218	5.022
2½	.77	2.875	2.311	.276	7.661
3	1.03	3.500	2.900	.300	10.252
3½	1.25	4.000	3.364	.318	12.505
4	1.50	4.500	3.826	.337	14.983
5	2.08	5.563	4.813	.375	20.778
6	2.86	6.625	5.761	.432	28.573
8	4.34	8.625	7.625	.500	43.388
10	5.48	10.750	9.750	.500	54.735
12	6.55	12.750	11.750	.500	65.415

***DOUBLE EXTRA STRONG GENUINE WROUGHT IRON PIPE**

Size, in.	List price, per ft.	Diameters, in.		Thickness, in.	Weight, per ft., lb.
		External	Internal		
½	$ .32	.840	.252	.294	1.714
¾	.35	1.050	.434	.308	2.440
1	.37	1.315	.599	.358	3.659
1¼	.52½	1.660	.896	.382	5.214
1½	.65	1.900	1.100	.400	6.408
2	.91	2.375	1.503	.436	9.029
2½	1.37	2.875	1.771	.552	13.695
3	1.86	3.500	2.300	.600	18.583
3½	2.30	4.000	2.728	.636	22.850
4	2.76	4.500	3.152	.674	27.541
5	3.86	5.563	4.063	.750	38.552
6	5.32	6.625	4.897	.864	53.160

*Any size not listed will be considered "Special."

Mohawk Steel Pipe

Mohawk Copper Bearing Steel Pipe
Comotube Electric Metallic Tubing

Mohawk Rigid Steel Conduit

FOUNDED 1850

JONES & LAUGHLIN STEEL CORPORATION

AMERICAN IRON AND STEEL WORKS

Jones & Laughlin Building, PITTSBURGH, PA.

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Telephone, Calvert 4422

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Telephone, Hubbard 5151

BUFFALO, N. Y., Liberty Bank Building
Telephone, Washington 0268

CHICAGO, ILL., Conway Building
Telephone, Franklin 2522

CINCINNATI, OHIO, Carew Tower
Telephone, Main 2324

CLEVELAND, OHIO, Union Commerce Building
Telephone, Main 7866

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Telephone, Madison 1600

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Telephone, Franklin 1131

NEW YORK, N. Y., 500 Fifth Avenue
Telephone, Lackawanna 4-8010

PHILADELPHIA, PA., Broad Street Station Building
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PITTSBURGH, PA., Jones & Laughlin Building
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Telephone, Exbrook 0266

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TORONTO, ONT., CANADA, Toronto Daily Star Building
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NEW YORK (Long Island City),* N. Y.—Telephone, Ironsides 6-8700
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NEW YORK (Long Island City),* N. Y.—Telephone, Ironsides 6-8700
PITTSBURGH, PA.—Telephone, Court 7400

*Operated by Jones & Laughlin Steel Service, Inc.

Products

J & L Tubular Products, Standard Weight, Extra Strong, and Double Extra Strong Pipe, Black and Galvanized, for steam, gas, air, water, refrigeration and sprinkler work, fences, railing, etc., in seamless and welded.

J & L Copper Steel Pipe, when specified, can be supplied in standard weight, or extra strong black or galvanized. Use of this product is recommended where piping is to be exposed to the atmosphere or to alternating wet and dry conditions.

J & L Seamless Tubular Products for oil and gas well drilling, pipe line construction and building and industrial services.

J & L Hot Rolled Seamless Steel Boiler Tubes.

Also Fabricated Structural Work, Columns, Girders, Trusses, Plate Work, Tanks, Mill and Factory Buildings; J & L Wire Products; J & L Bars for Concrete Reinforcement.

For J & L Junior Beams and Lightweight Channels for Stair Stringers and other uses, see page numbers in File Index.

Description

Jones & Laughlin Welded Pipe is made of soft, weldable steel rolled from solid ingots made to a special analysis which, checked over a period of years, has proven to be very uniform in quality. The steel pipe produced from this special grade of J & L Steel is soft and ductile, free cutting, strong at the welds, and free from excess scale.

Jones & Laughlin Seamless Pipe is made from specially prepared steel blooms, by piercing and rolling followed by reeling, sizing and other finishing operations, all arranged to produce a high order of perfection of workmanship and quality. Seamless pipe conforms fully to A. P. A. specification 5-L for line pipe, or to A. S. T. M. specification A53 of latest issue, covering welded and seamless steel pipe.



J & L Pipe is commercially straight and free from injurious defects and is well within the allowable tolerances as to dimensions and weights, and true to round in the outside diameter.

Vast resources and complete ownership-control of every manufacturing process from iron ore in the ground to finished products of tube mills, under an organization which has been producing iron and steel for over three-quarters of a century, assure production of steel pipe of exceptional quality.

Uniform Quality

Self-owned basic materials and control under one organization of every process from the mining of the ore to the final testing of the finished pipe, result in a high degree of uniformity in the quality of J & L Pipe that could not otherwise be maintained.

Threading

Recognizing that a pipe installation cannot be stronger than the joint, careful attention is given the threading of the pipe with good clean-cut threads fitted with sound couplings correctly tapped to give a tight joint. Soft, ductile steel of free cutting quality enables the contractor to cut clean, sound threads on the job.

Galvanized Pipe

The Jones & Laughlin process of galvanizing assures a thorough coating and insures against pipe being clogged with spelter. The surface of the pipe is carefully cleaned so that when the galvanized coating is applied it adheres strongly and does not tend to flake off.

Jalweld Pipe for Coiling and Bending

This product is made of a special quality steel that possesses a high degree of ductility making the pipe particularly adapted for coiling and bending. The improved method of welding used in its manufacture assures an absolutely homogeneous wall. Even under the most severe coiling or bending practices this pipe will not weaken or split at the weld.

Identifying Marks

The name "Jones & Laughlin" is rolled in each piece of pipe as a means of identifying a quality product carefully made and finished, and rigidly tested and inspected before shipment. Specify J & L Pipe and have a satisfied clientele.

Specifications for J & L Welded Steel Pipe

(1) **Material**—J & L Welded Pipe shall be made from a uniformly good quality of soft, weldable steel rolled from solid ingots from which sufficient crop has been cut to insure sound metal in the skelp.

(2) **Process of Manufacture**—Pipe 3 in. and smaller may be made by the butt-welding process. Pipe over 3 in. shall be lap-welded; also smaller sizes as listed, when ordered as lap-welded pipe. The welding shall be performed in accordance with the best practice in heating and rolling.

(3) **Physical Properties**—Steel used in the manufacture of the pipe shall show the following physical characteristics:

Tensile strength per sq. in.—minimum 50,000 lb.

Yield point per sq. in.—30,000 lb.

Elongation in 8 in.—20%.

When ordered subject to tension tests, the pipe shall conform to the tensile requirements for the respective grades as given in A. S. T. M. specification A53, or, in the case of line pipe, to the tensile requirements as given for welded line pipe in A. P. A. specification 5-L.

(4) **Finish**—Finished pipe shall be commercially straight and free from injurious defects. All burrs at the ends of the pipe shall be removed.

Threads shall be in accordance with Briggs standard, and cut so as to make a tight joint when the pipe is tested at the mill to the specified internal hydrostatic pressure. The variation from standard, when tested with a standard working gage, shall not exceed a maximum of one and one-half turns either way.

Couplings shall be of sound metal, free from injurious defects, and tapped to such pitch diameter as to make a tight joint.

Galvanized pipe shall be coated with zinc by the hot-dipping process. The coating on the inside and the outside of the pipe shall be free from injurious defects, excessive roughness, or lumps.

Solid, tapped rings or split couplings shall be provided as thread protectors on each length of pipe 4 in. and larger.

(5) **Tests**—Each length of pipe shall be subjected at the mill to the hydrostatic test pressures per square inch as shown in the appended table.

For lap-welded pipe, a flattening test on standard weight and extra strong pipe in sizes over 2 in. shall be made by taking a section of pipe 6 in. long, which shall be flattened between parallel plates until the distance between the plates is one-third the outside diameter of the pipe, with the weld located 45° from the line of direction of the applied force, without developing cracks.

Tension test specimens shall consist either of pieces of pipe in full cross-sections, or of sections machined longitudinally from the walls of the pipe.

One tension test, and one flattening test as specified for the respective sizes, may be made on a length of pipe in each lot of 500 lengths or less of each size.

(6) **Size Variation**—Pipe 1½ in. or under shall not vary at any point more than $\frac{1}{64}$ in. over nor more than $\frac{1}{32}$ in. under the nominal outside diameters as shown in the table. For pipe in sizes 2 in. and over, the outside diameter shall not vary more than 1 per cent over or under the standard dimension shown in the table.

(7) **Inspection**—When so desired, pipe may be inspected at the mill, in which event the inspector representing the purchaser shall have free entry, at all times while work on the contract of the purchaser is being performed, to all parts of the manufacturer's works which concern the manufacture of the pipe ordered. The manufacturer shall afford the inspector, free of charge, all reasonable facilities to satisfy him that the pipe is being furnished in accordance with these specifications. All tests and inspection shall be made at the place of manufacture prior to shipment, unless otherwise specified, and shall be so conducted as not to interfere unnecessarily with the operation of the works.

Material which shows injurious defects subsequent to acceptance at the manufacturer's works, or which proves defective when properly applied in service, may be rejected and the manufacturer shall be notified.

J & L FULL STANDARD WEIGHT PIPE, BLACK AND GALVANIZED

All weights and dimensions are nominal

Size, in.	Diameters, in.		Thickness, in.	Weight per ft., lb.		Threads per in.	Mill test, lbs. per sq. in.		
	External	Internal		Plain ends	Threads and couplings		Butt weld	Lap weld	†Seamless
⅛	.405	.269	.068	.244	.245	27	700	.....	.....
¼	.540	.364	.088	.424	.425	18	700	.....	.....
⅜	.675	.493	.091	.567	.568	18	700	.....	.....
* ½	.840	.622	.109	.850	.852	14	700	.....	1000
* ¾	1.050	.824	.113	1.130	1.134	14	700	.....	1000
* 1	1.315	1.049	.133	1.678	1.684	11½	700	.....	1000
* 1¼	1.660	1.380	.140	2.272	2.281	11½	700	1000	2500
* 1½	1.900	1.610	.145	2.717	2.731	11½	700	1000	2300
* 2	2.375	2.067	.154	3.652	3.678	11½	700	1000	2000
* 2½	2.875	2.469	.203	5.793	5.819	8	800	1000	2100
* 3	3.500	3.068	.216	7.575	7.616	8	800	1000	1900
* 3½	4.000	3.548	.226	9.109	9.202	8	.....	1000	1700
* 4	4.500	4.026	.237	10.790	10.889	8	.....	1000	1600
* 4½	5.000	4.506	.247	12.538	12.642	8	.....	1000	1500
* 5	5.563	5.047	.258	14.617	14.810	8	.....	1000	1400
* 6	6.625	6.065	.280	18.974	19.185	8	.....	1000	1300
* 8	8.625	8.071	.277	24.696	25.000	8	.....	800	950
* 8	8.625	7.981	.322	28.554	28.809	8	.....	1000	1100
*10	10.750	10.192	.279	31.201	32.000	8	.....	600	800
*10	10.750	10.136	.307	34.240	35.000	8	.....	800	850
*10	10.750	10.020	.365	40.483	41.132	8	.....	900	1000
*12	12.750	12.090	.330	43.773	45.000	8	.....	600	800
*12	12.750	12.000	.375	49.562	50.706	8	.....	800	900

**Also furnished in seamless. †Based on Grade "A" steel.*
Permissible variation in weight is 5% above and 5% below.
Furnished with threads and couplings and in random lengths unless otherwise ordered.

J & L EXTRA STRONG PIPE, BLACK AND GALVANIZED

All weights and dimensions are nominal

Size, in.	Diameters, in.		Thickness, in.	Weight per ft., plain ends, lb.	Mill test, lbs. per sq. in.		
	External	Internal			Butt weld	Lap weld	†Seamless
⅛	.405	.215	.095	.314	700	.....	.....
¼	.540	.302	.119	.535	700	.....	.....
⅜	.675	.423	.126	.738	700	.....	.....
* ½	.840	.546	.147	1.087	700	.....	1000
* ¾	1.050	.742	.154	1.473	700	.....	1000
* 1	1.315	.957	.179	2.171	700	.....	1000
* 1¼	1.660	1.278	.191	2.996	1500	2500	2500
* 1½	1.900	1.500	.200	3.631	1500	2500	2500
* 2	2.375	1.939	.218	5.022	1500	2500	2500
* 2½	2.875	2.323	.276	7.661	1500	2000	2500
* 3	3.500	2.900	.300	10.252	1500	2000	2500
* 3½	4.000	3.364	.318	12.505	.....	2000	2500
* 4	4.500	3.826	.337	14.983	.....	2000	2200
* 4¼	5.000	4.290	.355	17.611	.....	1800	2000
* 5	5.563	4.813	.375	20.778	.....	1800	2000
* 6	6.625	5.761	.432	28.573	.....	1800	2000
* 8	8.625	7.625	.500	43.388	.....	1500	1700
*10	10.750	9.750	.500	54.735	.....	1200	1400
*12	12.750	11.750	.500	65.415	.....	1100	1200

**Also furnished in seamless. †Based on Grade "A" steel.*
Permissible variation in weight is 5% above and 5% below.
Furnished with plain ends and in random lengths, unless otherwise ordered.

J & L DOUBLE EXTRA STRONG PIPE, BLACK AND GALVANIZED

All weights and dimensions are nominal

Size, in.	Diameters, in.		Thickness, in.	Weight per ft., plain ends, lb.	Mill test, lbs. per sq. in.		
	External	Internal			Butt weld	Lap weld	†Seam less
½	.840	.252	.294	1.714	700	.....	.....
¾	1.050	.434	.308	2.440	700	.....	.....
1	1.315	.599	.358	3.659	700	.....	.....
1¼	1.660	.896	.382	5.214	2200	.....	.....
1½	1.900	1.100	.400	6.408	2200	3000	.....
* 2	2.375	1.503	.436	9.029	2200	3000	3000
* 2½	2.875	1.771	.552	13.695	2200	3000	3000
* 3	3.500	2.300	.600	18.583	2200	3000	3000
* 3½	4.000	2.728	.636	22.850	.....	2500	2500
* 4	4.500	3.152	.674	27.541	.....	2500	2500
* 4½	5.000	3.580	.710	32.530	.....	2000	2000
* 5	5.563	4.063	.750	38.552	.....	2000	2500
* 6	6.625	4.897	.864	53.160	.....	2000	2500
* 8	8.625	6.875	.875	72.424	.....	2000	2500

**Also furnished in seamless. †Based on Grade "A" steel.*
Permissible variation in weight is 5% above and 5% below.
Furnished with plain ends and in random lengths, unless otherwise ordered.

MEMORANDA

REPUBLIC STEEL CORPORATION

GENERAL OFFICES
CLEVELAND, OHIO

For District Sales Offices Refer to Back Cover of Republic Steel Catalog in Section 13

A REPUBLIC PIPE FOR EVERY PURPOSE

RECOMMENDED USES

It is difficult to make general recommendations of tubular products that will hold true in all localities because of the varying conditions. In addition, some projects are of a less permanent character and the additional cost of a better material is not warranted. However, in general, the following uses are suggested to the architect who has a pipe installation problem.

Structural

Foundation Piling—Republic Electric Weld Pipe is recommended because of perfect roundness and high physical properties. Available in 16 in. O. D. and smaller.

Heating

Excessive Corrosion—Where excessive corrosion will be encountered, black standard weight Toncan Copper Molybdenum Iron Pipe or black extra strong wrought steel pipe should be used.

Normal Conditions—Where all piping, risers and returns are subjected to ordinary conditions, black standard weight wrought steel pipe is suggested.

Air Conditioning

Circulating Water Lines—Because of the corrosive nature of water used in air washers in the central unit type of air conditioning systems, black, standard weight Toncan Copper Molybdenum Iron Pipe should be used. Both threaded and welding fittings are available.

Plumbing

Excessive Corrosion—Where hot and cold water lines and general plumbing installations are subjected to highly corrosive action, galvanized extra strong or standard weight Toncan Copper Molybdenum Iron Pipe is most suitable.

Atmospheric Corrosion—Where atmospheric conditions cause corrosion on tubular products, it is suggested that galvanized standard weight copper bearing steel pipe be used.

Normal Conditions—Where pipe is subjected to ordinary usage and corrosion is mild, black standard wrought steel pipe will ordinarily be satisfactory.

Vents, Drainage and Down-spouts—Tubular products for such uses are generally subjected to atmospheric or alternate wet and dry corrosive action which suggests the use of Galvanized Toncan Iron or galvanized standard weight copper bearing steel pipe. When such corrosive action is mild, galvanized standard weight wrought steel pipe will usually suffice.

Fire Lines—Where water pressures are not excessive, black standard weight wrought steel pipe is recommended. Where water pressure is heavy and fire laws demand, black extra heavy weight wrought steel pipe is suggested.

Sprinkler Systems—Black standard weight wrought steel pipe for all piping.

Gas Lines—Black standard weight wrought steel pipe for all piping.

TONCAN IRON PIPE

THE ADVANTAGES OF TONCAN COPPER MOLYBDENUM IRON AS A PIPE MATERIAL

In the course of tests and service it has been proved that Toncan Iron Pipe possesses certain advantages for building applications which, stated briefly, are:

(1) It resists to a higher degree more of the many and varied types of corrosion than any other ferrous material in its price class. This resistance is not confined to the surface or "skin" of the metal, but is uniform throughout the *entire* wall thickness.

(2) It combines the high rust-resistance of an alloy iron with many of the desirable physical properties of less resistant ferrous materials.

(3) Absolute freedom from scale minimizes the possibility of the pitting type of corrosion.

(4) It possesses a higher resistance than other ferrous materials to impact and to vibration fatigue.

(5) It is one of the most workable of materials.

(6) Unlike other ferrous materials, cold working—cutting, bending, threading—has practically no effect upon the rust-resistance of Toncan Iron Pipe.

(7) It takes a sharp clean thread easily when properly machined.

(8) It welds more easily than other ferrous pipe. The use of Toncan Iron welding fittings and welding rod insures an installation of equal rust- and corrosion-resistance throughout.

(9) It takes and holds a galvanizing coating equal to that found on any other commercial ferrous pipe material, adding the protection of a heavy coating of zinc to the already high rust-resistance of the pipe material itself.

(10) Through its longer trouble-free life it has been found to cost far less per year of service. Its use is more than an economy. It is greater insurance against pipe failures and frequent costly replacements.

TECHNICAL DATA

Sizes

Butt Weld—¼ in. to 1½ in. inc.—iron pipe size.
Electric Weld—2 in. to 12 in. inc.—iron pipe size.
Electric Weld—14 in. O.D. and 16 in. O.D.
Single or double random lengths.

Weights

Standard and Extra Heavy.
Also all weights of pipe suitable for line pipe installations, Water Well Casing and Oil Country Goods.

Finishes

Black, Galvanized, Wrapped or Coated with special coatings as desired. Only single random lengths galvanized.

Specifications

Specifications—Same as for Wrought Steel Pipe except as follows:

Testing of Material—The Toncan Iron from which the pipe is made must show the following physical properties:

Tensile strength .....Minimum 48,000 lb. per sq. in.
Yield point .....Minimum 30,000 lb. per sq. in.
Elongation in 2 in.....Minimum 30%

How to Specify and Order Toncan Iron Pipe—Toncan Iron Pipe is now stocked for your convenience at all large jobbing centers. Standard weight is threaded and fitted with couplings of the same material as the pipe—Toncan Copper Molybdenum Iron. Extra Heavy, furnished plain ends for welded or special couplings or can be furnished threaded and coupled. All can be supplied Black or Galvanized.

Toncan Iron Pipe should be specified and ordered by its full name—TONCAN IRON PIPE. The blue pipe and blue coupling are your assurance that you have received the longer life pipe for which you have paid.

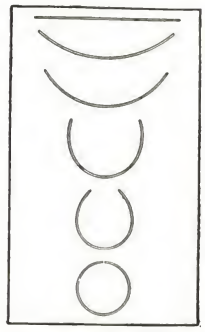
Identification—Every length of Toncan Iron Pipe is painted blue. Couplings are blue and stamped TM.

Literature—The 64-page catalogue, "Toncan Iron Pipe for Permanence" contains interesting and valuable facts concerning the remarkable performance of this rust-resisting pipe. Write for a copy.

TONCAN IRON ELECTRIC WELD PIPE

Combines the Advantages of Electric Welding with Those of Rust-resisting Toncan Iron

Toncan Iron Electric Weld Pipe is the result of combining an unusual welding process with Toncan Iron, for more than 25 years a leader of rust- and corrosion-resisting metals. It totals the advantages of electric welding with the quality of a long-lasting, rust-resisting alloy iron, and in addition, other outstanding features which are briefly enumerated below.



Gradually Forming Flat Plate Into Tubular Form Without Undue Strain on the Material

Features of Electric Weld Pipe

1. 100% Weld—The weld is an electrical resistance weld, made without the use of welding metal. It is smooth inside and outside and has the same tensile strength as the pipe wall. It is, therefore, 100% efficient.

2. Uniform Wall Thickness—Cold forming permits the maintenance of the same uniformity of wall thickness in the finished pipe as was present in the flat strips from which it is rolled. This means a uniform depth of metal at the root of every thread and reduces, to a minimum, the chances of breaks at the joints.

3. Roundness—Pipe made by this process is more nearly a perfect cylinder than is any other pipe because it is formed mechanically without the application of heat.

4. Scale Free—Electric Weld Pipe is clean inside and outside—no scale, no roll marks, no liquor marks, no burrs. Every length is inspected in the flat to insure against possible inside defects.

5. Long Lengths—The fewer joints in a line the lower the cost of construction and the leakage hazard. Electric Weld Pipe is obtainable in solid lengths without mid-weld up to 50 ft.

6. Straightness—Because no heat is used in forming, Electric Weld Pipe emerges from the welder cold and perfectly straight.

7. Strength—Due to the cold working of the metal, the yield point is considerably above that of pipe made by the hot processes. Strength is uniform in wall and weld because electrical resistance welding causes no grain growth at the weld. Thus collapse, broken joints and other expensive failures are avoided.

How Furnished

Toncan Iron Electric Weld Pipe is furnished with threads and couplings, plain ends, bevelled ends or belled ends. Sizes from 2 in. to 16 in. o.d., and in lengths up to 50 ft.

Typical Uses

Water well casing and drive pipe; oil country casing and tubing; power piping; ideal for fabrication and for oil, gas and water line piping. Recommended for various uses in the manufacture of equipment where uniform wall, concentricity and straightness are requisite properties.

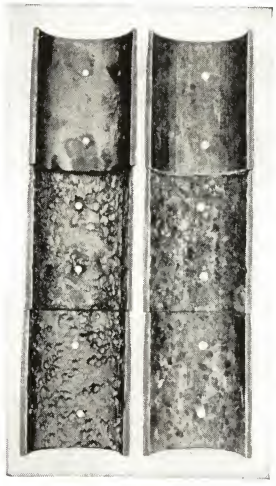
TONCAN IRON PIPE IN CORROSIVE SERVICE

Longer Life Without Extra Cost

That they might know the relative corrosion-resistance of various materials in actual power plant service, one of the large eastern utility companies installed steel pipe, wrought iron pipe and Toncan Iron Pipe in a steam return line in one of their power houses.

The photograph at the right is representative of the appearance of sections of the various pipe materials at the end of two years' service. The materials as shown in the photograph are: *top,* Toncan Iron; *center,* wrought iron; *bottom,* steel.

After 24 months the steel pipe was removed from service due to failure at the threads. At the end of 36 months the wrought iron pipe failed and was removed. The Toncan Iron Pipe was removed from service at *56 months.* When a recent addition was made to this power plant, Toncan Iron Pipe was specified and installed in cold water and steam return lines.



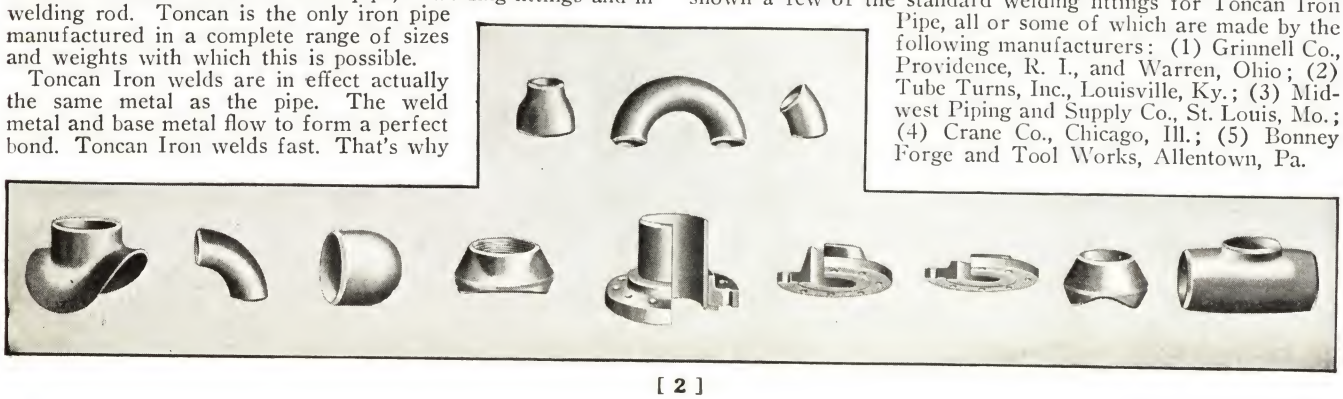
Time and again, Toncan Iron Pipe has given conclusive proof in service that it ranks *first* in resistance to rust and corrosion, among the ferrous metals in its price class. To the buyer and user of pipe this has one important meaning — *longer life and lower cost.* Bare pipe prices are no basis for figuring values. The true yardstick is the cost of the pipe installed divided by the service life. Installation usually costs more than the pipe and fittings, and when failure occurs, the entire installation cost is lost forever. Then it costs money to tear out the old piping, and the original cost must be paid again for replacement. *The best insurance against such costly maintenance is Toncan Iron Pipe.*

TONCAN IRON PIPE WELDING FITTINGS

Keeping pace with the growing trend to the use of welding in pipe installations, Republic has provided for welding fittings for Toncan Iron Pipe. It is now possible, through the cooperation of pipe fitting manufacturers, to obtain high resistance to rust throughout any pipe system—there need be no zone of weakness if Toncan Iron is used in pipe, in welding fittings and in welding rod. Toncan is the only iron pipe manufactured in a complete range of sizes and weights with which this is possible.

Toncan Iron welds are in effect actually the same metal as the pipe. The weld metal and base metal flow to form a perfect bond. Toncan Iron welds fast. That's why Toncan Iron welding fittings are used in so many installations—for speed, economy, long life, safety and uniform corrosion-resistance.

Toncan Iron welding rod and wire are available in the following forms: bare, lime coat, sulcoat and heavy flux coat. Below are shown a few of the standard welding fittings for Toncan Iron Pipe, all or some of which are made by the following manufacturers: (1) Grinnell Co., Providence, R. I., and Warren, Ohio; (2) Tube Turns, Inc., Louisville, Ky.; (3) Midwest Piping and Supply Co., St. Louis, Mo.; (4) Crane Co., Chicago, Ill.; (5) Bonney Forge and Tool Works, Allentown, Pa.





REPUBLIC WROUGHT STEEL PIPE

This pipe is made from uniformly good quality soft weldable wrought steel, rolled from solid ingots. Sufficient crop is cut from the ends to insure sound material, and the steel is given the most approved treatment in heating and rolling. Every piece is carefully inspected and tested. Republic Wrought Steel Pipe threads, flanges and bends easily.

Identification—Each length of pipe is identified with the name "Republic" rolled in raised letters every 3 ft. of length.

Specifications for Manufacture

The manufacturers of Republic Pipe have adopted a rigorous system of testing and inspection, which insures the best material and workmanship. A most rigid inspection is made after the welding of the skelp into the pipe.

In order to insure first class product without necessarily increasing the cost of manufacture, we have adopted and recommend the following specifications for Copper-Bearing Steel and Wrought Steel Pipe.

Process of Manufacture—All pipe shall be made either by the lap or butt-weld process as specified on order, according to the best methods and practice.

Surface Inspection—The pipe must be reasonably straight and free from blisters, cracks or other injurious defects. Liquor marks incidental to the manufacture of lap-welded pipe will not be considered as surface defects. The pipe shall not vary more than 1% either way from being perfectly round or true to the standard outside diameter, except on the small sizes (1½ in. and smaller) where a variation of $\frac{1}{64}$ in. will be accepted. The pipe must not vary more than 5% either way from standard weight.

Threading and Reaming—When required, the pipe must have a good Briggs standard thread. The threads must not vary more than 1½ turns either way when tested with a Pratt & Whitney Briggs standard gauge. All burrs at ends to be removed.

Internal Pressure Test—The test pressures will be applied to the respective sizes of standard butt and lap-welded pipe as indicated in tables.

Testing of Material—The steel from which the pipe is made must show the following physical properties:

Tensile strength .....52,000 to 62,000 lb. per sq. in.
Yield point .....minimum 30,000 lb. per sq. in.
Elongation in 8 in.....minimum 20%

A test piece cut lengthwise from the pipe and filed smooth on the edges shall bend, without fracture, through 180 degrees with an inner diameter at the bend equal to the thickness of the material.

Couplings—The material to be sound and free from injurious defects. Threads must be clean, tapped straight through, and of such pitch diameter as will make a tight joint. Ends must be countersunk.

Thread Protection—Solid tapped rings or split couplings will be provided as thread protectors on all sizes 3½ in. diameter or larger. Protection will be provided for smaller sizes when called for on order.

Additional Specifications—In addition to the above, Republic Pipe is manufactured in accordance with all standard specifications such as, A.S.T.M., A.P.I., etc.

REPUBLIC COPPER-BEARING STEEL PIPE

This type of material is suggested for installations where corrosive conditions similar to atmospheric are encountered. The slightly increased cost is a sound investment which yields increased life of installation.

Identification—Each length of pipe is identified with the name "Republic" rolled in raised letters every 3 ft. of length. Black pipe is painted solid orange. Galvanized pipe is striped orange.

REPUBLIC PIPE—SIZES AND WEIGHTS

TONCAN IRON—REPUBLIC WROUGHT STEEL—REPUBLIC COPPER-BEARING STEEL

In Toncan Iron, sizes ¼ in. to 1½ in. made by an improved butt weld process, absolutely scale-free. Sizes 2 in. to 16 in. O.D., inclusive, made by Republic's Electric Weld Process. All weights and dimensions are nominal.

Size, in.	Standard Weight										Extra Strong					
	Diameters, in.		Thickness, in.	Wt., per ft., lb.		Threads per in.	Couplings			Test pressure in pounds	Diameters, in.		Thickness, in.	Wt. per ft., plain ends	Test pressure in pounds	
	External	Internal		Plain ends	Thds. & cpgs.		Diam., in.	Length, in.	Wt., lb.	Butt / Lap	External	Internal			Butt	Lap
⅛*	.405	.269	.095	.24	.24	27	.562	⅞	.030	700 /	.405	.215	.095	.314	700	.....
¼	.540	.364	.088	.424	.425	18	.685	1	.044	700 /	.540	.302	.119	.535	700	.....
⅜	.675	.493	.091	.567	.568	18	.848	1⅛	.072	700 /	.675	.423	.126	.738	700	.....
½	.840	.622	.109	.850	.852	14	1.024	1⅜	.118	700 /	.840	.546	.147	1.087	700	.....
¾	1.050	.824	.113	1.130	1.134	14	1.281	1⅝	.214	700 /	1.050	.742	.154	1.473	700	.....
1	1.315	1.049	.133	1.678	1.684	11½	1.576	1⅞	.350	700 /	1.315	.957	.179	2.171	700	.....
1¼	1.660	1.380	.140	2.272	2.281	11½	1.950	2⅛	.546	700 / 1000	1.660	1.278	.191	2.996	1500	2500
1½	1.900	1.610	.145	2.717	2.731	11½	2.218	2⅜	.758	700 / 1000	1.900	1.500	.200	3.631	1500	2500
2	2.375	2.067	.154	3.652	3.678	11½	2.760	2⅝	1.233	700 / 1000	2.375	1.939	.218	5.022	1500	2500
2½	2.875	2.469	.203	5.793	5.819	8	3.276	2⅞	1.755	800 / 1000	2.875	2.323	.276	7.661	1500	2000
3	3.500	3.068	.216	7.575	7.616	8	3.948	3⅛	2.549	800 / 1000	3.500	2.900	.300	10.252	1500	2000
3½	4.000	3.548	.226	9.109	9.202	8	4.591	3⅝	4.328	..... / 1000	4.000	3.364	.318	12.505	.....	2000
4	4.500	4.026	.237	10.790	10.889	8	5.091	3⅝	5.410	..... / 1000	4.500	3.826	.337	14.983	.....	2000
4½	5.000	4.506	.247	12.538	12.642	8	5.591	3⅝	5.984	..... / 1000	5.000	4.290	.355	17.611	.....	1800
5	5.563	5.047	.258	14.617	14.810	8	6.296	4⅛	9.158	..... / 1000	5.563	4.813	.375	20.778	.....	1800
6	6.625	6.065	.280	18.974	19.185	8	7.358	4⅛	10.823	..... / 1000	6.625	5.761	.432	28.573	.....	1800
7	7.625	7.023	.301	23.544	23.769	8	8.358	4⅛	12.390	..... / 1000	7.625	6.625	.500	38.048	.....	1500
8	8.625	8.071	.277	24.696	25.000	8	9.420	4⅝	15.843	..... / 800	8.625	7.625	.500	43.388	.....	1500
8	8.625	7.981	.322	28.554	28.809	8	9.420	4⅝	15.843	..... / 1000	.....	.....	.....	.....	.....	.....
9	9.625	8.941	.342	33.907	34.188	8	10.420	5⅛	19.752	..... / 900	9.625	8.625	.500	48.728	.....	1500
10	10.750	10.192	.279	31.201	32.000	8	11.721	6⅛	33.923	..... / 600	.....	.....	.....	.....	.....	.....
10	10.750	10.136	.307	34.240	35.000	8	11.721	6⅛	33.923	..... / 800	.....	.....	.....	.....	.....	.....
10	10.750	10.020	.365	40.483	41.132	8	11.721	6⅛	33.923	..... / 900	10.750	9.750	.500	54.735	.....	1200
11	11.750	11.000	.375	45.557	46.247	8	12.721	6⅛	36.970	..... / 800	11.750	10.750	.500	60.075	.....	1100
12	12.750	12.090	.330	43.773	45.000	8	13.958	6⅛	48.266	..... / 600	.....	.....	.....	.....	.....	.....
12	12.750	12.000	.375	49.562	50.706	8	13.958	6⅛	48.266	..... / 800	12.750	11.750	.500	65.415	.....	1100

14-in. o.d. to 16-in. o.d. inclusive, also available. *Made in Steel and Copper-Bearing Steel only.

SPANG CHALFANT, INC.

GENERAL OFFICES

Grant Building, PITTSBURGH, PA.

SALES OFFICES

PITTSBURGH, PA., Grant Bldg.
NEW YORK, N. Y., R.C.A. Bldg.
BOSTON, MASS., Consolidated Bldg.
DENVER, COLO., Continental Oil Bldg.
CHICAGO, ILL., McCormick Bldg.
ST. LOUIS, MO., Boatmen's Bank Bldg.
TULSA, OKLA., National Bank of Tulsa Bldg.
ATLANTA, GA., Rhodes-Haverty Bldg.
HOUSTON, TEX., Shell Bldg.
LOS ANGELES, CALIF., Transamerica Bldg.
SAN FRANCISCO, CALIF., Russ Bldg.



Products

This company markets and distributes a complete line of Welded and Seamless Tubular Products including Standard, Extra Strong and Double Extra Strong Pipe, both black and galvanized in all standard sizes and for all purposes. Also Spang "Copper Clude" Pipe.

Facilities

"Spang" Pipe is backed by complete and modern facilities including the new, ultra-modern Continuous Process Butt-welding Mill producing all sizes from ⅛ to 3 in. inside diameter in uniform 20-ft. lengths; Lapweld Mills for the production of all sizes 1¼ in. i.d. to 24 in. o.d. inclusive. Also facilities for the production of a complete line of Seamless Pipe, 14 in. o.d. and smaller.

Distribution

"Spang" Pipe is nationally distributed through leading jobbers in every important industrial center throughout the country. These distributors carry ample stocks of standard sizes, both black and galvanized for every requirement.

"SPANG" STANDARD PIPE—BLACK AND GALVANIZED—ALL WEIGHTS AND DIMENSIONS ARE NOMINAL

Size, in.	List Price per ft.	Diameters, in.		Thickness, in.	Approx. weight per ft., lb.		Threads per in.	Test pressure, lb.			Couplings		
		External	Internal		Plain ends	Threads and couplings		Butt welded	Lap welded	Seamless	Diameter, in.	Length, in.	Approx. weight, lb.
⅛	$ .05½	.405	.269	.068	.24	.24	27	700	.....	.....	.562	⅞	.03
¼	.06	.540	.364	.088	.42	.42	18	700	.....	.....	.685	1	.04
⅜	.06	.675	.493	.091	.56	.56	18	700	.....	.....	.848	1⅛	.07
½	.08½	.840	.622	.109	.85	.85	14	700	.....	.....	1.024	1⅜	.11
¾	.11½	1.050	.824	.113	1.13	1.13	14	700	.....	.....	1.281	1⅝	.21
1	.17	1.315	1.049	.133	1.67	1.68	11½	700	.....	.....	1.576	1⅞	.35
1¼	.23	1.660	1.380	.140	2.27	2.28	11½	700	.....	.....	1.950	2⅛	.54
1½	.27½	1.900	1.610	.145	2.71	2.73	11½	700	.....	.....	2.218	2⅜	.75
2	.37	2.375	2.067	.154	3.65	3.67	11½	700	1000	2000	2.760	2⅝	1.23
2½	.58½	2.875	2.469	.203	5.79	5.81	8	800	1000	2100	3.276	2⅞	1.75
3	.76½	3.500	3.068	.216	7.57	7.61	8	800	1000	1900	3.918	3⅛	2.54
3½	.92	4.000	3.548	.226	9.10	9.20	8	.....	1000	1700	4.591	3⅝	4.32
4	1.09	4.500	4.026	.237	10.79	10.88	8	.....	1000	1600	5.091	3⅝	5.41
5	1.48	5.563	5.047	.258	14.61	14.81	8	.....	1000	1400	6.296	4⅛	9.15
6	1.92	6.625	6.065	.280	18.97	19.18	8	.....	1000	1300	7.358	4⅛	10.82
8	2.50	8.625	8.071	.277	24.69	25.00	8	.....	800	950	9.420	4⅝	15.84
8	2.88	8.625	7.981	.322	28.55	28.80	8	.....	1000	1100	9.420	4⅝	15.84
10	3.20	10.750	10.192	.279	31.20	32.00	8	.....	600	800	11.721	6⅛	33.92
10	3.50	10.750	10.136	.307	34.24	35.00	8	.....	800	850	11.721	6⅛	33.92
10	4.12	10.750	10.020	.365	40.48	41.13	8	.....	900	1000	11.721	6⅛	33.92
12	4.50	12.750	12.090	.330	43.77	45.00	8	.....	600	800	13.958	6⅛	48.26
12	5.07	12.750	12.000	.375	49.56	50.70	8	.....	800	900	13.958	6⅛	48.26

Permissible variation in weight is 5% above and 5% below.
Furnished with threads and couplings and in random lengths unless otherwise ordered. All weights given in pounds. All dimensions given in inches. For cut lengths, an extra charge will be made above random lengths. For pipe smoothed on the inside, known as plugged and reamed, an extra charge will be made above Standard Pipe. For galvanized, coated or "Copper Clude" Pipe, an extra charge above black. Taper of thread is ¾ in. diameter per foot length for all sizes.

"SPANG" EXTRA STRONG AND DOUBLE EXTRA STRONG PIPE—BLACK AND GALVANIZED—ALL WEIGHTS AND DIMENSIONS ARE NOMINAL

Size, in.	List price per ft.	Diameters, in.		Thickness, in.	Approx. weight per ft. plain ends, lb.	Test pressure, lb.		
		External	Internal			Butt welded	Lap welded	Seamless
Extra Strong								
⅛	$0.12	.405	.215	.095	.31	700	.....	.....
¼	.07½	.540	.302	.119	.53	700	.....	.....
⅜	.07½	.675	.423	.126	.73	700	.....	.....
½	.11	.840	.546	.147	1.08	700	.....	.....
¾	.15	1.050	.742	.154	1.47	700	.....	.....
1	.22	1.315	.957	.179	2.17	700	.....	.....
1¼	.30	1.660	1.278	.191	2.99	1500	.....	.....
1½	.36½	1.900	1.500	.200	3.63	1500	.....	.....
2	.50½	2.375	1.939	.218	5.02	1500	2500	2500
2½	.77	2.875	2.323	.276	7.66	1500	2000	2500
3	1.03	3.500	2.900	.300	10.25	1500	2000	2500
3½	1.25	4.000	3.364	.318	12.50	.....	2000	2400
4	1.50	4.500	3.826	.337	14.98	.....	2000	2300
5	2.08	5.563	4.813	.375	20.77	.....	1800	2000
6	2.86	6.625	5.761	.432	28.57	.....	1800	2000
8	4.34	8.625	7.625	.500	43.38	.....	1500	1700
10	5.48	10.750	9.750	.500	54.73	.....	1200	1400
12	6.55	12.750	11.750	.500	65.41	.....	1100	1200

Size, in.	List price per ft.	Diameters, in.		Thickness, in.	Approx. weight per ft. plain ends, lb.	Test pressure, lb.		
		External	In. ternal			Butt welded	Lap welded	Seamless
Double Extra Strong								
½	$0.32	.840	.252	.294	1.71	700	.....	.....
¾	.35	1.050	.434	.308	2.44	700	.....	.....
1	.37	1.315	599	.358	3.65	700	.....	.....
1¼	.52½	1.660	.896	.382	5.21	2200	.....	.....
1½	.65	1.900	1.100	.400	6.40	2200	.....	.....
2	.91	2.375	1.503	.436	9.02	2200	3000	3000
2½	1.37	2.875	1.771	.552	13.69	2200	3000	3000
3	1.86	3.500	2.300	.600	18.58	.....	3000	3000
3½	2.30	4.000	2.728	.636	22.85	.....	2500	2500
4	2.76	4.500	3.152	.674	27.54	.....	2500	2500
5	3.86	5.563	4.063	.750	38.55	.....	2000	2000
6	5.32	6.625	4.897	.864	53.16	.....	2000	2000
8	7.25	8.625	6.875	.875	72.42	.....	2000	2000

Permissible variation in weight is 5% above and 5% below for extra strong pipe; 10% above and 10% below for double extra strong pipe.
Furnished with plain ends and in random lengths, unless otherwise ordered. Random length of Extra Strong and Double Extra Strong Pipe is considered to be 12 to 22 ft.; we have the privilege, however, of supplying not exceeding 5% of total order in lengths from 6 to 12 ft. For pipe fitted with threads and couplings or threads only, an extra charge will be made above plain ends. For cut lengths, an extra charge will be made above random lengths. For galvanized, coated or "Copper Clude" Pipe, an extra charge will be made above black.
Taper of threads (when threaded) is ¾ in. diameter per foot length for all sizes.

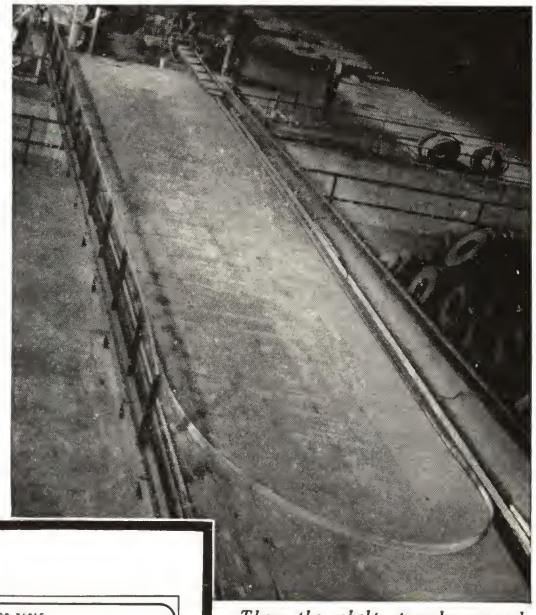
SPANG C-W (Continuous Weld) PIPE

For Sale by Spang Chalfant, Inc.

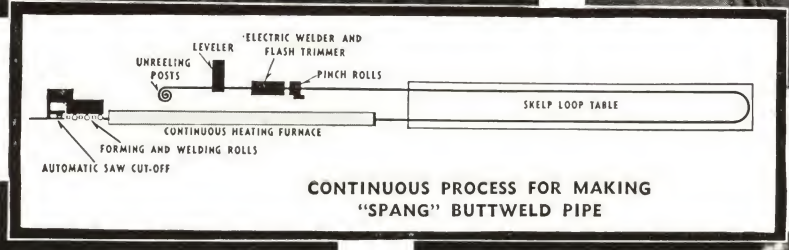
Pictured are the four principal steps in the manufacture of the new "Spang C-W Pipe"—a streamlined process that employs continuous automatic welding under scientific heat control, assuring a more uniform weld, greater strength and uniform lengths.



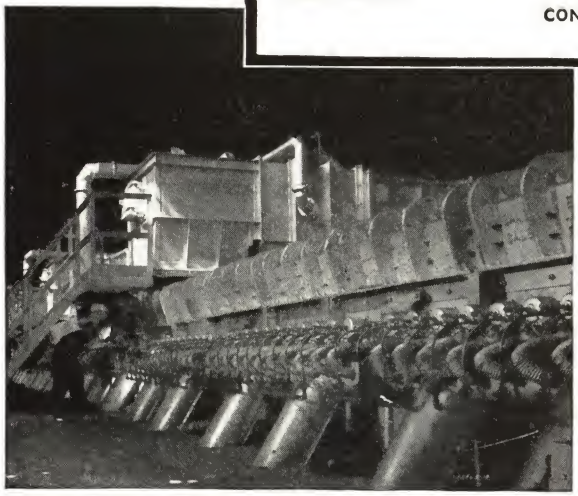
Reels of special steel skelp are welded together to form an endless ribbon of steel.



Then the skelp travels around the loop table to enter the furnace.



CONTINUOUS PROCESS FOR MAKING "SPANG" BUTTWELD PIPE





The flat skelp is carried on rolls and skids through the (154 ft.) furnace. Fired by 274 natural gas burners, where the steel is brought up to 2900° F. for welding.

Right: Emerging from the furnace the heated skelp passes through forming and welding rolls and then the hot pipe moves to the cut-off saw.

The New "Spang C-W Pipe"

Rolled by the most advanced method, "Spang C-W (Continuous Weld) Pipe" represents a revolutionary advance in quality pipe manufacture. Reels of steel skelp 185 to 550 ft. in length are unwound through a leveler and around a long loop table, entering a long, pyrometrically controlled furnace where the steel is progressively heated to correct welding temperature while under continuous movement. The briskly moving skelp emerges from the opposite end of the furnace where ingenious rolls shape and weld the white hot skelp into a continuous length of pipe. A moving saw synchronized with the speed of the pipe then cuts the pipe into uniform 20-ft. lengths.

"Spang C-W Buttweld Pipe" is manufactured in all standard sizes from ⅛ to 3 in. and is available in Standard Weight and Extra Strong as required.

"Spang C-W Line Pipe," tested to 1600 lbs. per sq. in., can be furnished either black or galvanized.

Advantages of "Spang C-W Pipe"—This continuous process makes possible the manufacture of buttweld pipe in uniform lengths, simplifies bundling and assures a definite number of feet per bundle.

A cleaner, stronger and more uniform weld is made possible through scientific control of the most modern heating furnace, with the result that "Spang C-W Pipe" has a much higher bursting strength, greater durability and superior ductility than produced by ordinary methods. A smoother and cleaner inside finish is also obtained. Easier and better threading due to more uniform diameter.

Complete stocks of "Spang C-W Pipe" are available through your Local Distributor.

MEMORANDA

WHEELING STEEL CORPORATION

Manufacturers of COP-R-LOY

GENERAL OFFICES

WHEELING, W. VA.

DISTRICT OFFICES

ATLANTA, GA., Healey Building
BOSTON, MASS., Statler Building
BUFFALO, N. Y., Liberty Bank Building
CHICAGO, ILL., Willoughby Tower Building
CINCINNATI, OHIO, Carew Tower
DALLAS, TEX., Dallas National Bank Building
DETROIT, MICH., Fisher Building
LOS ANGELES, CAL., Richfield Building
NEW ORLEANS, LA., Whitney Building
NEW YORK, N. Y., Equitable Building
PHILADELPHIA, PA., Girard Trust Co. Building
ST. LOUIS, MO., Telephone Building
SAN FRANCISCO, CAL., Rialto Building
SEATTLE, WASH., Northern Life Tower

Products

WHEELING "COP-R-LOY" supplied in Standard Black and Galvanized Pipe, Black and Galvanized Sheets, Special Finished Sheets; WHEELING STEEL PIPE; TIN and TERNE PLATE.

Also Wheeling Black and Galvanized Steel Sheets, Long Terne Sheets, Locker Sheets, etc.

"Cop-R-Loy" Pipe

"Cop-R-Loy" Pipe provides the composite of all steel pipe qualities and advantages. In addition, it has a copper content by admixture which metallurgical science has established as a means to maximum ferrous pipe durability under the majority of service conditions. It is pipe you hear discussed frequently and is used extensively by request of architects, building and industrial engineers. As a rust retardant under atmospheric conditions it has won genuine distinction. It can be specified with an assurance of economy and satisfaction.

"Cop-R-Loy" Pipe provides all the structural strength of steel pipe so necessary to present day piping installations. It cuts easily and threads readily without filling dies. Also it is quite readily bent cold. No better pipe for any plumbing, heating or waste lines need be desired.

Identification — Substitutes and imitations are avoided by insisting upon the pipe that has the name "Cop-R-Loy" rolled in the pipe wall. Genuine Wheeling "Cop-R-Loy" Pipe, in the black finish, has a maroon coating; galvanized "Cop-R-Loy," a maroon stripe, in addition to the name.

"Cop-R-Loy" Nipples—Nipples for "Cop-R-Loy" Pipe installations are made of "Cop-R-Loy" Pipe by leading nipple manufacturers. Names on request. Specify "Cop-R-Loy Nipples" throughout.

Full Standard Weight—"Cop-R-Loy" Pipe is available black or galvanized, in standard weights and sizes ⅛ to 12 ins.

Wheeling Steel Pipe

Wheeling Steel Pipe is supplied in the same weights and sizes.

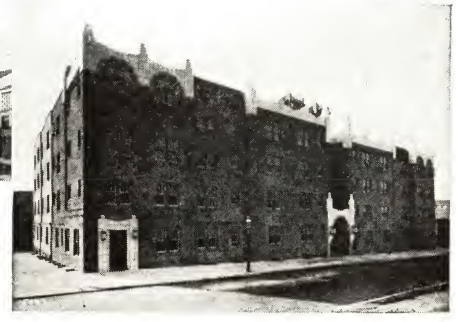
A modern Philadelphia structure is the Sprague and Horter Street Apartments, designed by Stetler and Deysher. Cop-R-Loy Pipe for plumbing and heating was installed by Harry Copperman





The Allen Apartments and shopping center, San Francisco, California, is Cop-R-Loy equipped throughout all plumbing. The contract was executed by E. Sugarman, Richmond Sanitary Company supplying the pipe. Architect: Bertz, Winter & Maury

In Philadelphia, Pennsylvania, the Conlyn Towers Apartments, is equipped with Cop-R-Loy Pipe in hot and cold water lines, vent wastes and in the heating system. The installations were by W. F. Rentschler & Brother



"Cop-R-Loy" Sheets

"Cop-R-Loy" Galvanized Sheets are universally used for sheet metal work in all types of building construction; particularly for ventilating systems, "Cop-R-Loy" has offered many economies with all the desirable features of durability and workability. All gauges and sizes of "Cop-R-Loy" Sheets required for sheet metal and ventilating work are manufactured and are supplied contractors by leading distributors. Specify "Wheeling Cop-R-Loy Galvanized Sheets."



THE AMERICAN BRASS COMPANY

Manufacturers of Anaconda Brass, Copper and Nickel Silver Pipe; Copper Tubes and Fittings

GENERAL OFFICES

WATERBURY, CONNECTICUT

MANUFACTURING PLANTS

WATERBURY, CONNECTICUT
ANSONIA, CONNECTICUT
TORRINGTON, CONNECTICUT
BUFFALO, NEW YORK
DETROIT, MICHIGAN
KENOSHA, WISCONSIN

IN CANADA: Anaconda American Brass, Limited, NEW TORONTO, ONT.

OFFICES AND AGENCIES IN PRINCIPAL CITIES

For Other Pages, see File Index

ANACONDA BRASS AND COPPER PIPE

Present standards of sanitation have broadly extended the chemical and mechanical treatment of domestic waters and, although purifying the water, such treatments tend to increase its corrosiveness. Waters from different localities may look alike and taste alike, yet their effect on pipe may be widely different. Often the purest and most healthful waters are highly corrosive to pipe.

Recognizing these conditions, THE AMERICAN BRASS COMPANY developed, as a result of exhaustive study, two scientifically determined alloys to meet all water conditions.

ANACONDA "85" RED BRASS PIPE

For Highly Corrosive Waters

The present perfect condition of installations of ANACONDA "85" Red Brass Pipe after 13 to 21 years of actual service under the most unfavorable water conditions, substantiates the results of laboratory research, indicating that this is as high a quality of corrosion-resisting pipe as is commercially obtainable. It contains 85% of copper and meets requirements of Government Specifications for Grade "A" Water Pipe. It is recommended for distribution lines carrying ground waters and colored surface waters, particularly when drawn from sources of peaty origin, and mechanically filtered waters which may be high in carbonic acid content and low in alkalinity.

For Underground Service—Regardless of local water conditions, ANACONDA "85" Red Brass Pipe is recommended for all underground service lines assembled with threaded connections.

For Salt Water Service—In many seacoast localities water pipe is installed to provide circulating sea (salt) water for baths or pools. For such exceptionally corrosive conditions ANACONDA "85" Red Brass Pipe is recommended as the most satisfactory commercial material.

ANACONDA "67" BRASS PIPE

For Normally Corrosive Waters

This brass pipe alloy contains 67% of copper and meets Government Specifications for Grade "B" pipe. It is being successfully used for distribution lines in many localities where normal water conditions prevail; that is, when waters are not drawn from peaty sources, shallow wells, tubular wells or filter galleries in lowlands along river beds, and where filtered waters are not of high permanent hardness.

CORROSIVENESS OF WATER SUBJECT TO CHANGE

It should be borne in mind that the corrosiveness of domestic waters is subject to radical changes, due principally to the introduction of new purification methods and to the need for additional sources of supply to meet the constantly growing requirements of most communities. As a result, waters that are only *normally* corrosive today may be *highly* so in a few years.

Consequently, THE AMERICAN BRASS COMPANY recommends the specification of ANACONDA "85" Red Brass Pipe in every instance where it is not definitely known that the water supply is only normally corrosive and that *conditions are such that it is reasonably certain to remain so.*

ANACONDA COPPER PIPE

THE AMERICAN BRASS COMPANY manufactures ANACONDA deoxidized copper pipe in all standard pipe sizes in both regular and extra strong.

ANACONDA NICKEL ALLOY PIPE

ANACONDA Pipe for exposed plumbing is furnished in several white metal alloys composed of copper and nickel or copper nickel and zinc.

NICKEL OR CHROMIUM PLATED PIPE

THE AMERICAN BRASS COMPANY is prepared to furnish ANACONDA Brass Pipe nickel plated or chromium plated to order.

ANACONDA COPPER TUBES

With the perfection of solder type fitting, there has been an increasing use of copper tubes for general plumbing and heating purposes where conditions of pressure and temperature are not excessive.

Strong, workmanlike installations are made with ANACONDA Copper Water Tubes and ANACONDA Solder Fittings. Installation costs are lower than with standard size pipe and threaded fittings. Furthermore, elimination of threading permits thinner tube walls and the cost of these copper tubes is correspondingly less per foot than that of heavier pipe. In fact, a complete installation costs very little, and often no more, than one of rustable materials.

Type K Tubes

The heaviest grade, Type K, is recommended for underground service general plumbing purposes and heating lines. Conforming to Type K requirements of U. S. Government Specification WW-T99 and A.S.T.M. Specification B-88-33, these tubes are stamped at frequent intervals with the words "Anaconda Type K." For connecting gas and oil appliances, these tubes have been listed and labeled under Re-examination Service by Underwriters' Laboratories, Inc., and tubes for this purpose are marked "G-Anaconda-O Type K."

Type L Tubes

ANACONDA Type L Copper Tubes, somewhat lighter than Type K, are suitable for interior plumbing including drainage lines, and heating lines as well. These are stamped "Anaconda Type L," and meet all requirements of the foregoing specification for Type L tubes.

Type M Tubes

Lighter than Type L and furnished in hard temper only, these tubes have nevertheless been used with apparent success for plumbing purposes. However, THE AMERICAN BRASS COMPANY recommends the heavier Type K tubes as providing a greater margin of safety.

TINNED COPPER TUBE

For Highly Corrosive Waters

Attention is called to the fact that waters which are "soft" are usually highly corrosive because rain water filtering through soil containing no limestone or other alkaline materials absorbs carbonic acid gas which renders the water slightly acid.

If a long line of bare copper tube be used for carrying such water, there is a large exposed surface compared with the volume of water carried unless the water is running freely all the time. Consequently, *under some conditions,* a small amount of copper may be dissolved in the water (not enough to shorten the life of the tube nor to be objectionable for domestic use) and where the water drips on white porcelain fixtures, a green discoloration may appear.

In order to eliminate the possibility of this discoloration of fixtures it is recommended that all copper service lines over 100 ft. in length carrying "soft" underground waters or other waters known to be highly corrosive should be tinned. It is definitely known that a small amount of copper in the solution is not enough to be questionable from a standpoint of health. The Public Health Department of the U. S. Government is of the opinion that copper in drinking water is not to be considered harmful where the amounts are not so great as to make the water entirely unpalatable.

ANACONDA FITTINGS

There is an ANACONDA Fitting for every copper tube requirement in plumbing, including drainage, heating and air conditioning.

Solder Type Fittings

ANACONDA Solder Fittings are available in both cast bronze and wrought copper. They are made to the exacting dimensions so essential for sound, leak-proof joints. Smooth inside surfaces permit quick, thorough cleaning which is necessary for satisfactory soldered connections. Deep cups, with adequate shoulders for the tubes to butt against, provide a maximum area for the solder bond.

ANACONDA Cast Bronze Solder Fittings are made in all standard sizes and reductions from ⅛ to 12 in., inclusive; the Wrought Copper Fittings from ¼ in. to and including 4 in.

Flared Tube Fittings

Cast Bronze Flared Tube Fittings, in conjunction with soft ANACONDA Copper Tubes, have a definite field of application, particularly for fire sprinkler systems and underground lines, such as water and gas service, oil burner construction and supply lines, etc.

The complete line of ANACONDA Cast Bronze Flared Tube Fittings includes: Elbows, Tees, Couplings, Unions and a full range of reduction and adapter combinations in all standard sizes and combinations of sizes from ⅛ to 2 in., inclusive.

LITERATURE

ANACONDA Publication AB-1, 12th Edition, contains detailed information regarding ANACONDA brass and copper pipe and copper tube and fittings. Copies will be mailed upon request.

COPPER TUBES FOR HEATING LINES

Copper Tubes are now being widely used for heating lines. Information regarding the use of ANACONDA Copper Tubes for this purpose will be found in this edition of Sweet's Catalog. (See File Index.)

BRIDGEPORT BRASS COMPANY

BRIDGEPORT, CONN.

"Plumrite" Brass and Copper Pipe

"Bridgeport" Copper Water Tube and Plumbers' Brass Goods

BRANCH OFFICES IN PRINCIPAL CITIES

Large Warehouse Stocks Carried in Bridgeport, Chicago, Cleveland, Denver, Houston, Newark, Los Angeles, Providence and San Francisco

"PLUMRITE" BRASS PIPE RECORD OF OVER 50 YEARS

"PLUMRITE" BRASS AND COPPER PIPE

Time, the Real Test of "Plumrite" Pipe

Bridgeport Brass Company has been making brass and copper pipe for over 50 years. It is installed in some of the finest and largest buildings in the country. This material is recommended for the highest quality work—large buildings, fine homes, general plumbing, heating and air conditioning. Rust-free, healthful, long life, reduced maintenance costs.

Different Pipe Alloys Made to Meet Various Water Conditions

Recommendations and specification numbers briefly follow. If in doubt as to water conditions in your vicinity, please write to our Engineering Laboratory.



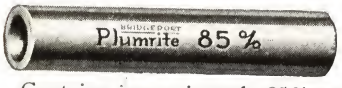
For Good Waters

Contains approximately 60% copper and 40% zinc. Known as Muntz Metal. Meets A.S.T.M. specifications B-43-33; Federal Specifications WW-P-351, Grade C; and U. S. Army Specifications 83-5A, Grade C. Can be bent easily when red hot as well as when cold. Very satisfactory. Used extensively in some of the finest buildings in the country during the past 50 years.



For Good Water Conditions

Contains 65% to 68% copper. Meets A.S.T.M. Specifications B-43-33; Navy 44-P-12, Grade B; Federal Specifications WW-P-351, Grade B; and U. S. Army Specifications 85-5A, Grade B. All bends must be made when the metal is cold.



For Corrosive Waters, Artesian Well Water Underground Service

Contains approximately 85% copper, 15% zinc. Also known as red brass. Best grade of brass pipe made. Meets U. S. Navy Specifications 44-P-12, Grade A; Federal Specification WW-P-351, Grade A and U. S. Army Specifications 83-5A, Grade A. Meets A.S.T.M. Specifications B-43-33. For highly corrosive waters—hot and cold sea water, corrosive artesian well water. For general plumbing, heating and underground installations.



For Corrosive Waters, Underground Service

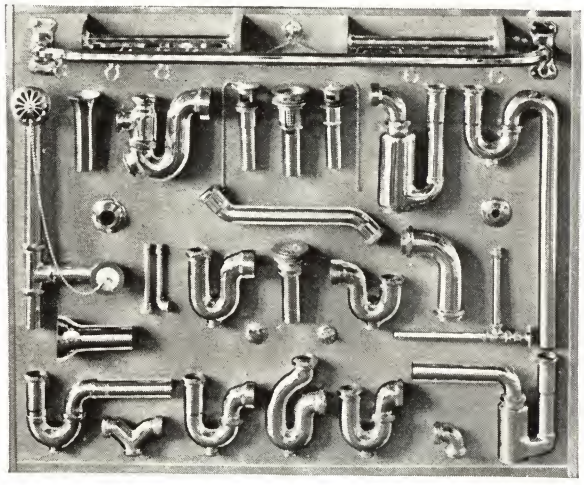
Contains approximately 99.9% copper. Meets A.S.T.M. Specifications B-42-33; U. S. Navy Specification No. 44-P-2; Federal Specification WW-P-377. Recommended for same conditions as are given under "Bridgeport Plumrite 85%".

SUGGESTED EQUIVALENT PIPE SIZES

Street service and cold water lines		Hot water lines	
Brass or copper	Iron	Brass or copper	Iron
½″	¾″	½″	¾″
¾″	1″	½″	1″
1″	1¼″	¾″	1¼″
1¼″	1½″	1″	1½″
1½″	2″	1¼″	2″
2″	2½″	1½″	2½″
		2″	3″

PLUMBERS' BRASS GOODS

Bridgeport Brass Company makes a distinctive line of Plumbers' Brass Goods such as traps, sink plugs, bath wastes, basin supplies, etc. Line very complete and up-to-date. Supplied in attractive and durable chrome finishes.



BRIDGEPORT PRODUCTS

Plumrite Brass and Copper Pipe.

Copper Water Tube.

Bridgeport-Arco Wrought Copper Fittings.

Plumbers' Brass Goods.

Roofing Copper.

Duronze (silicon copper alloy) Sheets for storage tanks, range boilers, automatic heaters.

Seamless Tubes.

Welding Rod and Wire.

Brass and Copper Mill Products.

WEIGHTS OF BRASS AND COPPER PIPE—S.P.S. REGULAR

Size, in.	O. D., in.	I. D., in.	Wall thickness, in.	Weight per foot, lb.			Plumrite 85%	
				Plumrite Standard and 67%	Plumrite 85%	Plumrite copper	Bursting pressure, lb.	Safe working pressure, lb.
⅛	0.405	0.281	0.0620	0.246	0.253	0.259	12,200	1935
¼	.540	.375	.0825	.437	.450	.460	12,300	1950
⅜	.675	.494	.0905	.612	.630	.643	12,000	1905
½	.840	.625	.1075	.911	.938	.957	10,200	1620
¾	1.050	.822	.1140	1.24	1.27	1.30	8,600	1365
1	1.315	1.062	.1265	1.74	1.79	1.83	7,700	1220
1¼	1.660	1.368	.1460	2.56	2.63	2.69	7,000	1110
1½	1.900	1.600	.1500	3.04	3.13	3.20	6,300	1000
2	2.375	2.062	.1565	4.02	4.14	4.23	5,200	825
2½	2.875	2.500	.1875	5.83	6.00	6.14	5,200	825
3	3.500	3.062	.2190	8.31	8.56	8.75	5,000	790
3½	4.000	3.500	.2500	10.85	11.17	11.41	5,000	790
4	4.500	4.000	.2500	12.29	12.66	12.94	4,400	700
4½	5.000	4.500	.2500	13.74	14.15	14.46	4,000	635
5	5.563	5.062	.2505	15.40	15.85	16.21	3,500	555
6	6.625	6.125	.2500	18.44	18.99	19.41	3,000	475
8	8.625	8.000	.3125	30.05	30.95	31.63	2,900	460
10	10.750	10.019	.3655	43.91	45.20	46.22	1,700	430

BRIDGEPORT COPPER WATER TUBE
BRIDGEPORT-ARCO SOLDER TYPE FITTINGS

BRIDGEPORT COPPER WATER TUBE



99.9% pure copper—oxygen free—non-rusting—resists corrosion from soil and water.

Uses—General plumbing and heating lines, underground service, lawn sprinkler systems, fuel oil lines, air conditioning and refrigeration.

Economical—Because it is thin walled copper pipe. Connections are made with either solder type or compression type fittings. Freedom from rust and low internal friction make possible the use of smaller sizes than rustable materials.



Supplied in Three Grades

***Type K**

—*Type K* recommended for general plumbing and heating; underground water service and lawn sprinkler systems; fuel oil lines.

***Type L**

Type L for general plumbing and heating lines.

Type M

Type M supplied in hard straight lengths only—for general plumbing purposes—lighter grade.

The above meet A.S.T.M. Specification B-88-33; Federal Specification WWT-799. (Calls for hard lengths only on Types L and M.)

General Plumbing—The soft flexible coils save fittings—can be bent easily. Excellent for replacing plumbing and heating lines and for new work. Can be "fished" in walls and saves tearing up property. Hard straight lengths for exposed lines—neat and workmanlike. Solder type fittings recommended.

Heating Lines—Attractive and very practical—especially for replacements and modernization work. Smaller sizes cut down waste, heat and radiation losses. Solder type fittings recommended.



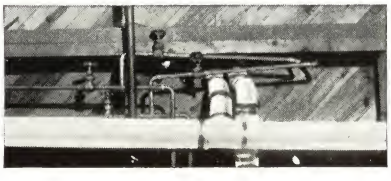
Air Conditioning and Refrigeration—Types L and M extensively used and very satisfactory.

Fuel Oil Lines—Type K soft with compression fittings acceptable by Fire Underwriters. Makes a very satisfactory installation.

Sprinkler Systems (for Fire Extinguisher Systems)—Underwriters' Laboratories, Inc., have listed the following sizes of "Bridgeport" hard drawn copper water tube:

Gov. Type K— ¼" to 2" incl.
Gov. Type L— ¾" to 2" incl.
Gov. Type M—1¼" to 2" incl.
Bridgeport-Arco Solder Type Fittings—¼" to 2" incl.

*Also furnished in soft coils.



Underground Service—Used by many water companies for connections between mains and house meters. The long soft coils can be bent around obstructions. Saves fittings. Type K with compression fittings recommended. For lawn sprinkler systems, Type K with solder type fittings generally used.

Technical Literature and Information—Write for booklets "Water Pipe Sizes," "Plumrite Brass Pipe," "Copper Water Tube."



BRIDGEPORT-ARCO FITTINGS

Solder type—wrought copper.

Made in sizes up to 4 in., inclusive, and carried in stock for immediate delivery.

Advantages of Wrought Copper Fittings—Non-porous; true copper to copper connections; same expansion as copper tubing; can be soldered more quickly than cast fittings; less loss of pressure because of less internal friction; neat and trim in appearance; makes a splendid looking job.



BRIDGEPORT COPPER WATER TUBE

Size		GOVERNMENT TYPE K Hard or soft temper in straight 20-ft. lengths. Soft temper in 30, 45 and 60-ft. coils			GOVERNMENT TYPE L Hard or soft temper in straight 20-ft. lengths. Soft temper in 60-ft. coils			GOVERNMENT TYPE M Hard temper in 20-ft. straight lengths.		
Size, in.	Outside diam., in.	Wall thickness, in.	Weight per ft., lb.	Soft Safe working stress, lb.	Wall thickness, in.	Weight per ft., lb.	Soft Safe working stress, lb.	Wall thickness, in.	Weight per ft., lb.	Hard Safe working stress, lb.
⅜	.500	.049	.269	980	.035	.198	700	.025	.144	800
½	.625	.049	.344	785	.040	.285	640	.028	.203	717
⅝	.750	.049	.418	653	.042	.362	560			
¾	.875	.065	.641	743	.045	.455	516	.032	.328	585
1	1.125	.065	.839	578	.050	.655	445	.035	.464	498
1¼	1.375	.065	1.04	473	.055	.884	400	.042	.681	488
1½	1.625	.072	1.36	443	.060	1.14	369	.049	.940	481
2	2.125	.083	2.06	390	.070	1.75	330	.058	1.46	436
2½	2.625	.095	2.92	362	.080	2.48	305	.065	2.03	396
3	3.125	.109	4.00	348	.090	3.33	289	.072	2.68	368
3½	3.625	.120	5.12	332	.100	4.29	276	.083	3.58	365
4	4.125	.134	6.51	325	.110	5.38	267	.095	4.66	368
5	5.125	.160	9.67	312	.125	7.61	243	.109	6.66	340
6	6.125	.192	13.87	313	.140	10.20	228	.122	8.91	318
8	8.125	.271	25.90	333	.200	19.29	247	.170	16.46	335

CHASE BRASS & COPPER CO.

—INCORPORATED—

SUBSIDIARY OF KENNECOTT COPPER CORPORATION

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For Other Chase Pages, see File Index

CHASE

CHASE RIGID COPPER WATER TUBE AND SWEAT FITTINGS

For Plumbing and Heating Lines

Chase Copper Water Tube

Chase Copper Water Tube is made from 99.9% pure copper. It will stand any city water pressure many times over. It is made in three gages called Types K, L and M, in accordance with U. S. Government Specifications WWT 799 and A.S.T.M. Specifications B-88-33.

Types L and M are used as explained on this page. The use of Type K is described on the following page.

Chase Copper Water Tube is satisfactory for most water conditions. For certain waters, tinned copper water tube is recommended. However, there are a few localities in which a special alloy pipe is needed for particular kinds of corrosive water.

The Chase Research Department will gladly offer recommendations on the best kind of pipe to install.

For Plumbing Lines

Type L, hard temper Chase Copper Water Tube is recommended for general plumbing and for use with Chase Sweat Fittings for new installations. It should also be used on all exposed pipe lines, because its rigidity and the trimness of sweat fittings make a better appearance.

Type M, hard temper, Chase Copper Water Tube, used with sweat fittings only, is recommended for general plumbing purposes only under favorable water conditions. Type M is lighter in weight than Type L, and therefore costs correspondingly less per foot.

For Heating Lines

Type M, hard temper, Chase Copper Water Tube is also used for low pressure heating systems, especially for return lines where considerable rusting takes place.

The steam carrying capacity of copper tube is greater than the same nominal size iron pipe. Therefore, many times a smaller size pipe can be used. Because copper does not radiate heat as fast as iron there is less heat loss and less need for insulation. And when insulating, copper tube usually takes one size smaller covering than the corresponding size iron pipe.

Chase Sweat Fittings

Chase Sweat Fittings are available for all sizes of copper tube up to and including 12 in. There is a sweat fitting in these sizes for practically every use. Strength, appearance, adaptability and ease of installation have made the sweated fitting increasingly popular in Plumbing, Heating and Air Conditioning work.

Standard Stock Sizes

Type L, Hard Temper—In 20-ft. straight lengths in sizes from ⅜ to 6 in., inclusive.

Type M, Chase Copper Water Tube—In sizes ⅜ to 4 in. in 20-ft. straight lengths.

Distribution

Chase Copper Water Tube and Fittings are distributed through plumbing supply jobbers to plumbers.

Write for the manual on Chase Copper Tube and Fittings, describing its many uses and advantages, for your files.



A Sweat Joint will withstand 5,000 lbs. water pressure per square inch

CHASE FLEXIBLE COPPER WATER TUBE AND FLARED FITTINGS

For House Replacements and Underground Water Services

For Replacement Work

Chase Flexible Copper Water Tube and Flared Fittings are used for all "in-the-wall" replacements and for adding new water supply lines in old buildings. Type K, the heaviest of the water tubes, is recommended for severe conditions, and Type L for general plumbing purposes. Many times, long 45 and 60-ft. coils can be worked down between the walls without opening walls to make connections and oftentimes without removing the old rusted-out pipes.

For Underground Service

Type K, soft temper, Chase Copper Water Tube and Flared Fittings are ideal for underground water service lines. Many cities use them exclusively. Being flexible, the tube rises and settles with the shifting of the ground. It resists freezing better than rigid pipe. In tests, five successive freezings expanded the outside diameter of ¾-in. tube .218 in. but the wall did not crack. By using one continuous length from water main to curb, and bending it around tree roots, rocks and cement foundations, many fittings are eliminated.

For Oil Burner Use

Type K, Chase Copper Water Tube and Flared Fittings, are used for oil burner work; and have been approved by the National Board of Fire Underwriters for gas and oil installations.

Standard Stock Sizes

Type L, soft temper—sizes ⅜ to 1¼ in., inclusive, in coils up to 60 ft. Over 1¼ in. and including 2 in. in 20-ft. straight lengths only.



Chase Flexible Copper Tube is worked through small openings in walls, and under floors. This saves tearing out walls and floors.



For Underground lines, Chase Copper Tube can be bent around rocks or other obstacles eliminating fittings and the time to make joints.

Type K, soft temper—sizes ⅜ to 1 in., in 20-ft. straight lengths and in coils of 45 and 60 ft. Sizes 1¼, 1½ and 2 in. in 20-ft. straight lengths only.

Chase Flared Fittings

Chase Flared Fittings are for use with soft temper copper water tube. They are made from a special alloy with a high copper content which makes them as highly resistant to corrosion as Chase Copper Water Tube.

A series of tests has proved that a flanged joint made with a Chase Flared Fitting is stronger than rigid pipe and a threaded fitting.

Each fitting is inspected, pressure tested and stamped with the Chase trademark.

CHASE BRASS AND COPPER S.P.S. PLUMBING PIPE

Chase Red Brass Pipe

We recommend Chase Red Brass Pipe as the best all-round commercial plumbing material for all types of waters. Especially it is recommended for hot water lines because of the normal increased corrosiveness of any water as the temperature is raised. This becomes of special importance in circulating hot water systems. For certain waters tinned Red Brass Pipe is recommended.

Chase Red Brass Pipe contains 85% copper, 15% zinc as specified in the U. S. Government Master Specifications WWP 351 for Grade A pipe for plumbing.

The name "Chase Red Brass Pipe" and the Chase trademark are stamped every 12 in. along every length.

All sizes up to ⅜ in. are tested to 1500 lbs. per sq. in. water pressure, and above ⅜ in. to 4 in. are tested to 2500 lbs. per sq. in.

Chase Copper Pipe

Chase Copper Pipe has a minimum copper content of 99.9%. It is made in standard pipe sizes and hard temper to be used with threaded fittings. It is highly resistant to corrosion from waters of high salinity.

Chase Laboratory Service

If you are in doubt as to what alloy will best meet a specific water condtion, write to us.

The Chase Research Department has had years of experience covering analyses of water conditions throughout the country. These facilities are always available.

PHELPS DODGE COPPER PRODUCTS CORPORATION

GENERAL SALES OFFICES
40 Wall Street, NEW YORK, N. Y.

MILLS: Bayway, Elizabeth, N. J.; Fort Wayne, Ind.; Yonkers, N. Y.; Los Angeles, Calif.

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CLEVELAND, OHIO, 1404 E. Ninth Street
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WASHINGTON, D. C., 14th and F Streets, N. W.

PRODUCTS

"Bulldog" Brass and Copper Pipe, Copper Service Tubes, Oil Burner Tubes and Air-Conditioning Tubes of Copper and Copper Alloys. "Bulldog" Hot Forged-Extruded Condenser Tubes, Evaporator Tubes and Heat Exchanger Tubes.

P-M-G Rustless Bronze Rigid Conduit and Electrical Metallic Tubing.

BULLDOG Brass and Copper Pipe

Bulldog Brass Pipe is made by the Hot-Forged Extrusion Process which gives sound metal as a result of compression at high temperatures under enormous pressures.

BULLDOG Yellow Brass Pipe



Bulldog Yellow Brass Pipe is recommended for general plumbing service and is specified for use in all localities where normal water conditions prevail. This grade conforms to government specifications for Grade "B" water pipe and is stamped "Bulldog" at intervals on each length.

BULLDOG Red Brass Pipe—(85-15)



Bulldog Red Brass Pipe is specified where highly corrosive water conditions prevail. It contains 85 percent copper and conforms to government specifications for Grade "A" Pipe. Every length of Bulldog Red Brass Pipe is stamped "Bulldog 85-15" at intervals along its length.



Mellon Institute of Industrial Research, Pittsburgh, Pa.
Bulldog Copper Pipe used exclusively

WEIGHT OF BRASS PIPE

Iron pipe size, in.	Outside diam. in.	Standard Lbs. per Ft.				Extra Heavy Lbs. per Ft.			
		Yellow Brass	Copper	Red Brass	Inside diam. in.	Yellow Brass	Copper	Red Brass	Inside diam. in.
⅛	.405	.246	.259	.253	.281	.285	.371	.363	.205
¼	.540	.437	.459	.450	.375	.593	.624	.611	.294
⅜	.675	.612	.644	.630	.494	.805	.847	.829	.421
½	.840	.911	.958	.938	.625	1.191	1.253	1.23	.542
¾	1.050	1.235	1.298	1.27	.822	1.622	1.706	1.67	.736
1	1.315	1.740	1.829	1.79	1.062	2.386	2.509	2.46	.951
1¼	1.660	2.557	2.689	2.63	1.368	3.291	3.460	3.39	1.272
1½	1.900	3.037	3.193	3.13	1.600	3.986	4.191	4.10	1.494
2	2.375	4.017	4.224	4.14	2.062	5.508	5.791	5.67	1.933
2½	2.875	5.830	6.130	6.00	2.500	8.407	8.839	8.66	2.315
3	3.500	8.314	8.741	8.56	3.062	11.24	11.82	11.57	2.892
3½	4.000	10.85	11.41	11.17	3.500	13.66	14.37	14.07	3.358
4	4.500	12.29	12.93	12.66	4.000	16.41	17.25	16.89	3.818
4½	5.000	13.74	14.44	14.15	4.500	20.07	21.10	20.66	4.250
5	5.563	15.40	16.19	15.85	5.062	22.51	23.67	23.18	4.813
6	6.625	18.44	19.39	18.99	6.125	31.32	32.93	32.21	5.750
7	7.625	23.92	25.15	24.63	7.062	41.22	43.34	42.43	6.625
8	8.625	30.05	31.60	30.95	8.000	47.00	49.42	48.39	7.625

Variation from these weights must be expected in practice.

BULLDOG Copper Pipe

Bulldog Copper Pipe is highly resistant to corrosion from waters of high salinity. It is made in standard pipe sizes and hard temper for use with thread fittings.

The use of Bulldog Brass and Copper Pipe eliminates repairs and replacements due to rust.

The Copper used in the manufacture of Bulldog Pipe and Tubes is taken from our own mines; smelted and refined in our smelters and refineries, then fabricated into tubes in our modern mills, thus controlling the product from *Mine* to *Market*. This insures uniformity of quality.

BULLDOG Copper Service Tubes

Bulldog Copper Service Tubes are particularly suitable for underground water service connections from street mains to curb-box and from curb-box to building. Because of their flexibility, Bulldog Copper Service Tubes are easily bent for turns and offsets. The necessity of threading is completely eliminated. All Bulldog Copper Service Tubes fit snug into any standard make of fitting (flared type), or sweat fittings of approved manufacture.

These tubes can be supplied in maximum length coils of 60 feet for all sizes up to and including 1¼-inch. Maximum straight lengths of 35 feet for all sizes up to and including 2-inch. Made in hard temper for new and exposed work and in soft temper for replacement and underground services.

BULLDOG Type K Tubes



For all underground service lines use BULLDOG TYPE K soft annealed Copper Service Tubes. This is the heaviest grade of tube and is recommended for water, gas, oil, steam and industrial uses.

BULLDOG Type L Tubes



BULLDOG Type L Tubes, lighter than Type K, are recommended for all cold and hot water lines for interior use and are soft annealed or hard drawn.

BULLDOG Type M Tubes



BULLDOG Type M Copper Service Tubes are thin wall tubes for interior use.

Trademark and type are stamped on the side of each tube at regular intervals—in accordance with U. S. Government Spec. WW-T-799 for types K, L and M respectively.

INSPECTION

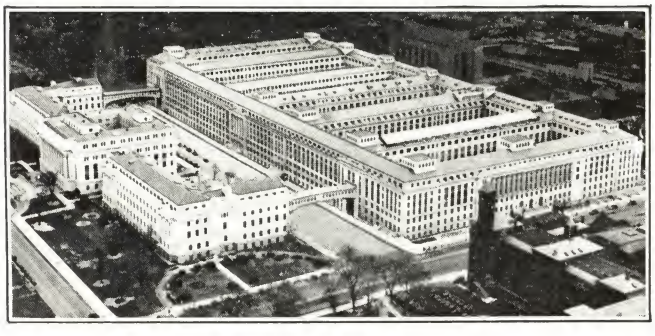
Every length of Copper Service Tubing is inspected and tested before shipment.



GAUGES AND WEIGHTS PER FOOT

Sizes, in.	Outside diam., in.	Type K		Type L *		Type M	
		Gauges	Weight per ft., lbs.	Gauges	Weight per ft., lbs.	Gauges	Weight per ft., lbs.
⅛	.250	.032	.085	.025	.068	.025	.068
¼	.375	.032	.134	.030	.126	.025	.106
⅜	.500	.049	.269	.035	.198	.025	.144
½	.625	.049	.344	.040	.284	.028	.203
⅝	.750	.049	.418	.042	.362	...	...
¾	.875	.065	.641	.045	.454	.032	.328
1	1.125	.065	.839	.050	.653	.035	.464
1¼	1.375	.065	1.04	.055	.882	.042	.681
1½	1.625	.072	1.36	.060	1.14	.049	.94
2	2.125	.083	2.06	.070	1.75	.058	1.46
2½	2.625	.095	2.92	.080	2.48	.065	2.03
3	3.125	.109	4.00	.090	3.33	.072	2.68
3½	3.625	.120	5.12	.100	4.29	.083	3.58
4	4.125	.134	6.51	.110	5.38	.095	4.66
5	5.125	.160	9.67	.125	7.61	.109	6.65
6	6.125	.192	13.87	.140	10.20	.122	8.91
8	8.125	.271	25.92	.200	19.25	.170	16.47

Variations from these weights must be expected in practice.
*Government specifications do not include sizes over 6-in. in Type L in soft temper.



South Building, U. S. Department of Agriculture, Washington, D. C.
A BULLDOG Copper Pipe installation

P-M-G ELECTRICAL CONDUIT



Left: P-M-G Rigid Conduit

Right: P-M-G Electrical Metallic Tubing



P-M-G Rustless Bronze Rigid Conduit and Electrical Metallic Tubing have been designed for use in hazardous and corrosive locations including bridges, railroads, seaboard locations, mines, chemical plants, oil refineries, distilleries and paint works. Both conduits are listed and labeled by the Underwriters' Laboratories and have withstood the prescribed tests. The corrosion resistance and the non-magnetic characteristics of this metal makes this conduit superior to ferrous alloys.

P-M-G Rustless Bronze Rigid Conduit and Electrical Metallic Tubing are manufactured under careful supervision and are of uniform temper and dimensions. They are seamless and cold drawn and can be threaded, bent and otherwise worked with the same devices employed for steel conduit and tubing.

Fittings—P-M-G Metal Fittings of standard design including box connectors, couplings, nipples, elbows, bends, clamps, hangers, condulets, outlet boxes, switch boxes and accessories in a wide range of sizes and design are available for use with P-M-G Rustless Bronze Rigid Conduit and Electrical Metallic Tubing.

P-M-G ELECTRICAL METALLIC TUBING

Nominal size, in.	O.D., in.	I.D., in.	Wall thickness, in.	Lbs. per foot
⅜	.577	.493	.042	.268
½	.706	.622	.042	.332
¾	.922	.824	.049	.510
1	1.165	1.049	.058	.765
1¼	1.510	1.380	.065	1.120
1½	1.740	1.610	.065	1.300
2	2.190	2.060	.065	1.650

Variations from these weights must be expected in practice.
All sizes are furnished in 10-ft. lengths for assembly with threadless or grooved fittings.
All electrical Metallic Tubing meets the requirements of the Underwriters' Laboratories and bears their labels under file No. E-11082, Guide No. 104LO.

P-M-G RIGID CONDUIT

Nominal size, in.	O.D., in.	I.D., in.	Wall thickness, in.	Lbs. per foot
¼	.540	.382	.079	.434
⅜	.675	.503	.086	.603
½	.840	.636	.102	.897
¾	1.050	.834	.108	1.210
1	1.315	1.075	.120	1.710
1¼	1.660	1.382	.139	2.520
1½	1.900	1.614	.143	2.990
2	2.375	2.077	.149	3.950
2½	2.875	2.519	.178	5.720
3	3.500	3.084	.208	8.160
3½	4.000	3.524	.238	10.670
4	4.500	4.024	.238	12.080

Variations from these weights must be expected in practice.
All sizes are furnished in 10-ft. lengths, both ends threaded with one coupling attached, but may be obtained unthreaded for use with threadless fittings.
All conduit meets the requirements of the Underwriters' Laboratories and bears their labels under file No. E-11172, Guide No. 6606.

(Booklets of above products upon request.)

MEMORANDA

27

Revere

COPPER & BRASS

Pipe & Tubing

REVERE

PROVIDES

dependable copper and copper alloy products for building construction and maintenance, and . . .

OFFERS

competent technical assistance in the selection and application of these materials to all building requirements.

FOUNDED BY PAUL REVERE

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REVERE BUILDING PRODUCTS

Sheet Copper and Leadtex (lead-coated copper) . . .

for roofing, gutters, conductor pipes, flashings, skylights, spandrels, decorative applications and termite proofing, also for range boilers.

Cheney and Revere Thru-Wall Flashing . . .

for protecting buildings against seepage, leaks and efflorescence.

Copper Water Tube, Brass Pipe, Red-Brass Pipe and Copper Pipe (S.P.S.) . . .

for water supply, hot and cold water lines, heating lines, drainage lines, oil burner, air conditioning and refrigerant lines, lawn irrigation and industrial piping.

Herculoy

for range boilers and hot water storage tanks, chemical containers and unfired pressure vessels.

Extruded Shapes of Architectural Bronze, Aluminum and Nickel-Silver, also Panel Sheets . . .

for the construction of doors, windows, grilles, store fronts, screens, pilasters and the like; Panel sheets of architectural bronze and other alloys for use with extruded shapes in the construction of the above.

Round, Square and Special Shaped Tubes in various alloys . . .

for door stiles and grilles in color match with Architectural Bronze Extruded Shapes and Panel Sheets.

Revere products can be safely written into any specification with assurance of quality and prompt delivery from Revere's Mills or through Revere's Distributors. Further information on any Revere Products supplied on request to any of the offices listed on rear cover.

IMPORTANCE OF LONG-LIVED PIPING

It has been estimated that residence and building owners in the United States could save $86,000,000 a year by using copper tube and brass pipe, in place of rustable materials, to prevent piping deterioration and consequent impairment and interruption of service, and ultimate costly replacements. In 1937 the value of residential construction in the United States was $1,222,007,000. $87,000,000 is more than 7% of this sum. These figures briefly and forcefully indicate the importance of using long-lived piping wherever practicable in every type of building construction.

Piping of this type is of special importance in water service lines from main to meter; lines for hot and cold water supply throughout the building; water and steam lines for heating systems; waste and vent pipe systems; water lines and refrigerant lines for air conditioning and refrigerating installations; oil lines for oil heater and tank installations; water lines for fire protection systems; and all general piping applications where rust and corrosion are factors.

In general, this means using copper water tube, brass pipe or copper pipe because they are resistant to most corroding factors common in water supplies.

However, the piping material for water lines should never be determined without knowledge of the local water characteristics, which may have unusual corroding properties. Revere Copper and Brass Incorporated offers the aid of its engineers and laboratories for water analysis and recommendations leading to specification of piping material of proper composition for best service and lowest ultimate cost in any given application and locality.

THE TREND IS TOWARD COPPER AND BRASS

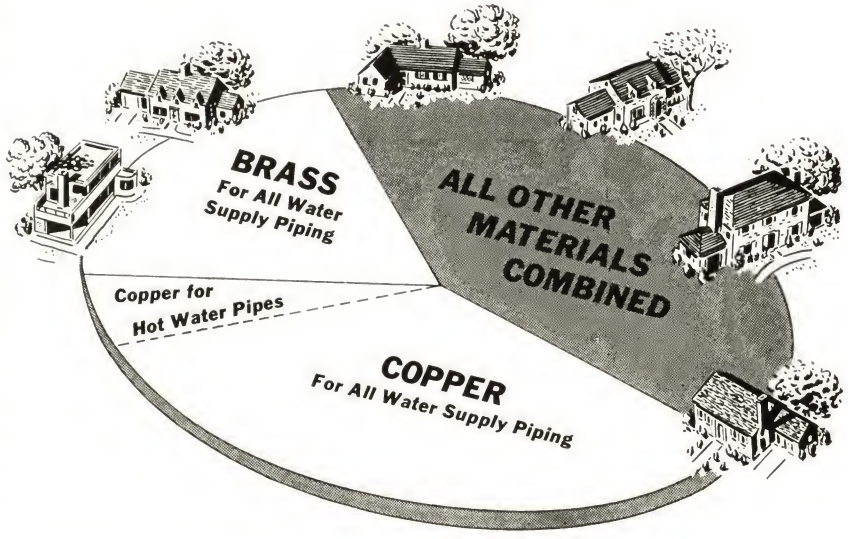
Pipe may be made from nearly all metals in common use. In recent years, however, there has been an increasing public recognition of the value of construction materials which are long lived and which, as nearly as possible, eliminate need of replacement.

This trend has been reflected in the increased sales of brass and copper pipe and copper water tube in relation to sales of all types of pipe. Compared to rustable pipe, even during the recent years when price has been a major consideration in practically all purchases, brass and copper tube and pipe have made extensive gains.

This was due in part to replacement of rusted-out pipe with copper and brass, because people realized the improvidence of repiping with material that would last only a few years; in part to the recognition by the public, as well as architects, engineers and contractors, of the fallacy of installing cheap materials that had a relatively short life; and in part to the fact that modern processes for treating and purifying water introduce factors that tend to increase the corrosive action of such water.

EVIDENCE of the trend toward the use of copper and brass for piping is found in an analysis of the specifications for 131 residences described in the "1938 Book of Small Houses". The material used for water supply piping is named in the specifications given for 107 of these houses. In 31 houses copper tube was used for all water supply lines. In 3 others copper tube was used for hot water lines. In 24 houses brass was used. Total mentions of copper alloy were 54% compared with 46% for other materials.

A similar analysis of 11 Resettlement Administration projects, also contained in the "1938 Book of Small Houses" discloses that copper or copper alloy for piping was mentioned in 63% of the specifications.



REVERE PRODUCTS FOR LONG-LIVED PIPING

To provide permanently rust-free service Revere manufactures the following pipes and tubes to meet various water conditions and installation requirements:



All Revere Pipe and Tube is Stamped as a Guarantee of Quality

REVERE COPPER WATER TUBE A pure copper pipe for plumbing and many other piping installations. Joints and connections are made by using soldered or compression fittings, thereby eliminating all threading.

REVERE BRASS PIPE (Yellow Brass) is designed for ordinarily corrosive water. It has a long record of satisfactory service and is favored by plumbers because of its easy working and threading qualities.

REVERE RED-BRASS PIPE (85% Copper) is designed for extremely corrosive waters. Where the utmost is demanded of a pipe, commercially available at reasonable price, this pipe is recommended.

REVERE COPPER PIPE (99.9% pure copper) in standard pipe sizes for use with threaded fittings. In certain localities, where water conditions are unusual, this pipe is preferred. It also has many uses in industry.

PIPE THAT RUSTS

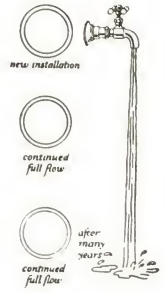




EXPERIENCE shows that iron and steel pipes rust out sooner or later, their life depending on the condition of the water supply and kind of pipe used. Even before they clog with rust you are bothered with rust-colored water, then with reduction in flow. Finally, the pipes become so clogged that, when you turn on the water full, you get only a trickle. When pipes become rusted, they also weaken and water pressure is likely to cause them to burst or leak at the joints, causing all sorts of trouble and expense.

Play safe, select piping with the same care you do plumbing fixtures: specify Rustproof Revere Copper Water Tube or Brass Pipe.

COPPER WATER TUBE OR BRASS PIPE



REVERE PRODUCTION FACILITIES AND EXPERIENCE

The ability of Revere Copper and Brass Incorporated to cooperate effectively with architects and builders in recommending and supplying piping of permanently economical and efficient character is derived from its large and extremely modern facilities for manufacturing copper tubing, and brass and copper pipe, of the highest grade; and from its 38 years of experience in furnishing these materials through its distributors to the building trades, for a great variety of residential, commercial and industrial structures and special applications.

Every precaution in the way of laboratory control and close inspection and tests during manufacture is taken to safeguard the quality of these products; and every possible aid to their proper application is offered to architects and contractors.

As a result, the average installation of these Revere products has shown a very low cost of maintenance and repairs. In fact, many of the installations of 20 to 30 years ago have required no attention whatever in the way of service or repairs.

COPPER WATER TUBE

WHAT IT IS

REVERE COPPER WATER TUBE (99.9% pure) is a cold drawn, seamless copper tube for water supply and many other applications. It is completely deoxidized and possesses a gun-barrel finish inside, free from flaws and blemishes. Each length is stamped "Revere Type K", "L" or "M", as a means of identification and a guarantee of quality. Used with Streamline Solder Fittings or any standard make of solder or compression fittings, it furnishes a complete piping system which is economical to install and, above all, permanently non-rusting, resistant to corrosion and long-lived.

WHERE TO USE IT

A REVERE COPPER WATER TUBE installation is especially recommended for economical service in the following:

1. General plumbing, piping and drainage systems.
2. Water services—from main to building.
3. Fuel oil lines—from tank to oil burner and for range burner lines.
4. Hot water, vapor and steam heating systems.
5. Heat control piping systems.
6. Lawn irrigation — underground lines and sprays.
7. Automatic sprinkler systems.
8. General factory piping.
9. Expansion joints and coils.
10. Anaesthetic lines.
11. Compressed air, gas and chemical conduits, refrigeration lines, etc.
12. Industrial piping.

Various public works projects in the last few years have specified Revere Water Tube for:

1. Underground water services.
2. Water filtration for resistance and non-rusting lines to control table and under drain piping.
3. Gas distribution for service lines.
4. Heating lines in sewerage disposal tanks.

ADVANTAGES OF REVERE COPPER TUBE

A Revere Copper Water tube installation possesses many advantages due both to the metal itself and to the improved and modern methods of installation.

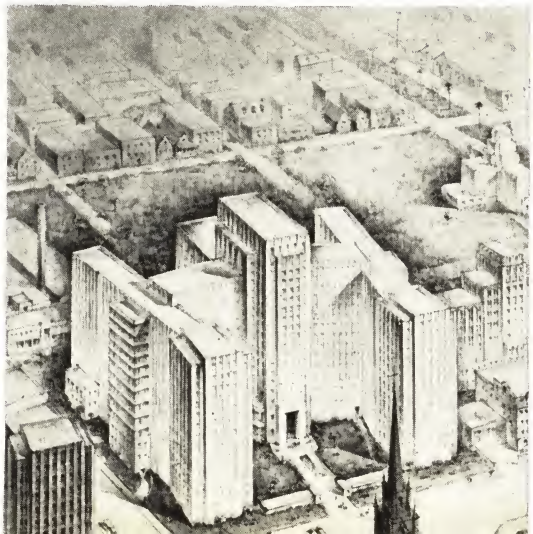
WILL NOT RUST Being made of pure copper, Revere Copper Water Tube is non-rusting and, under all ordinary conditions, provides long service with an absolute minimum of trouble.

REASONABLE COST The use of this tube with soldered or compression fittings now makes possible a superior installation at a reasonable price so that a long-life piping system of this material can be considered for practically any job.

ECONOMY IN SIZES There is no rust accumulation with Revere Copper Water Tube. Therefore, it is not necessary to install oversize pipe.

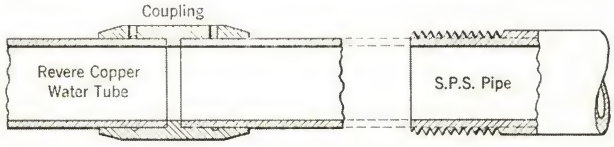
REVERE COPPER WATER TUBE IS RECOMMENDED FOR ALL TYPES OF BUILDINGS — LARGE AND SMALL







NO THREADED CONNECTIONS An important advantage of a Revere Copper Water Tube installation is that it is made without the use of threaded connections.

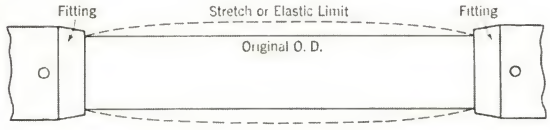


Illustrating the saving of metal with Revere Copper Water Tube.

Revere Copper Water Tube is joined with solder or compression fittings, which means a considerable economy in metal cost without loss of strength. The wall thickness of Revere Copper Water Tube is uniform throughout.

FREE WATER FLOW The gun-barrel finish on the Revere Copper Water Tube insures the rapid passage of water with a minimum of friction. Size for size, copper water tube delivers, and continues to deliver, a maximum amount of water.

RESISTS FREEZING The ductility of Revere Copper Water Tube, soft temper, is of particular importance in case of accidental freezing. When water freezes in this tube, the tube yields slightly to accommodate the expansion. An increase of as much as 25 per cent in diameter will not harm an annealed copper tube; water, when it freezes, expands about 9 per cent.



Revere Copper Water Tube, being 99.9% pure copper, expands with each freezing, up to its elastic limit. This limit is so great that sections of Soft Temper Revere Copper Water Tube have been repeatedly filled and frozen before bursting. On the sizes most generally used in water supply piping, five freezings, on the average, were necessary to cause bursting.

TYPES OF REVERE COPPER WATER TUBE

Revere Copper Water Tube is furnished in three types, known as K, L and M, which meet Government specifications WW-T-799 and A.S.T.M. specifications B88-33 for this product. These three types meet most corrosive conditions and price considerations.

Type K has the heaviest wall thickness of the three and is recommended for general plumbing purposes, particularly where water conditions are severe; (see page 8 regarding special conditions) also for underground services, gas, steam and oil lines and industrial uses. It is joined with either Streamline Solder Fittings or compression fittings. Furnished in both hard and soft tempers.

Type L has a medium wall thickness. Suitable for normal water conditions, it is recommended for general plumbing, also gas, steam and oil lines and industrial uses. It is joined with either Streamline Solder or compression fittings. Furnished in both hard and soft tempers.

Type M furnished in hard temper only; has a lighter wall than K or L. It is intended for general plumbing purposes where water conditions are normal and where low cost is a primary factor; also for gas, steam and oil lines and industrial uses. It is joined only with Streamline Solder Fittings or other standard soldered fittings.

Revere also manufactures Types O and U for special uses. Standard dimensions, weights and properties for all five types of Copper Tube are shown in table on page 13.

TEMPER OF REVERE COPPER WATER TUBE

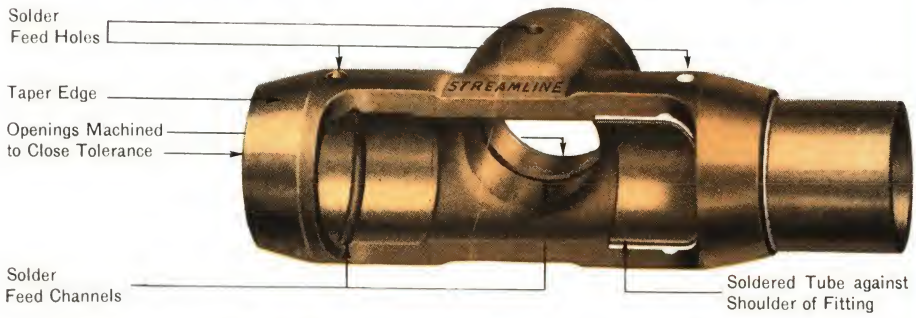
HARD TEMPER Revere Copper Water Tube — Hard Temper—is recommended for new work and should always be used for exposed piping. In sizes up to 1 inch, Type K (Hard Temper) can be bent cold with an inexpensive hand-operated bending tool, thus eliminating many fittings and producing a smooth flowing water system. There has been a definite trend from the use of soft temper to the hard temper in recent years. Hard temper is also preferable for use with Streamline and other solder fittings.

SOFT TEMPER Soft temper tube is for use wherever flexible piping is desired. It has particular advantages for replacements, where it can be worked between the walls and long runs made without couplings. This eliminates much of the tearing up ordinarily necessary in replacement work with its attendant carpentry, replastering, repainting, etc.

For services from main to building, soft temper always should be used. The long lengths eliminate fittings along the line. The flexibility makes it easy to make bends in cramped quarters around obstructions, etc., and compensates for any travel of the main or settling of the fill.

FITTINGS FOR REVERE COPPER WATER TUBE

STREAMLINE SOLDER FITTINGS



The Streamline Solder Fitting is especially recommended for use with Revere Copper Water Tube. However, this tube is manufactured to fit any standard make of compression or soldered fitting. Both compression and soldered fittings are thoroughly satisfactory when properly installed and are made in all types, including tees, elbows, couplings, adapters, etc.

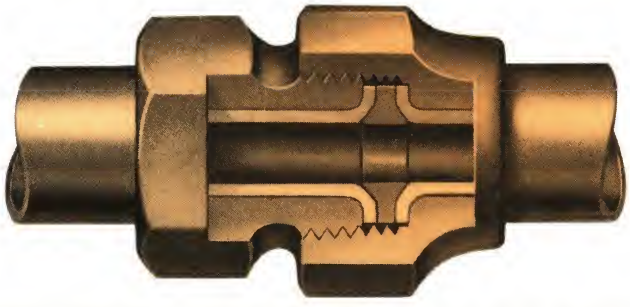
The Streamline Solder Fitting, which connects the piping by soldering rather than by threading or flaring, forms a patented soldered joint that is an outstanding piping development, offering important new advantages and economies in all phases of plumbing lines, service lines, heating systems, and in numerous phases of industrial piping. The fitting is only slightly larger than the tube itself, and use of a wrench is not required; therefore piping is easily installed with this soldered fitting in cramped quarters where it would be difficult or impossible to make a good joint with threaded couplings or compression fittings. Furthermore, joints properly made with Streamline Soldered Fittings are stronger than the pipe itself.

It should be noted in the illustration above that the Streamline Solder Fitting provides a smooth, uninterrupted surface, insuring minimum resistance to flow. Installation is quickly made by heating the fitting after it has been placed over the tubing, and running in solder through the holes provided. Capillary attraction causes the molten solder to completely fill the space between tube and fitting, producing a perfect joint.

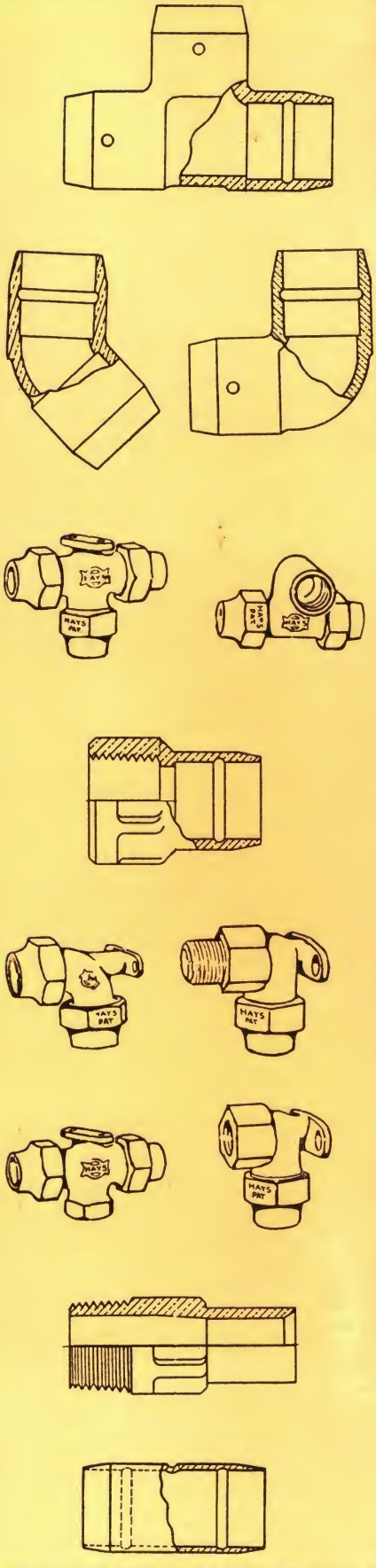
This is a fitting made for the mechanic, and requiring a mechanic's skill to install. Properly installed it is ideal for both concealed and exposed installations, because it not only promotes dependable, trouble-free service, but presents a far more attractive appearance than the ordinary run of S. P. S. (standard pipe size) piping installations.

COMPRESSION FITTINGS

Compression fittings have been used for many years with copper tube. The tightness and strength of joints made with this type of fitting have been thoroughly proved by long service in locomotives, steamships, steam lines, refrigerating systems, automobile and airplane fuel lines and many other exacting applications. The

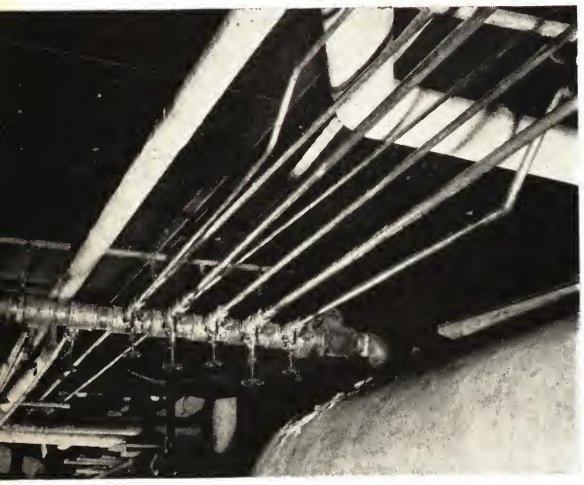


Hays Double-Seal Fitting is particularly efficient because of its double-seat feature, composed of a 45 seat holding the tube in a wedge and a 90 seat locking it and absorbing all strain and vibration. Revere Type K (heaviest weight) Copper Tube is recommended for use with compression fittings. Either soft temper or hard temper Type K Tube may be used without danger of cracking or splitting. As a rule compression fittings are not used with pipe sizes exceeding two inches.

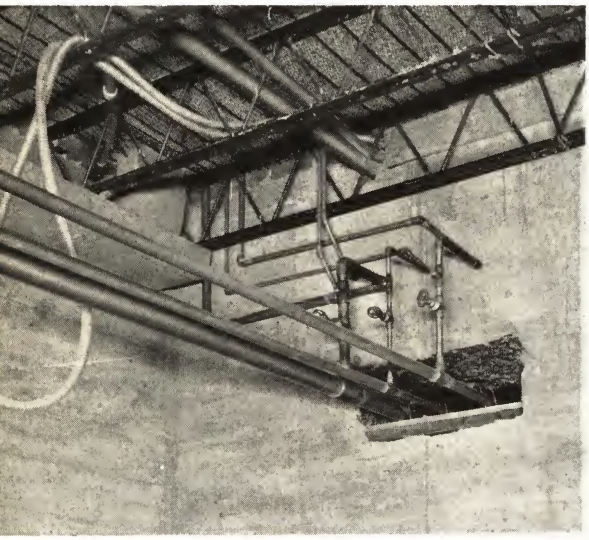


A FEW OF THE MANY TYPES OF STREAMLINE SOLDER AND DOUBLE-SEAL COMPRESSION FITTINGS

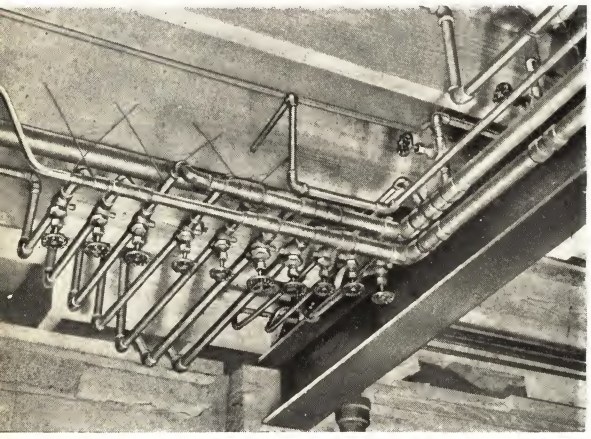
REVERE COPPER WATER TUBE FOR WATER SUPPLY



Approximately 2000 feet of Hard Temper Type L Tube was used in this Kresge Company Store in Cleveland. Replacement was made without interruption to business.



Neat, compact, long-lived, Revere Copper Water Tube with Streamline Fittings in a new Long Island residence.



Main manifold installation in a Cleveland residence. Revere Copper Water Tube (Type L, Hard Temper) and Streamline Solder Fittings were used. Plumbing Contractor: Reed & Campbell.

Revere Copper Water Tube will provide long-lived piping service for nearly all kinds of water. Generally speaking, pure copper or copper alloys are superior to other commercial metals for practically all water conditions.*

Revere Copper Water Tube meets modern requirements for long-lived building materials that can be installed at no penalty in cost. The building owner gets the benefit of permanently rust-free piping at low cost.

It is difficult to give accurate data on relative costs of copper water tube installations compared with other types, because special circumstances, such as the nature of the piping, lay-out, local labor rates, experience of the contractor with copper water tube installations, etc., influence the cost of each job. An installation of Revere Copper Water Tube, however, does provide rust-free piping at less cost than other types of rust-free materials. First costs for installations of Revere Copper Water Tube, Type M, are competitive with those of rustable pipe. In many instances Type L can be installed on a competitive cost basis. The ultimate cost of any type is less than that of rustable pipe.

NEW WORK For new work, straight lengths of Revere Copper Water Tube, Hard Temper, are recommended and favored by journeymen plumbers accustomed to working with rigid pipe. The finished job presents a neat and workmanlike appearance that will stand comparison with any type of piping installation. When the hard temper tube is used, fewer straps and hangers are needed to prevent sags.

In sizes up to and including 1", Revere Copper Water Tube (Type K, Hard Temper) in addition to possessing the advantage of coming in straight lengths can be perfectly bent with a hand-operated bending tool. This feature saves fittings, enhances appearance and reduces friction losses to an absolute minimum.

REPLACEMENT WORK In replacement work when the work is exposed or readily accessible, the recommendations under "New Work" should be followed. However for concealed work in walls, etc. Types K or L, Soft Temper Tube should be used. A great part of the cutting of walls, masonry, painting, etc., can be eliminated by taking advantage of the flexibility of Revere Copper Water Tube. Only small openings are necessary near fixtures.

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*NOTE: For salt water lines Admiralty Tubing is recommended rather than copper.

Also where high free carbon dioxide is present in combination with low permanent hardness, all pipes made of commercial metals will tend to corrode. In most installations rapid failure develops. When plain copper tubing is used, such a condition is likely to cause a green staining of enamel plumbing fixtures which, while unsightly, does not constitute a health hazard. Under these conditions, we recommend the use of tinned copper tube. Revere tube of this type is coated with pure tin on both the outside and inside of the tube. This coating is of uniform thickness and has a smooth surface. The use of Revere Tinned Copper Tube has solved the so-called "green water" problem in a large number of installations. Further information on request.

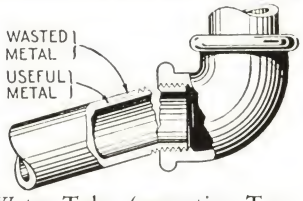
ADVANTAGES OF COPPER WATER TUBE

SMALLER SIZES From many years' experience on a variety of work, it would appear that smaller sizes of copper tube may be used than is common practice in iron-pipe installations. This is true because no allowance need be made for loss of head due to accumulation of rust.

The following table from the Copper Tube Handbook, published by Copper and Brass Research Association gives some interesting comparisons.

Iron Pipe, Nominal Diameter	*Corresponding Suitable Sizes for Copper Tube*	
	Hot Water	*Cold Water*
½ inch	⅜ inch	⅜ inch
¾ inch	½ inch	½ inch
1 inch	¾ inch	¾ inch
1¼ inch	1 inch	1 inch
1½ inch	1 inch	1¼ inch
2 inch	1¼ inch	1½ inch
2½ inch	1½ inch	2 inch
3 inch	2 inch	2½ inch

SAVES METAL Since threaded connections are not necessary Revere Copper Water Tube has a much thinner wall thickness than S.P.S. pipe without any loss of strength. This saving in metal means a consequent saving in cost.



SAVES FITTINGS Revere Copper Water Tube (excepting Type L, Hard Temper and Type M) can be bent to meet installation needs. This cuts down the number of fittings, particularly elbows.

SAVES SPACE A plumbing installation with Revere Copper Water Tube and Streamline Solder Fittings can be assembled in a minimum of space. Where there is room for the tube, a joint can be made up.

NON-RUSTING Revere Copper Water Tube is non-rusting and under all ordinary conditions provides long service with a minimum of trouble and cost.

LOW PRESSURE LOSS The gun-barrel finish on the inside of Revere Copper Water Tube insures the rapid passage of water with a minimum of friction. Friction losses are also reduced because the use of Streamline Fittings permits free flow; and easy bending of Revere Water Tube reduces the number of fittings used.

PROTECTION AGAINST FREEZING The ductility of Revere Copper Water Tube (soft temper) is important when water freezes in the tube. The tube yields slightly to accommodate the expansion but does not burst.

REDUCES "DRAW-OFF" LOSS In domestic hot water systems an often overlooked but important loss of heat occurs when the water in a pipe between the heater and the faucet, which has cooled to room temperature, is drawn off to obtain hot water. Every gallon of this water represents an expenditure in fuel consumed to heat it. Furthermore, the pipe itself has cooled and must be reheated by the new supply of hot water.

A recent investigation has disclosed that fuel bills for domestic hot water can be reduced as much as 38%, and have averaged 20%, when iron pipe has been replaced with direct runs of smaller sized copper tubing. At commonly found water pressures, Revere Copper Water Tube in ¼" nominal size will deliver sufficient water in many cases.

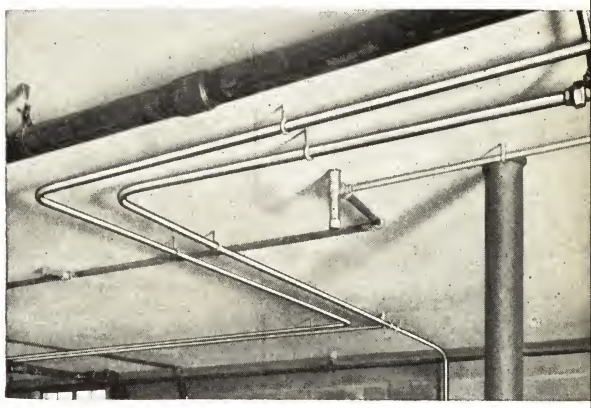
In many houses recently built, special lines are run directly from the heater to the kitchen, and sometimes the bathrooms in order to take advantage of these savings.



Streamline Fittings require less space, being only slightly larger than the pipe itself. They can also be installed much closer to walls, ceilings, etc., and in places otherwise inaccessible because no room is required for wrench grip or wrench swing.



Basement — modern style. Note air-conditioning ducts and steel joist construction with reinforced concrete arch. Along with these up-to-the-minute materials, 4000 lbs. of Revere Copper Water Tube, ½" to 3", joined with Streamline Solder Fittings, were used for all water lines.



An installation of Revere Copper Water Tube (Hard Temper) with compression fittings. Note the straight runs and the smooth bends made with a bending tool.

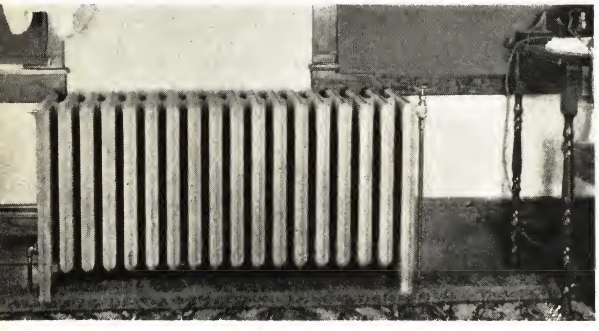
USES OF REVERE COPPER WATER TUBE



The supply lines in a forced circulation hot water heating system include one 1" and one ¾", and the return line one 1" Revere Copper Water Tube (Type M) and Streamline Fittings. Circulator requirements are 7 gallons per minute against a 24-inch head. The job was figured for 365 feet of direct cast iron radiation.



The basement piping includes Revere Copper Water Tube in sizes 1"—¾"—½"—⅜" and ¼". Note the copper wire used for hangers, and the neat, compact connections made with Streamline Fittings. Even with the added advantages of forced circulation and thermostatic control the actual cost of this Copper Water Tube installation was only slightly more than the cost of a steel pipe gravity installation which did not include these desirable features.



A radiator in the above home showing supply and return connections ⅜" Revere Copper Water Tube (Type M) assembled with Streamline Soldered Fittings.
The heating contractor was Leonard P. Hoffmeister of Syracuse. Material was supplied through the Crane Company branch at Syracuse.

FOR HEATING

Within the last few years architects, engineers and heating contractors throughout the United States, realizing the advantages of copper tube for plumbing purposes, have installed both steam and hot water house heating systems, using copper tube for all piping. The recorded results prove copper tube is entirely satisfactory. Copper not only conveys the steam and water without leakage, but also eliminates most of the troubles from corrosion and dirt that made traps, valves and other specialties inoperative at times. Copper tube also helps to avoid dirty boiler water because copper forms no rust to foul or discolor the water. It also is recognized that the smooth inside finish of copper tube with flush fittings creates less resistance to the flow of stream or water than threaded pipe.

An easy uninterrupted flow through the pipe lines of a heating system is even more vital to the success of the system than to that of a plumbing installation. In a plumbing system there is usually ample pressure behind the water to give a forcible flow. In heating systems, the pressure behind steam is usually less than two pounds per square inch. The pressure which makes hot water move through a hot water house heating system is extremely low where no pump is used. Many systems operate by gravity circulation only. The least resistance retards and in certain cases may entirely stop circulation.

STEAM SYSTEMS In general, copper tube sizes for steam heating installations may be the same as standard iron pipe. While the inside diameter of copper tube is usually slightly smaller than that of iron pipe of the same nominal size, this difference is compensated for by the smoother interior and freedom from pockets at fittings, when copper tube is used.

While it is common practice to use iron pipe capacities when laying out steam systems with copper tubing, it is possible to obtain good results by estimating slightly greater capacities for certain copper tube sizes, such as allowing 5 to 10% on the 1, 1¼ and 1½ inch sizes; 15% on the 2, 3, 3½ and 4 inch sizes; and 24% on the 2½ inch size.

Copper Water Tube is particularly recommended for steam return lines where the greatest amount of corrosion takes place and which frequently fail through rust after a comparatively short period of service.

HOT WATER SYSTEMS While copper tubes have proved successful in steam heating, it is in hot water heating systems, especially those employing a circulator, that copper tubes and solder fittings are most effective and most economically used. In forced circulation hot water heating systems, circulation is speeded by a noiseless electric pump. Smaller pipe sizes are used and it is therefore particularly important that there be no hindrance to flow. The smooth interior surface of Copper Water Tube reduces flow resistance to a minimum and it is estimated that there is 10 to 15% greater velocity circulation in copper with the same circulating head. This, plus the fact that heat losses are less with copper, results in increased circulation and the maximum amount of heat is delivered to the radiators in the least possible time.

HEAT LOSSES AND INSULATION While the total heat loss from both convection and radiation of copper is approximately 50% of that of black iron pipe of the same nominal size, it is considered good practice to cover copper tubing with the same thickness of insulation as would be required for iron or steel pipe

under the same conditions. Where the temperature difference of the tube and surrounding still air is relatively high, complete insulation is economically justified. However in the installation of a forced circulation hot water heating system, where the runs are approximately 125 feet in length or less and where the temperature of the air in the vicinity of the mains is not less than 50°, the use of pipe covering is frequently eliminated. The above conditions are found in the average private residence type of dwelling.

When copper tube is left uncovered, it is customary to clean it and finish it with one coat of bright lacquer. This prevents the tube from tarnishing, adds to its appearance and tends to reduce heat losses.

FOR AIR CONDITIONING

Revere Copper Tube is extensively used in air conditioning work for water lines leading to and from condenser coils of compressor units; from condensate pans of room coolers; and to and from humidifier spray chambers. Also for refrigerant lines between compressor and cooling units. Freedom from rusting, and resistance to corrosion are of course basic considerations leading to the practically universal use of copper tube for these purposes.

FOR DRAINAGE

Revere Copper Water Tube and Streamline Drainage Fittings may be advantageously used for all waste and vent piping systems. Standard Streamline Plumbing Fittings are suitable for all vent piping and for some applications of waste piping.

Advantages of Revere Copper Water Tube and Streamline Fittings in drainage work, aside from those previously mentioned, include:

Smooth interior surface eliminates tendency to clog.

Streamline Fittings, with inside shoulder of same wall thickness as tube, avoid recesses which cause friction and clogging.

Alternate filling and emptying of drainage lines promote corrosion; copper resists corrosive action.

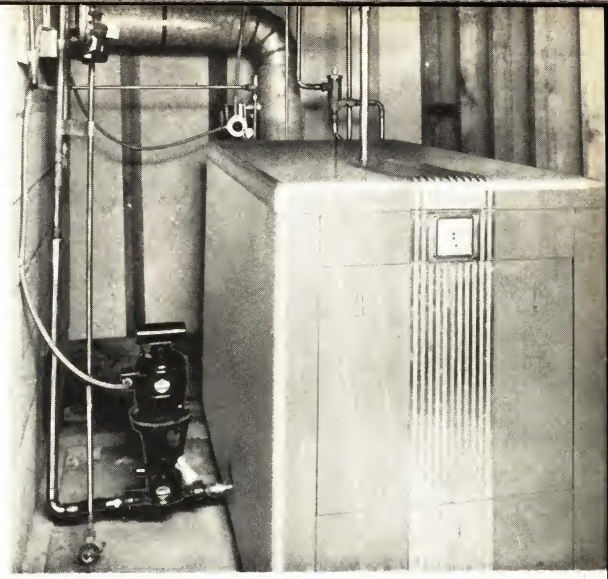
Copper tube has high thermal conductivity, is warmed quickly when hot water passes through it, and permits grease to flow through in a liquid state, reducing tendency to clog.

An entire drainage system of Revere Copper Water Tube and Streamline Fittings for a bathroom may be assembled on a work bench, roughed into place and connected to fixtures.

Valuable space is saved and work can be installed in tight spaces quickly and easily.

FOR MODERNIZATION WORK

Revere Copper Water Tube is adaptable to modernization work for water lines, hot water heating, steam heating and drainage lines in a wide variety of applications. It has been used satisfactorily in large apartment houses, hotels, office buildings and large and small residences. In each, Revere Copper Water Tube was selected to replace rustable pipe that had failed in service. Owners, architects, engineers and contractors now recognize that replacement work can be done more economically than is possible with other types of pipe, because attendant costs of carpentry, masonry, painting, etc., are greatly reduced. Moreover, a Revere Copper Water Tube installation usually means that the piping in a building has been replaced for the last time —and can be forgotten.



Note the small sizes of copper tube used in this forced circulation hot water heating system. Architect: Emil H. Kleeman, Newark. Plumbing and Heating Contractors: Northfield Plumbing and Heating Co., Livingston, N. J.



In drainage work, clogging by sediment is prevented and the flow is uninterrupted because the bore of Revere Copper Water Tube is the same as that of the Streamline Solder Fittings.



Replacing worn-out rustable pipe with Revere Copper Water Tube in Union Central Building, Cincinnati, Ohio. Over 12,000 ft. of tube installed with no interruption to business.



The flexibility of Revere Copper Water Service Tube (Type K, Soft Temper) saved time and simplified installation on this job. This 100-foot trench was dug through very rocky soil, which caused many curves, but this pure copper was bent right around them.



Part of an extensive Lawn Irrigation System installed with Revere Copper Water Tube.



Tanks to burner connections are quickly made with flexible Revere Copper Tube.

FOR UNDERGROUND SERVICE

Revere Copper Water Tube is an ideal material for underground service use for water and gas from main to building, for oil from tank to burner, for underground lawn irrigation systems, etc.

It meets every requirement for this type of installation including (1) resistance to internal corrosion from the liquid or gas; (2) resistance to external corrosion from the soil; (3) reduction of the danger of bursting in case of freezing; (4) freedom from contamination of liquid or gas being conveyed; (5) no reduction in flow due to rust; (6) freedom from breakage due to vibration or settling of the ground; (7) freedom from splitting, flattening or cracking under pressure; (8) trouble-free service under normal conditions.

WATER SERVICE Lines from the water main to the building are of great importance. From the standpoint of the building owner, if they fail to deliver a full flow of water, his piping system inside the building fails to function properly. If the pipe leaks, not only must the cost of replacing it be considered, but it is quite likely that lawns will be torn up, pavements ripped up, etc.

From the standpoint of the water company or city, if there is a small unseen leak, valuable water is wasted and, as stated before, pavements have to be torn up and replaced. Such lines require a non-rusting and sanitary pipe which, when placed underground, can be forgotten.

Revere Copper Water Tube (Type K, Soft Temper) in our opinion more nearly meets all of the requirements for water services than any other type of pipe. Its use is justified from the standpoint of the material itself. This makes for long life and trouble-free service, and permits methods of installation which, in addition to the foregoing, result in economical first cost.

IRRIGATION Concealed sprinkling systems for lawns, gardens, parks, school grounds, athletic fields and golf courses are rapidly gaining favor because it has been proved that, in those sections of the country where we have long, hot, dry spells during the summer, the use of such systems can be actually justified on an economy basis. There is no comparison between copper and other piping lines when the appearance and condition of turf, corrosion, long life, ease of installation, etc., are considered.

Two necessities of first importance in underground installations are freedom from servicing and freedom from danger of bursting caused by accidental freezing. When copper tube is used it will not be found necessary to tear up the lawn which it helped to beautify. Likewise, if, through unforeseen severity, there should be accidental freezing when copper is used, the danger of bursting is greatly reduced.

FUEL OIL LINES Revere Copper Tube, Soft Temper, is standard for fuel oil lines from tank to burner. It cannot rust and is resistant to corrosion from oil and soil. Being flexible, the tube can be bent to meet installation needs; the flexibility also allows for tank settling without straining or breaking connections. Permanently tight, vibration-proof connections are made with compression or Streamline Soldered Fittings. Type U Copper Tube, also Type K Copper Tube, Soft Temper in sizes from $\frac{3}{8}$″ to 2″ inclusive, meet the requirements of the National Board of Underwriters for fuel oil services.

STANDARD DIMENSIONS · WEIGHTS · PROPERTIES
REVERE COPPER WATER TUBE

TYPES — USES — RECOMMENDATIONS — DATA	SIZE IN INCHES Nominal	O. D.	Wall Thickness in Inches	Inside Diameter in Inches	I. D. Area in Square Inches	Test Pressure in Pounds Minimum	Weight in Pounds Per Foot
TYPE K **Temper** — **Working Pressure** Hard — * 400 lbs. Soft — * 250 lbs. *Steam (saturated) up to 80 lbs. gauge or 325° F. For Underground Services, General Plumbing Purposes, Severe Water Conditions. Also Gas, Steam, Oil Lines and Industrial Uses. Hard or Soft in straight 20 ft. lengths. Soft in 30 ft., 45 ft. and 60 ft. coils. Coiling over 1¼ in. size not recommended. Bending — Hard or Soft by machine. Soft by hand.	¼	.375	.032	.311	.076	1000	.133
	† ⅜	.500	.049	.402	.127	1000	.269
	† ½	.625	.049	.527	.218	1000	.344
	† ⅝	.750	.049	.652	.333	1000	.418
	† ¾	.875	.065	.745	.436	1000	.641
	† 1	1.125	.065	.995	.778	780	.839
	† 1¼	1.375	.065	1.245	1.217	630	1.040
	† 1½	1.625	.072	1.481	1.723	580	1.360
	† 2	2.125	.083	1.959	3.014	510	2.060
	2½	2.625	.095	2.435	4.657	470	2.920
	3	3.125	.109	2.907	6.637	450	4.000
	3½	3.625	.120	3.385	8.999	430	5.120
	4	4.125	.134	3.857	11.684	420	6.510
	5	5.125	.160	4.805	18.133	400	9.670
	6	6.125	.192	5.741	25.886	400	13.870
	8	8.125	.271	7.583	45.162	400	25.900
	10	10.125	.338	9.449	70.123	400	40.260
	12	12.125	.405	11.315	100.554	400	57.760
TYPE L **Temper** — **Working Pressure** Hard — * 250 lbs. Soft — * 150 lbs. *Steam (saturated) up to 80 lbs. gauge or 325° F. For General Plumbing Purposes. Suitable for normal Water Conditions. Also Gas, Steam, Oil Lines and Industrial Uses. Hard or Soft in straight 20 ft. lengths. Soft in 30 ft., 45 ft. and 60 ft. coils. Coiling over 1¼ in. size not recommended. Bending — Hard, not recommended. Soft by hand or machine.	¼	.375	.030	.315	.078	1000	.126
	⅜	.500	.035	.430	.145	1000	.198
	½	.625	.040	.545	.233	1000	.285
	⅝	.750	.042	.666	.348	1000	.362
	¾	.875	.045	.785	.484	1000	.455
	1	1.125	.050	1.025	.825	880	.655
	1¼	1.375	.055	1.265	1.257	780	.884
	1½	1.625	.060	1.505	1.779	720	1.140
	2	2.125	.070	1.985	3.095	640	1.750
	2½	2.625	.080	2.465	4.772	580	2.480
	3	3.125	.090	2.945	6.812	550	3.330
	3½	3.625	.100	3.425	9.213	530	4.290
	4	4.125	.110	3.905	11.977	510	5.380
	5	5.125	.125	4.875	18.666	460	7.610
	6	6.125	.140	5.845	26.832	430	10.200
	8	8.125	.200	7.725	46.869	430	19.290
	10	10.125	.250	9.625	72.760	430	30.040
	12	12.125	.280	11.565	105.047	430	40.360
TYPE M **Temper** — **Working Pressure** Hard — * 250 lbs. *Steam (saturated) up to 80 lbs. gauge or 325° F. For General Plumbing Purposes with soldered fittings only. Suitable for normal Water Conditions. Also Gas, Steam, Oil Lines and Industrial Uses. Hard in straight 20 ft. lengths. Bending not recommended either by hand or machine.	¼	.375	.025	.325	.083	1000	.106
	⅜	.500	.025	.450	.159	1000	.144
	½	.625	.028	.569	.254	890	.203
	⅝	.750	.030	.690	.373	800	.263
	¾	.875	.032	.811	.517	710	.328
	1	1.125	.035	1.055	.874	600	.464
	1¼	1.375	.042	1.291	1.309	590	.681
	1½	1.625	.049	1.527	1.831	580	.940
	2	2.125	.058	2.009	3.170	520	1.460
	2½	2.625	.065	2.495	4.889	470	2.030
	3	3.125	.072	2.981	6.979	440	2.680
	3½	3.625	.083	3.459	9.397	430	3.580
	4	4.125	.095	3.935	12.161	430	4.660
	5	5.125	.109	4.907	18.911	400	6.660
	6	6.125	.122	5.881	27.164	370	8.910
	8	8.125	.170	7.785	47.600	370	16.460
	10	10.125	.212	9.701	73.914	370	25.570
	12	12.125	.254	11.617	105.993	370	36.690
TYPE O **Temper** — **Working Pressure** Hard — 125 lbs. For Industrial Use only such as Paper Mill and other process applications. May be used for low pressure steam.	3	3.125	.049	3.027	7.196	180	1.830
	3½	3.625	.049	3.527	9.770	180	2.130
	4	4.125	.058	4.009	12.623	180	2.870
	5	5.125	.065	4.995	19.596	180	4.000
	6	6.125	.072	5.981	28.096	180	5.310
	8	8.125	.083	7.959	49.752	180	8.120
	10	10.125	.109	9.907	77.086	180	13.280
	12	12.125	.134	11.857	110.418	180	19.550
TYPE U **Temper** — **Working Pressure** Soft — 250 lbs. For Oil Burner Use. Listed by Underwriters' Laboratories, Inc., under "Gas Tubing" for tank to burner oil service and for oil burner manufacture and assembling purposes. (Note Type K, sizes ⅜" to 2" inclusive, is also listed for this service.) Furnished in 50 ft. coils.	—	.250	.049	.152	.018	1000	.120
	—	.3125	.049	.2145	.036	1000	.157
	—	.375	.049	.277	.060	1000	.195
	—	.4375	.049	.3395	.090	1000	.233

†Also Type K, sizes ⅜" to 2" inc. are approved

PIPE
BRASS AND COPPER

For more than 38 years, Revere Copper and Brass Incorporated has manufactured brass and copper pipe for commercial and residential use. The average installation of these products has shown a surprisingly low cost for maintenance and repairs. In fact, many of the installations of 20 to 30 years ago have required no attention whatever in the way of service or repairs.

Every precaution in the way of laboratory control, close inspection and tests during manufacture is taken to safeguard the quality of Revere Brass Pipe.

THE ECONOMY OF BRASS AND COPPER PIPE

Brass pipe's greater endurance, longer life, resistance to corrosion and greater permanent value constitute ultimate economies of great importance.

The cost of ripping out and replacing piping installations is far in excess of the slight saving in first cost effected by using rustable material. In fact, a survey shows that, at the end of slightly over four years, the cost of rustable pipe begins to exceed that of brass pipe and that in a twenty-year period, because of repairs and renewal, the cost of rustable pipe is frequently five times that of brass pipe.

ALLOWANCE FOR RUST CLOGGING ELIMINATED

When rustable pipe is specified for plumbing, allowance must be made for rust-clogging. Therefore a larger size pipe is necessary than for the same installation when copper or brass pipe is used. Thus the difference in first cost between these pipes it not large enough to be an appreciable factor in total cost of an installation.



Memorial Hospital for the Treatment of Cancer and Allied Diseases, New York City. Over 200,000 pounds of Revere Red Brass Pipe were used in this job for hot and cold water lines. Other Revere products included Copper Water Tube for heating lines and Cheney Flashing. James Gamble Rogers and Henry C. Pelton, Associated Architects; Vermilya Brown Co., Inc., General Contractors; J. L. Murphy, Inc., Plumbing Contractor.

REVERE BRASS PIPE (Yellow Brass)

Revere Brass Pipe (Yellow Brass) is seamless, semi-annealed, and free threading. It is a clean yellow-gold in color with a fine smooth finish. Each length is stamped "Revere" as a means of identification and a guarantee of quality.

This pipe is intended for waters normally corrosive. The selection of pipe should depend on local water conditions. No definition that is all inclusive can be given for a normal water. However, the following conditions are indicative of normalcy in a water supply: Low permanent hardness, a fair degree of temporary hardness, low carbonic acid content and relatively high alkalinity.

The majority of waters in the United States fall into this group. Thus, Revere Brass Pipe provides long-lived, trouble-free service in a large percentage of the towns and cities in this country, for both hot and cold water lines.

If there is any doubt about the corrosiveness of the water, an analysis should be made so that a correct grade of pipe may be installed. The making of such an analysis is offered free of charge to architects, engineers, and plumbing contractors.

Revere Brass Pipe has a long record of satisfactory service in all sections of the United States and in all types of buildings. This pipe possesses excellent working and threading qualities, and is fully guaranteed by the manufacturer not to split or to be in any way defective when shipped.

It is made in two mixtures, one containing approximately 60% copper and the other 67% copper. These grades of pipe meet the following specifications:

60% Copper—A. S. T. M. Specifications B43-33 (Muntz Metal); Federal Standard Specifications WW-P-351, Grade "C."

67% Copper—A. S. T. M. Specifications B43-33 (High Brass); Federal Standard Specifications WW-P-351, Grade "B"; and Navy Department Specification 44P12, Grade "B."

Revere Brass Pipe is reasonably priced, the cost being slightly less than that of Revere Red-Brass Pipe.

REVERE RED BRASS PIPE (85% Copper)

Revere Red-Brass Pipe (85% copper) distinguished by its copper-bronze color, possesses extraordinary resistance to corrosion. It is readily threaded and easily worked. Each length is stamped "Revere Red-Brass" as a means of identification and a guarantee of quality.

This pipe is designed for use with abnormally corrosive waters and should always be used where there is high sulphur and carbon-dioxide content or where heavy chlorination is necessary to insure purity and for all installations in contact with soil or cinder concrete.

Waters drawn from sources of peaty origin, shallow wells, tubular wells or filter galleries in lowlands along river beds ordinarily fall in the class of extremely corrosive waters.

Aerial view of downtown Cincinnati in which a list of Revere Brass Pipe installations reads like a directory of the city's finest buildings.

- Starrett's Netherland Plaza and Carew Tower
- Union Central Building
- Union Central Building Annex
- Dixie Terminal Building
- Union Trust Building
- Fountain Square Office Building
- Hotel Gibson
- The Sinton-St. Nicholas Hotel
- The H. & S. Pogue Co. Department Store
- The Enquirer Building
- Doctors' Building
- The Cincinnati Club
- Hotel Metropole (Addition)
- Cincinnati & Suburban Bell Telephone Co. Building
- Young Women's Christian Association Building
- Brotherhood of Railway & Steamship Clerks' Building
- The Gwynne Building
- Duttenhofer Building



Revere Red-Brass Pipe can also be used for salt (sea) waters used in baths and swimming pools. (However, Admiralty Tube is generally preferred for this service.) In fact, where the utmost is demanded from a pipe obtainable commercially at a reasonable cost Revere Red-Brass Pipe should be used.

It is advisable to consider the use of this pipe wherever possible regardless of the present condition of the water supply, as a safeguard against possible changes in corrosiveness due to future changes in source of supply, or purification methods.

Revere Red-Brass Pipe is guaranteed not to split or in any way be defective when shipped.

Revere Red-Brass Pipe meets the following specifications: Federal Standard Specifications WW-P-351, Grade "A"; and Navy Department Specification 44P12, Grade "A"; A. S. T. M. Specifications B43-33 (Red Brass).

REVERE COPPER PIPE (Standard Pipe Size)

Revere Copper Pipe is made of 99.9% pure copper in Standard Pipe Size. Each length is stamped "Revere" as a means of identification and a guarantee of quality.

Revere Copper Pipe, like Revere Red-Brass Pipe, is made primarily for extra-corrosive waters. It is not in as general use as Red-Brass Pipe, but is preferred in certain cities and it gives utmost satisfaction. Pure copper pipe is used also for industrial piping where it withstands severe service.

The above pipe meets the following specifications:

A. S. T. M.—B42-33; Federal Standard Specifications No. WW-P-377; and Navy Department Specification 44P2.



New York State Water Amphitheatre, New York State World's Fair Commission. Stage is surrounded by a moat.

Revere Red Brass Pipe were used in sizes from 4 inch to 3/8 inch.

Architect: Sloan and Robertson; General Contractor: Psaty and Fuhrman, Inc.; Plumbing Contractor: John Weil Plumbing Co., all of New York City.

STANDARD BRASS PIPE SIZES
Brass, Red-Brass and Copper Pipe

Pipe Size	Dimensions in Inches			Pounds per Foot		
	O. D.	I. D.	Wall	Brass	Red-Brass	Copper
1/8	.405	.281	.0620	.246	.253	.259
1/4	.540	.375	.0825	.437	.450	.460
3/8	.675	.494	.0905	.612	.630	.643
1/2	.840	.625	.1075	.911	.938	.957
3/4	1.050	.822	.1140	1.24	1.27	1.30
1	1.315	1.062	.1265	1.74	1.79	1.83
1 1/4	1.660	1.368	.1460	2.56	2.63	2.69
1 1/2	1.900	1.600	.1500	3.04	3.13	3.20
2	2.375	2.062	.1565	4.02	4.14	4.23
2 1/2	2.875	2.500	.1875	5.83	6.00	6.14
3	3.500	3.062	.2190	8.31	8.56	8.75
3 1/2	4.000	3.500	.2500	10.85	11.17	11.41
4	4.500	4.000	.2500	12.29	12.66	12.94
4 1/2	5.000	4.500	.2500	13.74	14.15	14.46
5	5.563	5.062	.2500	15.40	15.85	16.21
6	6.625	6.125	.2500	18.44	18.99	19.41
7	7.625	7.062	.2815	23.92	24.63	25.17
8	8.625	8.000	.3125	30.05	30.95	31.63
9	9.625	8.937	.3440	36.94	38.03	38.88
10	10.750	10.019	.3655	43.91	45.20	46.22
11	11.750	11.000	.3750	49.37	50.81	51.94
12	12.750	12.000	.3750	53.71	55.29	56.51

INSTALLATION DATA FOR COPPER AND BRASS PIPE AND TUBE*

For hot and cold water lines in plumbing installations pipe and tube sizes are not usually definitely fixed by codes. The sizes are generally left up to plumbing engineers and contractors who figure them out to satisfy the maximum water demand. Determining correct sizes for ordinary plumbing installations with ordinary mains, ordinary branches, ordinary fixture demands, etc., is an easy matter. Certain tables in common use in the trade, which have been demonstrated by experience in successful installations to be satisfactory, may act as a guide, and the results from them are usually reasonably accurate. But for unusual installations such as large or complex systems, or where unusually long mains are required, correct tube or pipe sizes can only be determined by the use of intricate formulas, or comprehensive tables which have been laboriously worked out to save the time of designers, and to help them to escape errors that so often arise in the working out of pipe sizes by formulas

In the design of hot and cold water supply systems for small and large buildings correct tube sizes must be selected. The pipes should be proportioned just right so that none will be so small that the water supplied by them will not be ample, and so that none will be too large, which would be unnecessarily expensive. Tubes too large, and too small, represent bad design.

SIZE SELECTION—When Iron Pipe Sizes Are Known

From many years' experience on a variety of work, it would appear that smaller sizes of copper tube and brass pipe may be used than is common practice in iron-pipe installations. This is true because no allowance need be made for loss of head due to the accumulation of rust. Thus, if the correct sizes are known for iron pipe, due allowance being made for rust, etc., the data given in Table 1 may be used to select the correct size of copper tube and Table 1A for brass pipe.

TABLE 1—For Copper Water Tube

IRON PIPE Nominal Diameter	CORRESPONDING SUITABLE SIZES FOR COPPER TUBE	
	Hot Water	Cold Water
1/2 inch	3/8 inch	3/8 inch
3/4 inch	1/2 inch	1/2 inch
1 inch	3/4 inch	3/4 inch
1 1/4 inch	1 inch	1 inch
1 1/2 inch	1 inch	1 1/4 inch
2 inch	1 1/4 inch	1 1/2 inch
2 1/2 inch	1 1/2 inch	2 inch
3 inch	2 inch	2 1/2 inch

TABLE 1A—For Brass Pipe

IRON PIPE Nominal Diameter	CORRESPONDING SUITABLE SIZES FOR BRASS PIPE	
	Hot Water	Cold Water
1/2 inch	1/2 inch	1/2 inch
3/4 inch	1/2 inch	1/2 inch
1 inch	3/4 inch	3/4 inch
1 1/4 inch	1 inch	1 inch
1 1/2 inch	1 inch	1 1/4 inch
2 inch	1 1/4 inch	1 1/2 inch
2 1/2 inch	1 1/2 inch	2 inch
3 inch	2 inch	2 1/2 inch

SIZE SELECTION—When Iron Pipe Sizes Are Not Known

If the correct sizes for an iron-pipe installation are not known, the method of selection of copper tube sizes is to first determine approximately the required flow per minute, by reference to Table 2.

TABLE 2

FIXTURES	RATE OF FLOW (Gallon per Minute)
Each Bath	8-10
Lavatory	5- 8
Tank Closet	3- 5
Flush Valve Closet	30-40
Shower	5- 8
Sink	8-10
Laundry Tub	8-10
Garden Hose	5-10

The rate of flow in Table 2 is that through the branches to the fixtures. In baths, lavatories, sink and laundry tubs, the rate is for both hot and cold running at the same time. To compute the rate of flow through mains which supply numerous fixtures, the total rate will be less than that found by Table 2, because all fixtures will not be running at the same time.

The rate of flow in mains may as a rule be closely approximated by dividing the total found by Table 2 by four for residences, apartments, schools, office buildngs and other edifices of a similar water-consuming character. For clubs and hotels divide by three. For gymnasiums, hospitals, public comfort stations and similar water-consuming structures divide by two. For public baths, laundries and factories allow the full amount shown in the table.

Commonly Used Branch Sizes

The sizes of pipes commonly used as branches to fixtures vary somewhat with the pressures at the fixture levels and are approximately as in Table 3 for copper tube and 3A for brass pipe.

TABLE 3—Sizes of Copper Tube Water Supply Short Branches to Plumbing Fixtures

FIXTURE	PRESSURES		
	High Over 60 lbs.	Medium 30 to 60 lbs.	Low Under 30 lbs.
	Inch	Inch	Inch
To Baths	1/2	3/4	3/4
Lavatories	3/8	1/2	1/2
Tank Closets	3/8	3/8	1/2
Valve Closets	1	1	1 1/4
Pantry Sinks	1/2	1/2	1/2
Kitchen Sinks	1/2	1/2	3/4
Slop Sinks	1/2	3/4	3/4
Showers	1/2	1/2	3/4
Urinals (Flush Tank)	1/2	3/4	3/4
Urinals (Flush Valve)	3/4	3/4	3/4
Drinking Fountains	3/8	3/8	1/2

TABLE 3A—Sizes of Brass Water Supply Short Branches to Plumbing Fixtures

FIXTURE	PRESSURES		
	High Over 70 lbs.	Medium 40 to 70 lbs.	Low Under 40 lbs.
	Inch	Inch	Inch
To Baths	1/2	3/4	1
Lavatories	3/8	1/2	1/2
Tank Closets	3/8	1/2	1/2
Valve Closets	3/4	1	1 1/4
Pantry Sinks	3/8	1/2	1/2
Kitchen Sinks	1/2	3/4	3/4
Slop Sinks	1/2	3/4	3/4
Showers	3/8	1/2	3/4
Urinals	1/2	3/4	3/4
Fountains	3/8	3/8	1/2

*From Copper Tube Handbook, published by Copper and Brass Research Association

INSTALLATION DATA

After finding the rate of flow by Table 2 and dividing for different classes of buildings, the sizes of the water mains in a building may be determined from Tables 4 and 4A. These tables state the approximate quantities of water that various sizes of copper tubes and brass pipes will deliver under various pressure drops. These are conservative values for everyday use and make some allowance for fittings, etc. We recommend the adoption of a pressure drop not exceeding 20 pounds per 100 feet, to reduce noise to a practical minimum. As a matter of fact, systems designed for a ten-pound pressure drop are considered preferable for domestic installations.

TABLE 4—Approximate Delivery of Copper Tubes in U. S. Gallons per Minute.
S=Deliveries through short lines, less than 15 ft. L=Delivery through lines approximately 100 ft. long.

PRESSURE DROP (lbs.)	3/8"		1/2"		5/8"		3/4"		1"	
	S	L	S	L	S	L	S	L	S	L
5	3	0.7	6	2	10	3	14	5	35	11
10	4	1.0	10	3	17	5	25	7	50	17
20	6	2.0	14	4	24	7	35	11	70	25
30	8	2.5	16	5	30	9	45	14	90	30
40	9	2.7	18	6	36	11	55	17	100	35
50	10	3.0	20	7	42	13	65	20	110	40

PRESSURE DROP (lbs.)	1 1/4"		1 1/2"		2"		2 1/2"		3"	
	S	L	S	L	S	L	S	L	S	L
5	70	20	100	35	200	75	400	150	700	200
10	100	30	150	50	325	110	600	225	1000	300
20	150	45	215	75	500	165	900	300	1500	500
30	180	60	275	95	600	200	1100	350	1800	600
40	220	70	310	115	700	250	1300	450	2200	700
50	240	80	350	130	800	280	1500	500	2500	800

TABLE 4A—Approximate Deliveries of Brass Pipe in U. S. Gallons per Minute
Length 100 feet

PRESSURE DROP (lbs.)	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"
17	3.2	9.1	18.7	33.5	51.6	105.8	200.0	290.0	589.0
30	5.0	13.8	28.3	52.0	78.0	159.7	308.0	436.0	885.0
40	5.8	15.9	32.7	60.0	90.0	184.4	350.0	504.0	1023.0
50	6.5	17.5	36.6	70.0	100.7	206.2	390.0	564.0	1143.0
60	7.0	19.5	40.0	76.0	110.3	225.9	430.0	617.0	1252.0
75	7.5	21.8	44.8	85.0	123.4	252.6	480.0	690.0	1400.0
100	9.0	25.2	51.7	99.0	142.4	291.6	558.0	797.0	1617.0

In proportioning piping it is also good practice to bear in mind the relative sizes and numbers of branches that can be adequately served by a main of a given size. Table 5 will be found useful for checking this.

While these tables may be considered quite reliable for the average plumbing installation, there may arise cases where a special study should be made of the conditions and requirements, and the piping proportioned by hydraulic formulas or from more comprehensive tables which are available to the trade and contain engineering data covering practically all conditions that may arise in plumbing practice.

TABLE 5 Relative Sizes of Branches and Water Mains

Size of Main	Number and Size of Branches Main Will Supply—Running Full
1/2"	Two — 3/8"
3/4"	Two — 1/2"
1"	Two — 3/4"
1 1/4"	Two — 1" or One — 1" and Two — 3/4"
1 1/2"	Two — 1 1/4" or One — 1 1/4" and Two — 3/4"
2"	Two — 1 1/2" or One — 1 1/2" and Two — 1 1/4"
2 1/2"	Two — 1 1/2" and Two — 1 1/4" or One — 2" and Two — 1 1/4"
3"	One — 2 1/2" and One — 2" or Two — 2" and Two — 1 1/2"
3 1/2"	Two — 2 1/2" or One — 3" and One — 2" or Four — 2"
4"	One — 3 1/2" and One — 2 1/2" or Two — 3" or Three — 2 1/2" and One — 2" or Six — 2"

ALLOWANCE FOR EXPANSION

In laying out brass and copper pipe and tube installations, allowance must be made for the fact that copper tube expands approximately 50% and brass pipe 60% more than iron or steel pipe for equal temperature rises. Where piping, as in the open and the runs are short it is not difficult to avoid trouble from expansion and contraction.

For copper tube an expansion bend made of soft temper tube or a loop assembled with hard temper tube and elbows should be provided. One of the many types of bends is shown at the right.

For brass pipe several methods of providing for expansion are shown at the bottom of page 19. Special care should be exercised where long runs or risers are rigidly anchored to supporting members.



SUGGESTED SPECIFICATIONS

FOR COPPER WATER TUBE

TUBE (PIPING) The roughing-in of all (cold water lines) (hot water lines and recirculating piping) (steam and return piping) shall be done with Type (K) (L) (M) REVERE COPPER TUBE of standard weight and thickness, and shall include all labor and material necessary for a complete installation; lines shall be properly supported to prevent swinging or sagging and shall run true and plumb in an approved workmanlike manner in complete accordance with the manufacturer's instructions, subject to the complete approval of the (architect) or his authorized representative.

FITTINGS, SOLDERED All soldered fittings shall be of the Streamline Pipe and Fittings Company's manufacture or equal and approved, and installed on REVERE COPPER TUBE in complete accordance with manufacturer's directions, and as written above under "Tube."

FITTINGS, COMPRESSION All compression fittings shall be of the Hays Manufacturing Company's manufacture or equal and approved, and installed on REVERE COPPER TUBE in complete accordance with manufacturer's directions, and as written above under "Tube."

Additional specification data to be included, if desired.

SUPPLY LINES All main supply, return and branch piping shall be (installed with) REVERE COPPER TUBE as manufactured by Revere Copper and Brass Incorporated, to carry (cold water) (hot water) (including recirculating) (steam main and returns).

NOTE: Follow the above specifications for oil, gas or other liquids and solutions containing no corrosive elements.

HARD TUBE All rigid hard temper tube shall be used for all mains, returns, risers, recirculating lines and branches, where shown or detailed; shall be REVERE COPPER TUBE, HARD TEMPER, and shall always be bent with a bending tool in accordance with tube manufacturers' instructions.

SOFT TUBE Soft temper tube shall be used for all branches and short runs where flexible tube is practicable, or where shown, detailed or required; shall be REVERE COPPER TUBE, SOFT TEMPER, capable of being bent or flexed into position by hand.

FOR BRASS OR COPPER PIPE

SUPPLY LINES All hot and cold water supply lines and all branches to plumbing fixtures shall be of Revere Brass Pipe (or Revere Red-Brass Pipe or Copper Pipe) manufactured by Revere Copper and Brass Incorporated. Each length shall have "Revere" (or "Revere Red-Brass") stamped in the metal and shall be guaranteed by the manufacturer not to split or to be in any way defective when shipped.

FITTINGS All fittings shall be of substantial beaded construction, free from flaws and with threads tested, and within the following limits as to the composition of the four elements—copper, zinc, lead and tin:

Copper	80% min. to 86% max.
Zinc	4% min. to 15% max.
Lead	2% min. to 6% max.
Tin	3% min. to 6% max.

NIPPLES All nipples shall be of the same composition as the pipe used, and the contractor or the contractor's source of supply shall guarantee that they were cut from trademarked lengths of Revere Brass Pipe (or Revere Red-Brass Pipe or Copper Pipe).

SUPPORT Only brass or copper hangers shall be used and they shall be spaced in such a way as to provide adequate support. (For sizes ½ inch and smaller, hangers shall be not more than 8 feet apart—for ¾-inch pipe and larger, not more than 10 feet apart.) All hangers shall be arranged to hold the pipe horizontal, vertical or at the specified pitch.

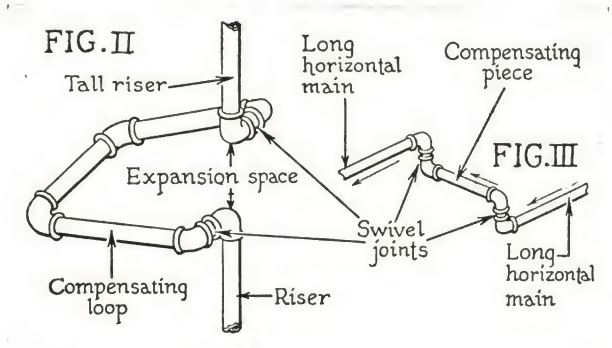
EXPANSION AND CONTRACTION Suitable means shall be provided for an allowance of ¼ inch in every 10 feet in hot and cold water lines for expansion and contraction.

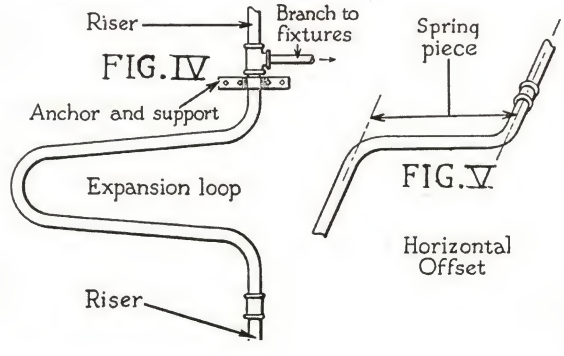
INSULATION All pipe laid in concrete or cinders shall be protected in such a way that the brass will not be in contact with cinders or concrete at any time.

IRON PIPE CONNECTIONS If it is necessary to connect brass pipe with an iron pipe line, a trap or lift shall be provided which will prevent rust draining into the brass piping.

SERVICE LINES The service supply line from main to building shall be of Revere Red-Brass Pipe used in conjunction with a flexible copper gooseneck; or soft temper copper water tube with compression fittings shall be used. If rigid pipe is used, provisions shall be made for expansion, settling of the fill and other injurious conditions encountered in underground service work.

METHODS FOR PROVIDING FOR TEMPERATURE EXPANSION





DIVISION OFFICES AND MILLS

BALTIMORE DIVISION
1301 Wicomico Street
Baltimore, Md.

DALLAS DIVISION
2200 No. Natchez Avenue
Chicago, Ill.

ROME DIVISION
Rome, New York

MICHIGAN DIVISION
5851 West Jefferson Avenue
Detroit, Mich.

TAUNTON-NEW BEDFORD DIVISION
24 North Front Street
New Bedford, Mass.

ROME MANUFACTURING COMPANY DIVISION
Rome, New York

DISTRICT SALES OFFICES

New York, N. Y.
New York Central Bldg.
75 East 45th Street

Providence, R. I.
1215 Industrial Trust Bldg.
111 Westminster Street

Pittsburgh, Pa.
727 Gulf Bldg.

Philadelphia, Pa.
1201 Architects Bldg.
17th and Sansom Streets

Milwaukee, Wis.
626 E. Wisconsin Avenue

Atlanta, Ga.
911 Rhodes-Haverty Bldg.

Cleveland, Ohio
1110 Midland Bldg.

Cincinnati, Ohio
2616 Carew Tower

Grand Rapids, Mich.
922 Grand Rapids National Bank Bldg.

New Orleans, La.
425 Decatur Street

Los Angeles, Calif.
124 W. Fourth Street

San Francisco, Calif.
562 Russ Bldg.

Houston, Texas
Second National Bank Bldg.

Boston, Mass.
United Shoe Machinery Bldg.
140 Federal Street

Hartford, Conn.
209 Capitol National Bank Bldg.
410 Asylum Street

Minneapolis, Minn.
724 Metropolitan Bank Bldg.

St. Louis, Mo.
955 Telephone Bldg.
1010 Pine Street

Dallas, Texas
1314 Tower Petroleum Bldg.

Seattle, Wash.
317 Pioneer Bldg.

Revere Copper *and* Brass

INCORPORATED

FOUNDED BY PAUL REVERE

1801

Executive Offices: 230 PARK AVENUE, NEW YORK CITY

COPPER PIPE AND FITTINGS FOR ★ PLUMBING, HEATING, AIR CONDITIONING AND INDUSTRIAL USE



STREAMLINE

STREAMLINE
PIPE AND FITTINGS DIVISION
MUELLER BRASS CO.
PORT HURON, MICHIGAN

The Company

The Mueller Brass Co. of Port Huron, Michigan, of which STREAMLINE Pipe and Fittings is a division, was incorporated in 1917 and during its industrial life has contributed some outstanding advances to industry. Immediately after the World War its executives had the vision to see the commercial possibilities in brass forgings which, previously, were confined almost solely to the manufacture of munitions. The Mueller Brass Co. is recognized as one of the world's largest manufacturers of brass forgings. The Company's contribution to the electric refrigeration industry has probably more to do, than any other factor, in bringing it to the state of perfection that it has attained today.

In 1924 the Mueller Brass Co. invented and marketed a product known as Mueller Copper Service Pipe and Fittings for waterworks service use. In a few short years this product has become standard with an ever-growing number of waterworks systems throughout the United States and Canada.

The Mueller Brass Co.'s latest and most revolutionary advance for plumbing, heating and industrial uses is their product known internationally as STREAMLINE Copper Pipe and Fittings described and illustrated in this catalog.

Reliability

The Mueller Brass Co.'s rating in Bradstreet's is over one million dollars—first grade of credit.

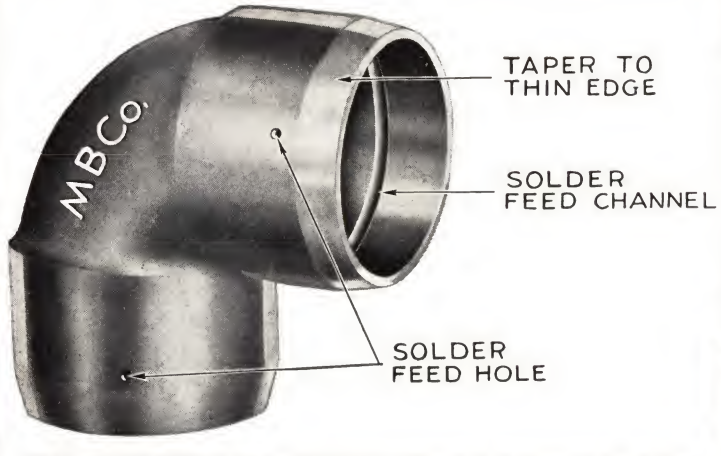
Complete control from virgin metal to finished product, including extensive engineering and laboratory facilities, is an outstanding feature in this organization. No new product is ever put upon the market without having successfully passed tests far beyond those which it would ever be called upon to withstand.

Mechanical Features of the STREAMLINE Fitting

The STREAMLINE Solder Fitting is the outstanding revolutionary advance of the age to the development of plumbing and heating. The STREAMLINE Fitting also assures an absolutely tight connection for industrial uses, in electric refrigeration work, gas, oil, air and vacuum lines, or for the handling of liquids of low specific gravity, such as gasoline, butane, etc., which readily seep through threaded connections. It is a fitting made for the experienced plumber or steamfitter and requires a mechanic's skill and tools to connect.

The STREAMLINE Solder Fitting is a radical departure from any method heretofore used in that it is not connected by threading or flaring but by soldering. This operation is performed by feeding wire or stick solder through a feed hole in the fitting after STREAMLINE copper pipe has been assembled in it, and sufficient heat applied with the blow-torch.

The liquefied solder is carried around the entire surface between the pipe and fitting by capillary attraction, and becomes immediately visible as a bright line at the outer edge between the pipe and fitting, thus affording unfailing visual evidence that a leakproof, bonded joint has been completed. **No previous tinning whatever is necessary.**



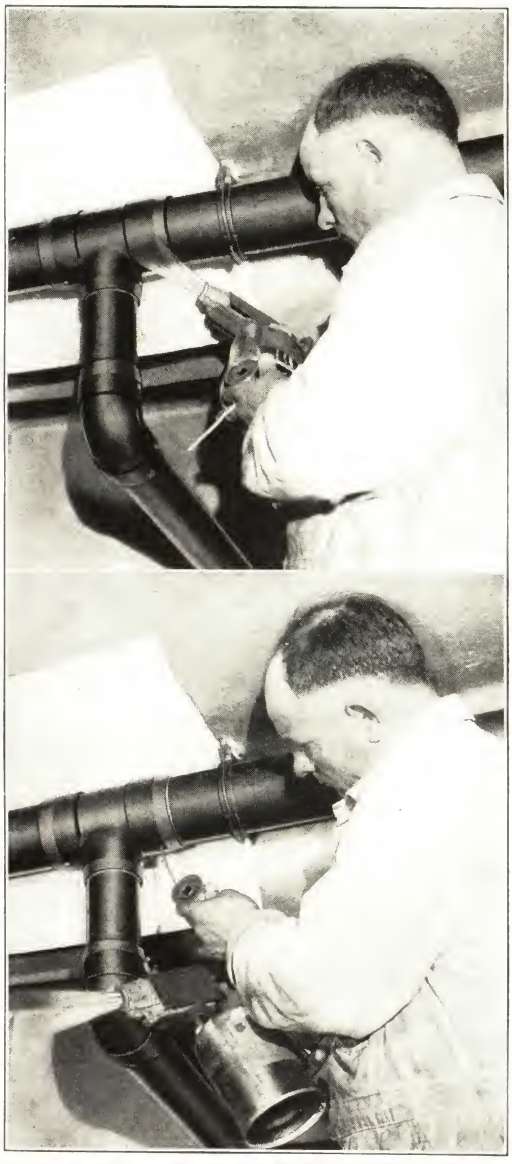
STREAMLINE Fittings are manufactured under one or more of the following United States patent numbers: 1,770,852; 1,776,502; 1,783,088; 1,801,171; 1,866,857; 1,870,651; 1,881,943; 1,890,998; 1,895,426; 1,916,989; 1,918,715; 1,921,584; 1,931,666; 1,933,915; 1,938,194; 1,963,421; 1,964,474.

There are several distinct mechanical features utilized in the construction of STREAMLINE Fittings. The machined openings in the fittings as well as the diameter of the STREAMLINE copper pipe are held to very close tolerances so that when the pipe is assembled in the fitting, it fits snugly.

The distance to which the pipe may be inserted in the fitting is made positive by a shoulder in the fitting itself against which the pipe rests. This shoulder is approximately the same height as the thickness of the pipe wall, thus insuring a continuous uninterrupted waterway, and reducing flow resistance to a minimum. **All STREAMLINE Solder Fittings are furnished with the solder feed hole drilled.** The solder feed hole is located immediately above solder feed channel.

The tapered ends of the fitting hasten the cooling of the solder at this point and form a solder gate.

A joint made with STREAMLINE Solder Fittings to STREAMLINE Copper Pipe is, in contrast to all other methods of connection, actually much stronger than the pipe itself.



Making a Connection with STREAMLINE Fitting to Copper Pipe

The Phenomenon of Capillary Attraction

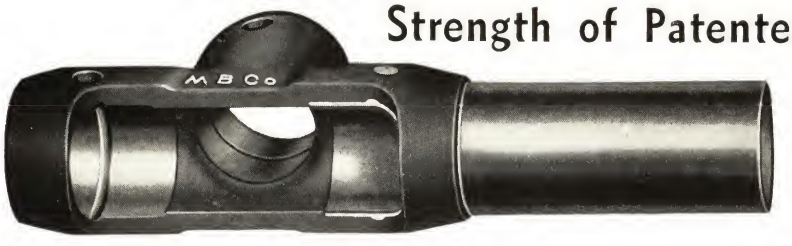
The phenomenon of capillary attraction is utilized in making a connection with STREAMLINE Solder Fittings and Copper Pipe. Capillary attraction is that property which liquids possess of rising or being drawn up above their normal levels through close fitting surfaces or capillary channels.

The harnessing or utilizing of this natural law is one of the basic principles on which the STREAMLINE Fitting is constructed and upon which it depends for success. The successful functioning of this natural law in making connections with STREAMLINE Solder Fittings and Copper Pipe depends upon close tolerances and clean, fluxed surfaces. STREAMLINE Fittings are designed for, and are most successfully used with STREAMLINE Copper Pipe.

Note This Particular Feature

It does not make the slightest difference where the solder feed hole is located when making a connection. Many operators who are not thoroughly familiar with installing this material erroneously conclude that the solder feed hole must be located at the top. This naturally leads to some doubt in their minds as to how the solder could be fed in if they were working against a partition or ceiling on which the feed hole, owing to the position of the fitting in the line was located at the bottom or side. As a matter of fact, the solder will feed just as readily from these positions as from the top. Owing to the never failing phenomena of capillarity, the solder will flow up, down or laterally with equal facility, and the operator can just as readily make a perfect joint by applying the solder through the feed hole located at the bottom or side as he can if it is located at the top.

Strength of Patented Joint



Sectional View of the Joint

Photomicrographs and innumerable tests have conclusively proved that a joint made with STREAMLINE Copper Pipe and Fittings is actually a perfect bond of pipe, solder and fitting. This patented joint is of such amazing strength that if two ¾-in. sections of pipe are connected with a ¾-in. coupling and pulled in the Olsen testing machine, it requires the enormous pull of approximately nine thousand pounds to fracture the pipe while the joint remains invariably intact without the slightest sign of damage of any kind. In other words, the joint is very much stronger than the pipe itself. The pipe used in these tests was Extra Heavy .065 wall thickness.

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Assurance of a Leak-Proof Connection by Visual Inspection Is an Exclusive Feature of the Patented Joint

After a STREAMLINE Solder Fitting and copper pipe have been cleaned, fluxed, assembled, and heated to the proper temperature with the blow torch, the solder is introduced through the feed hole in the fitting. The feed hole, as you will note, is located immediately above the feed channel at a point equidistant from the internal shoulder against which the pipe rests and the outer edge of the fitting.



STREAMLINE Fittings are manufactured under one or more of the following United States patent numbers: 1,770,852; 1,776,502; 1,783,088; 1,801,171; 1,866,857; 1,870,651; 1,881,943; 1,890,998; 1,895,426; 1,916,989; 1,918,715; 1,921,584; 1,931,666; 1,933,915; 1,938,194; 1,963,421; 1,964,474.

Feed the solder through the feed hole only. In no other way can you be absolutely sure by visual inspection that a perfect leak-proof bond has been accomplished. This is a feature which no other connection possesses

The never failing phenomenon of capillary attraction distributes the solder outward and inward over the entire area between pipe and fitting. The first indication that this solder film has bonded these two surfaces is the appearance of a ring of tiny dark green bubbles around the pipe at its junction with the fitting. This is the hot flux, which is being forced out of the space between the pipe and fitting by the outward flow of the solder. When these bubbles are wiped off, a continuous bright ring of solder is visible at the end of the fitting. (See illustration.)

This is a visual and never failing proof that a tight and perfect joint has been made. Expansion will not work it loose, vibration cannot make it leak.

Never, under any circumstances, should the solder be fed from the outer edge of the fitting, but invariably through the feed hole only. The important point to remember is that the solder is fed **into** a STREAMLINE Solder Fitting and must flow outwards evenly, consequently its appearance in a continuous ring at the end of the fitting is a positive indication of thorough bonding—attempts to feed from the end are, at the best, merely guesswork, because there is no evidence whatever, visual or otherwise, without an actual pressure test, that a leak-proof joint has been completed, and even the test does not prove that there is a thorough distribution of solder.

If the solder is fed from the end of the fitting, practically all the operator can do is to hope that it has been evenly distributed. It may go thoroughly in on one side and not fill up the other, or it may even make a continuous ring around the fitting, while the whole area back of the ring is not soldered.

The STREAMLINE Solder Fitting is the only fitting on the market which has the valuable visual inspection feature, and assurance of a perfect leak-proof connection.

How to Make Joints

1. Cut pipe square with fine hack saw (use 32 tooth saw preferably). Remove burr.

2. USING SANDCLOTH, SANDPAPER, or STEEL WOOL, thoroughly clean outside end of copper pipe equal to depth of fitting. Leave no dark spots.

3. USING SANDCLOTH, SANDPAPER, or STEEL WOOL, thoroughly clean inside of fitting where pipe is to be inserted. Use scraper, if necessary, for cleaning groove or feed hole.

4. Apply a coat of STREAMLINE Soldering flux to outside of pipe and inside of fitting. Be sure that the flux is distributed evenly. Make certain that there is plenty of flux in the feed hole also. In extremely cold weather warm fitting slightly with torch to approximate room temperature (70 to 80 degrees).

5. Slip pipe into fitting until it will go no farther and turn back and forth once or twice to further insure an equal distribution of the flux.

6. Use only STREAMLINE Special Solders as they are expressly prepared for this work.

7. Using a blow torch or gas tip, melt a drop of solder into the solder feed hole. Apply heat around fitting until drop of solder disappears, indicating that the proper temperature has been reached. Where feed hole is located at side or bottom, the proper temperature may be ascertained by touching the heated fitting with the end of the solder wire, (preferably in the feed hole)—when solder melts upon contact, the proper temperature for soldering has been reached. **Feed solder through feed hole ONLY until it appears around the end of the fitting for the full pipe circumference.** Now remove the flame and a second or two later, as the connection starts to cool, completely fill feed hole with solder and remove surplus with a small piece of cloth. Bonding the surfaces and filling the hole should be done completely in ONE HEATING OPERATION. A little experience soon enables the operator to make perfect solder joints.

8. It is advisable on sizes larger than 1¼" to move the fitting on the pipe or tap with hammer when the solder starts in, thus breaking the surface tension and insuring equal distribution. When making connections with larger sizes of STREAMLINE fittings (3" to 10" inclusive), the procedure for soldering although fundamentally the same as given here for the smaller sizes, is best performed with a knowledge of certain tips and instructions that facilitate the work. A complete set of instructions for the larger sizes will be furnished upon request.



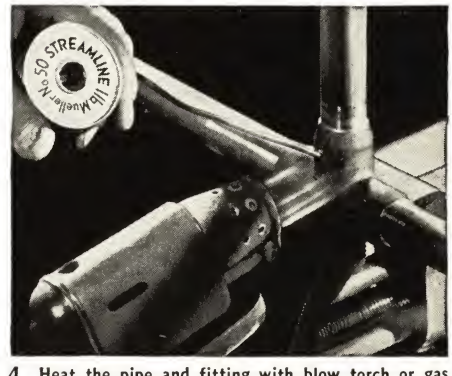
1 Cut pipe to length and remove burr with a file or scraper.



2 Clean outside of pipe and inside of fitting with sandpaper or sandcloth.



3 Apply flux to outside of pipe and inside of fitting.



4 Heat the pipe and fitting with blow torch or gas tip. Feed solder through hole only. When solder shows at end of fitting remove heat and fill hole.

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PIPE AND FITTINGS DIVISION
MUELLER BRASS CO.
PORT HURON, MICHIGAN

CLASSIFICATION OF STREAMLINE COPPER PIPE (HARD)

TYPE O—Hard STREAMLINE Copper Pipe may be used for water lines for non-shock pressures not over 125 lbs. This is largely used in pulp and paper mills.

TYPE M— (Federal Specification WW-T-799 and A.S.T.M. B 88-33) ; principal use is for plumbing. Also largely used for gas services, compressed air, low pressure steam, hot water heating lines and for water piping for non-shock pressures not over 200 lbs. Large sizes used for paper mill, brewery, distillery, and other industrial piping.

TYPE L— (Federal Specification WW-T-799 and A.S.T.M. B 88-33) ; principal use is for plumbing. Also used for gas services, hot water and low pressure steam and return lines, compressed air and industrial piping and water piping with non-shock pressures not over 250 lbs. Steam piping at pressures not over 65 lbs. or 310° F. This temperature limit is imposed by the solder used with the fitting.

TYPE K— (Federal Specification WW-T-799 and A.S.T.M. B 88-33). This is used for all purposes when higher than usual pressures are to be carried and for hot water piping where water conditions demand unusual corrosion resistance.

It may be used for non-shock water pressures not over 400 lbs. and for steam not over 65 lbs. or 310° F. This temperature limit is imposed by the solder.

Note—Hard pipe is not primarily intended for bending (see below for soft classification). It is for use with STREAMLINE Solder Fittings and shipped in straight lengths of 20 feet.

CLASSIFICATION OF STREAMLINE COPPER PIPE (SOFT)

TYPE L—Soft STREAMLINE Copper Pipe is recommended for work requiring bends, flares, concealed replacements and repairs, hot and cold water, compressed air and vacuum lines, for working pressures up to 150 pounds and on steam (saturated) up to 65 pounds gauge, or 310° F. (See below for Steam Applications.)

Note—See TYPE K Soft STREAMLINE Copper Pipe for Government Specifications and for underground use.

TYPE K (Federal Specification WW-T-799 and A.S.T.M. B 88-33) ; recommended for underground use and work requiring bends, flares, concealed replacements and repairs, hot and cold water, compressed air and vacuum lines for working pressures up to 250 pounds, and on steam (saturated) up to 65 pounds gauge, or 310° F. (See below for Steam Applications.)

Note—Soft pipe can be bent without annealing. It is for use with STREAMLINE Fittings and is shipped crated in coils of 30 to 60 ft. lengths up to and including 1 inch nominal pipe size, or in straight lengths of 20 feet in all sizes.

The larger the size the more difficult it is to make satisfactory bends without proper equipment.

When installing this pipe it is advisable to use the STREAMLINE Sizing Tools, which are furnished in sizes up to 2 inches inclusive.

STEAM APPLICATIONS—IMPORTANT!

Pressure allowed for steam is less than that allowed for air, water, etc., because the temperature of the pipe must not exceed the safe working temperature of the solder used to connect the fitting.

In a steam installation (where temperature increases with pressure) the successful application of STREAMLINE Copper Pipe and Fittings depends upon the solder used to make the connections as well as upon the thickness of the pipe.

For steam pressures up to 15 pounds use No. 50 STREAMLINE Solder and No. 50 STREAMLINE Flux.

For steam pressures from 16 pounds to 65 pounds, use either No. 95 or No. 104 STREAMLINE Solder and No. 50 STREAMLINE Flux.

For steam pressures in excess of 65 pounds, write home office—STREAMLINE PIPE AND FITTINGS DIVISION, Mueller Brass Co., Port Huron, Michigan.

General Properties of STREAMLINE Copper Pipe

CLASSIFICATION	Nominal pipe size	Outside diam.	Stubbs gauge	Decimal equiv. of wall thickness	Actual inside diam.	Actual net copper area sq. in.	Weight per foot, lbs.	O.D. tolerance
TYPE "O" HARD 125 Lbs. Max. Working Pressure	3	3 1/8	18	.049	3.027	.4735	1.834	3.125 + .002 — .001
	4	4 1/8	17	.058	4.009	.741	2.87	4.125 + .002 — .002
	5	5 1/8	16	.065	4.995	1.034	4.00	5.125 + .002 — .002
	6	6 1/8	15	.072	5.981	1.370	5.31	6.125 + .002 — .002
	8	8 1/8	14	.083	7.959	2.097	8.12	8.125 + .002 — .002
	10	10 1/8	12	.109	9.907	3.431	13.28	10.125 + .002 — .002
	12	12 1/8	10	.134	11.857	5.06	19.55	12.125 + .002 — .002
Govt. Type "M" HARD 250 Lbs. Working Pressure	1/4	3/8	23	.025	.325	.0275	.106	.500 + .001 — .0005
	3/8	1/2	23	.025	.450	.0373	.144	.500 + .001 — .0005
	1/2	5/8	22	.028	.569	.0526	.203	.625 + .001 — .0005
	3/4	7/8	21	.032	.811	.0848	.328	.875 + .001 — .0005
	1	1 1/8	20	.035	1.055	.1199	.464	1.125 + .0015 — .0005
	1 1/4	1 3/8	19	.042	1.291	.1759	.681	1.375 + .0015 — .0005
	1 1/2	1 5/8	18	.049	1.527	.2429	.94	1.625 + .002 — .000
	2	2 1/8	17	.058	2.009	.3766	1.46	2.125 + .002 — .000
	2 1/2	2 5/8	16	.065	2.495	.5229	2.03	2.625 + .002 — .001
	3	3 1/8	15	.072	2.981	.6909	2.68	3.125 + .002 — .001
	3 1/2	3 5/8	14	.083	3.459	.924	3.58	3.625 + .002 — .002
	4	4 1/8	13	.095	3.935	1.204	4.66	4.125 + .002 — .002
	5	5 1/8	12	.109	4.907	1.719	6.66	5.125 + .002 — .002
	6	6 1/8		.122	5.881	2.305	8.91	6.125 + .002 — .002
	8	8 1/8		.170	7.785	4.249	16.46	8.125 + .002 — .002
	*10	10 1/8		.212	9.701	6.603	25.57	10.125 + .002 — .002
	*12	12 1/8		.254	11.617	9.88	36.69	12.125 + .002 — .002
Govt. Type "L" HARD 250 Lbs. Working Pressure	3/8	1/2		.035	.430	.0511	.198	.500 + .001 — .0005
	1/2	5/8		.040	.545	.0736	.285	.625 + .001 — .0005
	5/8	3/4	19	.042	.666	.0934	.362	.750 + .001 — .0005
	3/4	7/8		.045	.785	.1173	.455	.875 + .0015 — .0005
	1	1 1/8		.050	1.025	.1689	.655	1.125 + .0015 — .0005
	1 1/4	1 3/8		.055	1.265	.2281	.884	1.375 + .002 — .000
	1 1/2	1 5/8		.060	1.505	.2949	1.14	1.625 + .002 — .000
	2	2 1/8		.070	1.985	.4519	1.75	2.125 + .002 — .001
	2 1/2	2 5/8		.080	2.465	.6399	2.48	2.625 + .002 — .001
	3	3 1/8		.090	2.945	.8582	3.33	3.125 + .002 — .002
	3 1/2	3 5/8		.100	3.425	1.108	4.29	3.625 + .002 — .002
	4	4 1/8		.110	3.905	1.394	5.38	4.125 + .002 — .002
	5	5 1/8		.125	4.875	1.964	7.61	5.125 + .002 — .002
	6	6 1/8		.140	5.845	2.635	10.20	6.125 + .002 — .002
	8	8 1/8		.200	7.725	4.98	19.29	8.125 + .002 — .002
	10	10 1/8		.250	9.625	7.74	30.04	10.125 + .002 — .002
	12	12 1/8		.280	11.565	10.40	40.36	12.125 + .001 — .0005
Govt. Type "K" HARD 400 Lbs. Working Pressure	1/4	3/8	21	.032	.311	.0345	.133	.375 + .001 — .0005
	3/8	1/2	18	.049	.402	.0694	.269	.500 + .001 — .0005
	1/2	5/8	18	049	.527	.0887	.344	.625 + .001 — .0005
	5/8	3/4	18	.049	.652	.1079	.418	.750 + .001 — .0005
	3/4	7/8	16	.065	.745	.1654	.641	.875 + .0015 — .0005
	1	1 1/8	16	.065	.995	.2165	.839	1.125 + .0015 — .0005
	1 1/4	1 3/8	16	.065	1.245	.2679	1.04	1.375 + .002 — .000
	1 1/2	1 5/8	15	.072	1.481	.3519	1.36	1.625 + .002 — .000
	2	2 1/8	14	.083	1.959	.5326	2.06	2.125 + .002 — .001
	2 1/2	2 5/8	13	.095	2.435	.7559	2.92	2.625 + .002 — .001
	3	3 1/8	12	.109	2.907	1.033	4.00	3.125 + .002 — .002
	3 1/2	3 5/8	11	.120	3.385	1.322	5.12	3.625 + .002 — .002
	4	4 1/8	10	.134	3.857	1.684	6.51	4.125 + .002 — .002
	5	5 1/8		.160	4.805	2.499	9.67	5.125 + .002 — .002
	6	6 1/8		.192	5.741	3.585	13.87	6.125 + .002 — .002
	* 8	8 1/8		.271	7.583	6.689	25.90	8.125 + .002 — .002
	*10	10 1/8		.338	9.449	10.396	40.26	10.125 + .002 — .002
	*12	12 1/8		.405	11.315	14.92	57.76	12.125 + .001 — .0005

(*) All items prefixed with an asterisk are not carried in stock but are made only to order.

STREAMLINE
PIPE AND FITTINGS DIVISION
MUELLER BRASS CO.
PORT HURON, MICHIGAN

General Properties of STREAMLINE Copper Pipe

CLASSIFICATION	Nominal pipe size	Outside diam.	Stubbs gauge	Decimal equiv. of wall thickness	Actual inside diam.	Actual net copper area sq. in.	Weight per foot, lbs.	O.D. tolerance
TYPE "L" SOFT	3/8	1/2		.035	.430	.0511	.198	.500 + .001 — .0005
	1/2	5/8		.040	.545	.0736	.284	.625 + .001 — .0005
	3/4	7/8		.045	.785	.1173	.454	.875 + .001 — .0005
	1	1 1/8		.050	1.025	.1689	.653	1.125 + .0015 — .0005
	1 1/4	1 3/8		.055	1.265	.2281	.882	1.375 + .0015 — .0005
	1 1/2	1 5/8		.060	1.505	.2949	1.14	1.625 + .002 — .000
150 Lbs. Working Pressure	2	2 1/8		.070	1.985	.4519	1.75	2.125 + .002 — .000
	2 1/2	2 5/8		.080	2.465	.6399	2.48	2.625 + .002 — .001
	3	3 1/8		.090	2.945	.8582	3.33	3.125 + .002 — .001
	3 1/2	3 5/8		.100	3.425	1.108	4.29	3.625 + .002 — .002
	4	4 1/8		.110	3.905	1.394	5.38	4.125 + .002 — .002
	5	5 1/8		.125	4.875	1.964	7.61	5.125 + .002 — .002
	6	6 1/8		.140	5.845	2.635	10.20	6.125 + .002 — .002
Govt. Type "K" SOFT	1/4	3/8	21	.032	.311	.0345	.133	
	3/8	1/2	18	.049	.402	.0694	.269	.500 + .001 — .0005
	1/2	5/8	18	.049	.527	.0887	.344	.625 + .001 — .0005
	3/4	7/8	16	.065	.745	.1654	.641	.875 + .001 — .0005
	1	1 1/8	16	.065	.995	.2165	.839	1.125 + .0015 — .0005
	1 1/4	1 3/8	16	.065	1.245	.2679	1.04	1.375 + .0015 — .0005
	1 1/2	1 5/8	15	.072	1.481	.3519	1.36	1.625 + .002 — .000
	2	2 1/8	14	.083	1.959	.5326	2.06	2.125 + .002 — .000
	2 1/2	2 5/8	13	.095	2.435	.7559	2.92	2.625 + .002 — .001
250 Lbs. Working Pressure	3	3 1/8	12	.109	2.907	1.033	4.00	3.125 + .002 — .001
	3 1/2	3 5/8	11	.120	3.385	1.322	5.12	3.625 + .002 — .002
	4	4 1/8	10	.134	3.857	1.684	6.51	4.125 + .002 — .002
	5	5 1/8		.160	4.805	2.499	9.67	5.125 + .002 — .002
	6	6 1/8		.192	5.741	3.585	13.87	6.125 + .002 — .002
	*8	8 1/8		.271	7.583	6.689	25.90	8.125 + .002 — .002
	*10	10 1/8		.338	9.449	10.396	40.26	10.125 + .002 — .002
	*12	12 1/8		.405	11.315	14.92	57.76	12.125 + .002 — .002

(*) All items prefixed with an asterisk are not carried in stock but are made only to order.

STREAMLINE Solders and Fluxes

Choice of Solder Depends Upon Working Temperatures, Not Working Pressures
How Hot Does Pipe Line Get in Service?

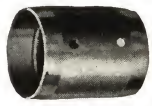
WORKING TEMPERATURE	Solder	Flux	Melting Range	Recommended Uses		Procedure for Making Joints
				Regular Fittings	Fittings with Locking Wire Joints	
Not over 250° F.	No. 50	No. 50	358°-414° F.	Plumbing, Drainage, Industrial Piping and Steam not over 15 lbs. pressure	Steam up to 50 lbs. (297° F.) Type "L" or "K" Hard Pipe	Refer to page 4
Not over 312° F.	No. 95 No. 104	No. 50	450°-460° F. 460° F.	Refrigeration and Air Conditioning Steam up to 65 lbs.	Steam up to 125 lbs. (353° F.) Type "L" or "K" Hard Pipe	Refer to page 4
Not over 387° F.	No. 114	No. 50	625°-740° F.	Steam up to 200 lbs. Type "K" Pipe **not over** 2 in. in size	Steam up to 250 lbs. (403° F.) Type "K" Hard Pipe	Heat joint evenly to at least 800°—Test temperature by applying solder to outside of fitting which should be hot enough to make solder flow readily—Do not apply flame direct to solder as oxidation will occur
Not over 475° F.	Phos. Copper or No. 122	Borax Water Paste or Fluxine	1300° F. 1250° F.	Steam up to 250 lbs. (403° F.) Refer all inquiries to office at Port Huron		Use Oxy-Acetylene Torch
Over 475° F.				Do not use copper		

STREAMLINE
PIPE AND FITTINGS DIVISION
MUELLER BRASS CO.
PORT HURON, MICHIGAN

STREAMLINE SOLDER FITTINGS



90° Elbow
Copper to Copper



Coupling
Copper to Copper



Coupling
Copper to Outside I. P. S.



90° Elbow
Copper to Outside I. P. S.



Coupling
Copper to Inside I. P. S.



Range Boiler Coupling



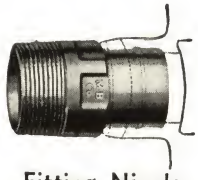
90° Elbow
Copper to Inside I.P.S.



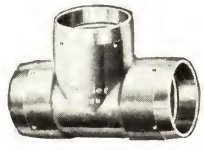
45° Elbow
Copper to Copper



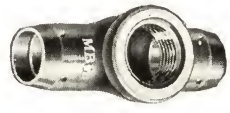
Range Boiler Elbow



Fitting Nipple
Fitting to Outside I. P. S.



Tee
Copper to Copper to Copper



Tee
Copper to Copper to Inside I. P. S.



Cross
Copper to Copper



Fitting Coupling
Fitting to Inside I. P. S.



90° Street Elbow
Fitting to Copper



45° Street Elbow
Fitting to Copper



Bushing
Fitting to Copper



Plug



Cap



Eccentric Coupling
Copper to Copper



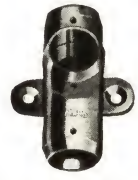
Drop Ear Elbow
Copper to Copper to Inside I.P.S.



Drop Ear Elbow
Copper to Copper



Drop Ear Tee
Copper to Inside I. P. S.



Drop Ear Tee
Copper to Copper to Copper

We manufacture a complete line of FORGED brass STREAMLINE Fittings for mechanical refrigeration and air conditioning applications.

Note: With few exceptions, or where existing demand does not require them, STREAMLINE Solder Fittings are furnished in full range from ¼ in. to 8 in. inclusive. Our Catalog with complete detailed information on Streamline Copper Pipe and Fittings is available upon request.

STREAMLINE
PIPE AND FITTINGS DIVISION
MUELLER BRASS CO.
PORT HURON, MICHIGAN

OUTSTANDING ADVANTAGES
of STREAMLINE Copper Pipe and STREAMLINE Solder Fittings

Elimination of Threaded Connections

Piping Systems commonly used in the past for plumbing and heating have required labor consuming threaded connections. The STREAMLINE Copper Pipe and Fittings are the first practical solution of a permanently tight, easily made soldered connection. By the elimination of the cut thread the strength of the tube or pipe is not reduced at the connections—the STREAMLINE Fitting and the completely soldered connection actually increase the strength.

Permanence

Made of 99.90 per cent pure copper, STREAMLINE Copper Pipe is permanently non-corroding except under extremely unfavorable conditions seldom encountered. It is hard drawn and is shipped in 20-ft. straight lengths. Being hard drawn it retains its fine straight appearance and when installed there are no kinks, ripples or bends.

It requires no more hangers or supports than an ordinary iron installation—it actually weighs less.

With soft copper pipe there is always the danger of driving nails through it during the process of lathing, etc. With STREAMLINE Hard Copper Pipe (Types K, L, and M) tests conclusively show that its hard surface readily deflects nail points.

Installations of materials that rust away and corrode will, at best, last but a few years depending upon the nature of the soil or water and will then have to be replaced. In many cases corrosion and rust will start almost immediately, gradually decreasing their service and cutting down the flow capacity. At the end of a few years they have no salvage value. An installation of STREAMLINE Copper Pipe and STREAMLINE Solder Fittings will continue to give uninterrupted permanent capacity service.

Conservation of Space in Construction

Space saving is of major importance to both architect and owner. STREAMLINE Copper Pipe and Fittings require approximately 30 per cent less space than other materials—no room is required for wrench grip or swing necessitated by screwed fittings. A STREAMLINE Solder Fitting, although enormously strong, is little larger than the pipe itself. An installation of STREAMLINE Copper Pipe and Fittings can be placed close to walls, partitions or ceilings, and thus decreases space for vertical pipe shafts and horizontal pipe spaces.

Absence of Noise in STREAMLINE Installations

The smooth interior of the STREAMLINE Pipe and the absence of turmoil at the recessed fittings make for extreme quietness when water is running through it. This quality of silence is greatly desirable in residences, and particularly in apartment and hotel buildings where the noise created by water traveling through most piping systems is a source of considerable annoyance to people in adjoining rooms.

For Repair and Replacement Work

An installation of STREAMLINE Copper Pipe and Fittings cannot rust. They are ideal for replacement work and last a lifetime without further attention.

The cost of STREAMLINE Copper Pipe and Fittings is approximately the same as iron but costs very much less than iron in repair jobs, owing to the fact that it is not necessary to tear up large areas of wall and flooring to make a replacement. The removal of a base or floor board is generally all that is necessary.

TYPE L and **TYPE K** STREAMLINE Copper Pipe is pliable enough to be easily bent and worked around projections. It may be readily run between studding, over or under electric conduits, by manipulating and bending the pipe in almost the same way as an electrician installs an electric cable. A STREAMLINE installation requires less room than any other material for the same purpose. A joint made with STREAMLINE Solder Fittings and Copper Pipe is the strongest part of the installation. There is no danger of future leakage at these points.

STREAMLINE Copper Pipe is provided in both hard and soft tempers and either or both may be used to advantage. **TYPES O, M, L** and **K,** hard temper STREAMLINE Copper Pipe are particularly suitable on some of the larger jobs where utility corridors or large partition areas are available. In these cases, straight length runs are easily handled and the compactness of the STREAMLINE Fitting, which is very slightly larger than the pipe itself, makes an exceptionally handsome job.

TESTS

Expansion and Contraction—Sections of ¾-in. STREAMLINE Copper Pipe were connected with STREAMLINE couplings making a total length of 36 ft. containing 14 joints. Cold water was run through the Pipe for 15 seconds alternated with 100 lb. of steam at 339° F. This alternating test of steam and cold water was run continuously until 20,160 complete cycles had been effected. After a thorough inspection there was not the slightest sign of any damage or leak in the connection. This test was a very severe one and in view of the results obtained should satisfactorily answer any questions as to its dependability under service conditions.

Vibration—A test to determine the effect of continued vibration on connections made with STREAMLINE solder fittings to STREAMLINE Copper Pipe was conducted as follows:

The test was run on a 10-ft. length of ¾-in. vertical pipe which contained nine joints; the lower end was held rigid. The upper end of the pipe was attached to a vibrator. The vibrator was set in motion and run continuously day and night for one week. The pipe was subjected to 850 vibrations per minute, totaling 8,568,000 vibrations over the test period with not the slightest sign of failure.

TESTS

Tensile Strength—Two pieces of ¾-in. iron pipe were screwed into a coupling and pulled on the Olsen testing machine. Repeated experiments showed that the threads fractured at about 6,400 lbs.

Extra-heavy STREAMLINE Copper Pipe soldered into STREAMLINE couplings and subjected to the same test resulted in a fracture of the pipe itself at slightly over 9,000 lbs. but showed not the slightest sign of joint failure.

Deflection or Bending—Two pieces of ¾-in. iron pipe size brass pipe 6 in. long were screwed into a coupling and placed over supports 5⅜ in. center to center. A deflection test showed that the thread failed at $1\frac{1}{16}$ in. from horizontal.

The same test was carried out on two 6-in. pieces of Standard and Extra-Heavy STREAMLINE Copper Pipe and after being bent to a 45° angle the joint was still intact.

Heat Loss from Wrought Iron or Steel Pipe Is Approximately Twice That from STREAMLINE Copper Pipe

A STREAMLINE Copper Pipe and Solder Fittings installation emits very little heat by radiation and in hot water lines, steam lines, etc., can be very often advantageously installed **without insulation.**

There are two causes of heat loss from a pipe line, one is radiation and one is convection. Hard copper will have a radiation loss of about one-sixth that of black pipe but the loss by convection, which will be nearly alike on both, will bring the total heat loss from copper to less than half that of black pipe. This reduction frequently justifies the use of hard copper pipe without covering instead of covered steel pipe or wrought iron. This is particularly true where space is valuable, as it is in all large buildings. The smaller uncovered pipe not only takes little room but has a most handsome appearance. This question of covering must be considered on each job by itself. When a line is exposed to strong air currents or is over large outside doorways or places where convection loss would be high, it should be covered.

Not only many small jobs but many large ones, apartment houses, hotels and school buildings are installing heating systems with all copper lines and considering the saving by the use of smaller pipe sizes and saving of covering, their cost compares favorably with former practice.

Many contractors after completing a heating installation of STREAMLINE Copper Pipe and Fittings, polish the pipe and give it a light coat of thin lacquer. The preparatory cleaning is readily accomplished by the use of steel wool and gasoline. The lacquering keeps the pipe, in the majority of cases, permanently bright and lowers the heat emission.

Copper heating surfaces are widely used at present, especially in the form of finned tubes for convection heat transfer or as exemplified in the numerous convection types of exposed and concealed radiators. It is interesting to note that, without exception, when brass and copper surfaces are successfully used for heat transfer, the effective radiation area is necessarily greatly increased, as by the use of fins, and a current of air must be kept steadily moving over such surfaces; this current being provided either by power-driven fans or by natural convection or stack draft action such as may be effected by heated flues above the warm surfaces.

The users of concealed heaters built into the walls under the windows have learned the importance of the height of the heated flue. When air ceases to travel over the smooth surface of heated copper pipe, heat transfer ceases to a great extent.

Although copper pipe surfaces radiate very little heat, copper itself is a very rapid conductor of heat. Therefore it naturally follows that there is considerably less loss of heat when being conveyed from the point of generation to the points of distribution.

COST COMPARISONS

STREAMLINE Solder Fittings and Copper Pipe in certain installations may cost a little more than ordinary threaded iron pipe and fittings—but the possible extra cost is so little considering the trouble-free service it gives that it is relatively unimportant. For instance, in the average 6 to 8 room house costing from $5000 to $8000, the added cost of the STREAMLINE installation would range from about $15 to $30, depending, of course, on the extent of the plumbing and heating system.

This extra cost is probably less than ½ of 1% of the value of the house and for this the owner is getting lifetime trouble-free service. It is practically everlasting under ordinary conditions of soil and water. In a very few sections of the country where the water is acidulated owing to certain elements in the soil through which the water passes, it may attack the pipe but even under these conditions it will last a great deal longer than iron, which rusts under any condition. The first cost of installing STREAMLINE is the only cost.

A STREAMLINE Copper Pipe and Solder Fittings installation is, of course, much lower in cost than threaded brass or copper pipe, the wall of which must be a great deal thicker to accommodate the threading than is required in actual service.

STREAMLINE
PIPE AND FITTINGS DIVISION
MUELLER BRASS CO.
PORT HURON, MICHIGAN

STREAMLINE DRAINAGE FITTINGS

STREAMLINE Copper Pipe and Solder Type Drainage Fittings may be advantageously used for all waste, soil and vent piping systems.

A few years ago drainage plumbing was wholly constructed of lead pipe. Later cast iron piping was used instead. In the smaller sizes iron or steel piping with threaded cast iron fittings came into general use and their use extended in full range up to 12 in. in size.

It is practically impossible to entirely remove the burrs from the ends of steel or iron piping. Protruding pipe ends, uneven galvanizing, and burrs, collect and gradually build up accumulations of hair, lint, grease, etc., until trouble results through complete blocking of the line. The pipe must be threaded so that it may be seated firmly against the shoulder in the fitting to be water tight. Corrosion, too, definitely limits the life of such a job. If a drainage line were always full of water, its life would be that of cold water supply lines, but a drainage line is alternately empty and partially full, promoting corrosion in its worst form.

The need for a better material in drainage lines has long been recognized. STREAMLINE provides a line of hard drawn copper with fittings having a smooth interior of the same bore as the pipe, permitting unrestricted and smooth flow area.

Since no room is required for wrench hold or wrench swing, the STREAMLINE Fitting, which is very little larger than the pipe line, may be easily connected in any space large enough to accommodate the fitting itself.

Since there are no hubs on STREAMLINE Fittings the piping can be concealed between studs and joists and still leave ample room for flooring, lath and plaster. The space saved by STREAMLINE is valuable. The 4-in. cast iron stack used heretofore required 6½ in. of space for the bell joint. A STREAMLINE Fitting requires 1¾ in. less diameter and eliminates unsightly and expensive "furring."

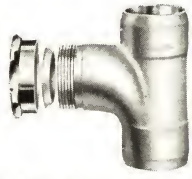
DRAINAGE FITTINGS



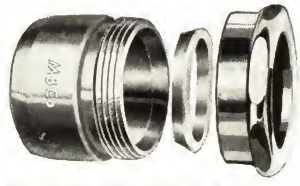
90° Slip Joint Adapter
Complete with Coupling Nut and Washer



45° Slip Joint Adapter
Complete with Coupling Nut and Washer



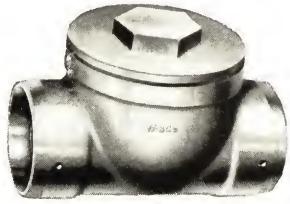
90° Y Branch (Tee)
Cop. to Cop. to Outside I.P.S.
(With Slip Nut)



Straight Slip Joint Adapter
Complete with Coupling Nut and Washer



Drainage Pipe Cleanout
(Complete with Brass Plug)



Drainage Test Tee
(Complete with Plug)



Drainage Fitting Cleanout
(Complete with Brass Plug)

Note: With few exceptions, or where existing demand does not require them, STREAMLINE DRAINAGE FITTINGS are furnished in full range from 1¼ in. to 5 in. inclusive. A special bulletin illustrating the complete line with roughing-in dimensions will be furnished on request.

DRAINAGE FITTINGS



11¼° Long Turn Elbow
Copper to Copper



22½° Long Turn Elbow
Copper to Copper



45° Long Turn Elbow
Copper to Copper



60° Long Turn Elbow
Copper to Copper



90° Long Turn Elbow
Copper to Copper



90° Long Turn Elbow
Copper to Inside I.P.S.



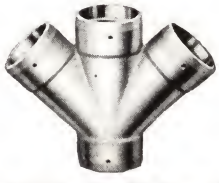
Drainage Trap Coupling
Copper to Outside I.P.S.



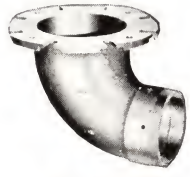
Caulking Connection
Copper to Hub



45° Y Branch
Copper to Copper to Copper



Double 45° Y Branch
Cop. to Cop. to Cop. to Cop.



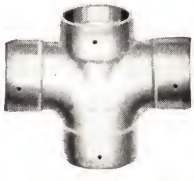
90° Elbow
Copper to Closet Flange



Closet Flange



90° Y Branch (Tee)
Copper to Copper to Copper



Double 90° Y Branch (Tee)
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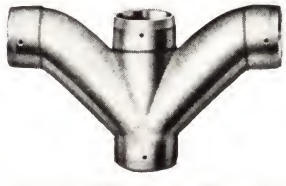
90° Y Branch (Tee)
Cop. to Cop. to Inside I.P.S.



Vent Tee
Inside I.P.S. to Cop. to Inside I.P.S.



90° Long Turn Y Branch
Copper to Copper to Inside I.P.S.



Double 90° Long Turn Y
Copper to Copper to Copper to Copper



90° Long Turn Y Branch
Copper to Copper to Copper

Note: With few exceptions, or where existing demand does not require them, STREAMLINE DRAINAGE FITTINGS are furnished in full range from 1¼ in. to 5 in. inclusive. A special bulletin illustrating the complete line with roughing-in dimensions will be furnished on request.

STREAMLINE COPPER PIPE AND FITTINGS FOR PLUMBING, HEATING, AIR CONDITIONING, AND INDUSTRIAL USE

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STREAMLINE
PIPE AND FITTINGS DIVISION
MUELLER BRASS CO.
PORT HURON, MICHIGAN

THE DURIRON COMPANY, INC.

Sole Manufacturers of Duriron Acid-Proof Drain Pipe and Fittings, Exhaust Fans, Laboratory Equipment and Special Castings

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PRODUCTS

ACID-PROOF DRAIN PIPE and FITTINGS—Sizes 1½ to 15 in.
ACID-PROOF FLOOR DRAINS
ACID-PROOF DILUTION BASINS
ACID-PROOF TRAPS, SINK STRAINERS and OVERFLOWS for Duriron, soapstone, stoneware and other acid-resisting sinks.
ACID-PROOF EXHAUST FANS
ACID-PROOF FUME DUCTS
ACID-PROOF HOOD CONNECTIONS
ACID-PROOF HOOD SINKS

WHERE DURIRON SHOULD BE USED

Waste lines from educational, hospital and industrial laboratories.

Government buildings with food and drug laboratories, appraisers' laboratories, fertilizer laboratories.

Medical buildings housing physicians, surgeons and dentists.

In buildings devoted to general manufacturing where acids may be used.

Waste lines from industrial plants where corrosives are used in the manufacturing processes.

In structures devoted to crafts, such as photo-engraving and electroplating.

Removal of corrosive fumes from chemical hoods, laboratories, metal-pickling rooms.

In memorial buildings where the lines are between the walls, to forestall marring or defacing because of failure of less resistant materials.

Insurance buildings and county courthouses and other buildings containing photostat equipment.

Waste lines through cinder concrete where corrosion attacks outside the pipe.

Battery service stations, for battery-acid wastes.

Battery rooms for emergency lighting and power plants as in hospitals, theaters, telephone exchanges.

Roof vents exposed to coal smoke and moisture, which results in the formation of a corrosive solution of sulphuric acid.

Commercial kitchens, because of fruit and vegetable juices, cleaning powders, detergents.

THE ADVANTAGES OF DURIRON

Duriron is extremely resistant to nearly all kinds of corrosives and is practically proof against all acid wastes encountered in laboratories.

Duriron can be expected to outlast the building in which it is installed.

Duriron pipe joints, properly caulked, stay tight and will not loosen under ordinary building vibration.

Duriron is not scoured by sharp solids, such as broken glassware, nor by sediment.

Duriron is not affected by mercury.

THE INSTALLATION OF DURIRON

The labor cost of installing Duriron Acid-Proof Drain Pipe is the same as that of extra heavy cast iron soil pipe. The installation is identical, except that pure asbestos rope must be used instead of hemp or oakum (which are not acid-resisting). A support or hanger for each length of pipe is generally used, with a hanger provided at each bend.

DURIRON AND THE ARCHITECT

As the value of an architect's services is not in his pencils and paper, but in his knowledge and experience, so is the value of Duriron largely in the skill of manufacture and close control of quality and uniformity of product, together with a knowledge of requirements of the user.

The architect who uses Duriron for the drainage of corrosive wastes has these assurances: that he has used the best there is for such service; that Duriron will maintain his reputation, as Duriron will outlast the building in which it is installed.

Send for Bulletin No. 702.

Duriron is recognized by the Chemical and allied industries as the standard high-silicon iron of the world. 26,000 patterns are available, including those for pumps, valves, flanged pipe and fittings, concentrators, condensers, heaters, coolers, etc.—all for severe acid service.

MAURICE A. KNIGHT

Knight-Ware Acid, Alkali and Corrosion Proof Chemical Stoneware

AKRON, OHIO

SALES ENGINEERING OFFICES

NEW YORK, N. Y. CHICAGO, ILL. DETROIT, MICH. SAN FRANCISCO, CAL. TORONTO, CAN.
CLEVELAND, OHIO NIAGARA FALLS, N. Y. ST. LOUIS, MO. MONTREAL, CAN.

What Knight-Ware Is

Knight-Ware is an improved ceramic product having a tight, close-grained body which is tough, uniform, thoroughly vitrified and wholly inert to the action of acids, alkalis, chemicals, and corrosive solutions and gases, weak or strong, hot or cold. Its acid-proof qualities do not depend upon any glaze, enamel or veneer, "It is the body itself."

Deairated Knight-Ware is light weight yet mechanically strong, and is equalled only by glass or fused silica for acid resistance.

A typical specification should read, "All parts of plumbing and ventilating system subject to the action of chemical wastes, acid fumes, or chemical corrosion shall be of Knight-Ware as manufactured by MAURICE A. KNIGHT of Akron, Ohio.

Where Knight-Ware Is Used

Knight-Ware Plant Equipment is used by the manufacturer and the user of chemicals, and in processes where contamination must be avoided.

Knight-Ware Laboratory Sinks, Table Troughs, Sumps and Piping are used in school, university and commercial laboratories, in hospitals, in newspaper buildings and wherever acid-proof waste or ventilating lines are necessary.

Knight-Ware Laboratory Sinks

Knight-Ware sinks are custom built to suit your requirements. Because they are entirely handmade, it costs no more for this service. The one-piece construction, smooth surfaces, rounded corners and acid-proof quality mean a freedom from leaks and a cleanliness that is permanent. Outlets of various designs are furnished as an integral part of the sink or separately as desired.

Knight-Ware Acid Waste Pipe and Fittings

Bell and spigot pipe and fittings are available in any bore from 1 up to 60 in. in any lengths up to 5 ft. Special fittings for unusual places or to eliminate unnecessary joints are furnished at no great increase in cost. Flanged or plain ground end connections can be furnished where desired.

Knight-Ware B&S joints packed and poured to our specifications are absolutely acid and leak proof. Installation is no more difficult than with ordinary cast iron pipe. Pressure-Flex, a new type rubber joint, is now available for an easily installed, positive seal.

Knight-Ware Acid Ventilating Pipe and Fittings

This pipe is furnished in round or rectangular cross section in bores of from 4 to 60 in. Bell and spigot, flanged, or plain butt end connections are available. Fume condensates are often more corrosive than the gas itself. Specify Knight-Ware for positive protection.



238 End Table Sink

Guaranty and Service

All Knight-Ware is guaranteed to be acid-proof, free from defects and satisfactory in every respect.

We are prepared to assist you in making layouts using Knight-Ware, and with special designs for piping and sinks.

Literature

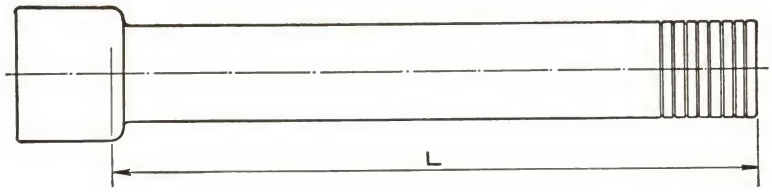
Our 48-page catalog on Knight-Ware Laboratory Equipment containing complete details and fully illustrated will be sent upon request. A.I.A. File No. 29b81.



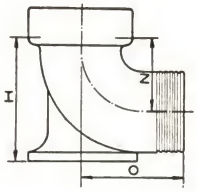
275-A—Table Trough

SOME KNIGHT-WARE INSTALLATIONS

INSTITUTION	ARCHITECT	ENGINEER	CONTRACTOR
Princeton University	Charles Z. Klauder	Louis T. Klauder	John Black & Son C. H. Cronin, Inc.
Columbia University	McKim, Mead and White	McKim, Mead and White	James McCullagh
Ohio State University	Jos. N. Bradford Howard Dwight Smith		Sam'l A. Esswein Spohn Plumbing & Heating
Columbia-Presbyterian Medical Center	James Gamble Rogers	Fred Brutschy	W. G. Cornell Co.
New York-Cornell Medical Center	Coolidge, Bullfinch, Shepley & Abott	James A. Cotter	John McMillan & Co., Inc.
Brooklyn College	Randolph Evans	Frank Sutton	J. L. Murphy, Inc.
Massachusetts Institute of Technology	Coolidge and Carlson	Chas. T. Main Stone & Webster	Wm. H. Mitchell & Sons Co.
Mellon Institute of Industrial Research	Janssen & Cocken	Janssen & Cocken	Mellon-Stuart
Duke University	Horace Trumbauer	Duke Construction Co.	Duke Construction Co.
Purdue University	Walter Scholer	R. T. Hamilton	A. E. Kemmer
McGill University	Nobbs & Hyde	Combe & Ryan	John Colford, Ltd.
University of Washington	Naramore, Thomas & Grainger	Lincoln Bouillon	Allied Plumbing & Heating Co.

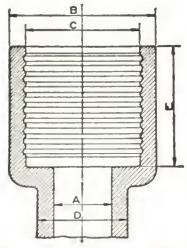


Right:
272-AB Knight-Ware Base Elbow



271—KNIGHT-WARE SINGLE HUB PIPE

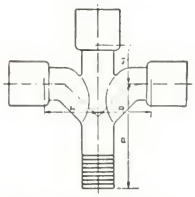
A	B	C	D	E	L	Wt. per ft., lbs.
1	3 1/4	2 1/2	1 5/8	3	1-3 ft.	2 1/4
1 1/2	3 1/2	2 7/8	2 1/8	3	1-4 ft.	3 1/4
2	4 1/4	3 5/8	2 3/4	4	5	4
3	5 1/2	4 5/8	3 7/8	4	5	5 1/2
4	6 3/4	6	5	4	5	8 1/2
5	8	7	6	4	5	11
6	9 1/8	8	7	4	6	15
8	11 1/2	10 1/4	9 1/4	4	6	20
9	12 3/4	11 3/4	10 5/8	4	6	24
10	14	13	11 7/8	4	6	28
12	16 3/4	15 1/8	14	4	6	36



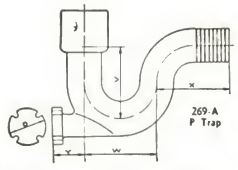
Detail of Knight-Ware Hub

272-AB—BASE ELBOW

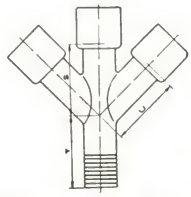
Bore	N	O	H	Wt., lbs.
4"	4"	8"	7 1/2"	18
6"	6"	10"	10 3/4"	31
8"	10"	14"	15 3/4"	52
9"	10"	14"	16 1/2"	63
10"	10"	14"	17 1/4"	77
12"	12"	16"	20 1/4"	100



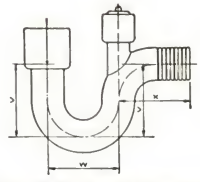
273B—Double T.Y.



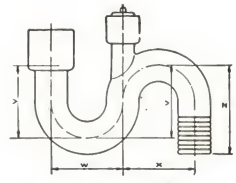
269-A, P Trap with Flange Cleanout



274A—Double Y Fitting



269—P Trap with Cleanout



268—S Trap with Cleanout

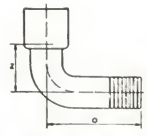
Bore, in.	P, in.	M, in.	R, in.	Wt., lbs.
1	8 3/4	3 1/4	3	6
1 1/2	8 3/4	3 1/4	3	7
2	8 3/4	3 1/4	3	8 1/2
3	8 3/4	3 1/4	4	12
4	13 1/4	4 3/4	6	28
5	13 1/4	4 3/4	7	38
6	13 1/4	4 3/4	8	52

Bore, in.	D, in.	V, in.	W, in.	X, in.	Y, in.	Wt., lbs.
1	4	4	4	6	2	5
1 1/2	4	6	6	6	3	7
2	4	6	6	7	3 1/4	10 1/2
3	5	8	8	8	4 1/4	17
4	5	9	9	9	4 3/4	28
5	5	9	9	10	5 1/2	38
6	5	10	10	10	6 1/4	48

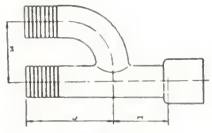
Bore, in.	S, in.	T, in.	U, in.	Wt., lbs.
1	6	6	6	7 1/2
1 1/2	6	6	6	10 1/2
2	6	6	6	12
3	8	8	8	15
4	10	8	10	27
5	12	9	12	36
6	12	9	12	47

Bore, in.	V, in.	W, in.	X, in.	Wt., lbs.
1	4	4	6	4
1 1/2	6	6	6	7
2	6	6	7	10
3	8	8	8	20
4	9	9	9	28
5	9	9	10	40
6	10	10	10	50

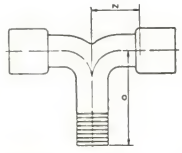
Bore, in.	V, in.	W, in.	X, in.	Z, in.	Wt., lbs.
1	4	4	4	5	6 1/2
1 1/2	6	6	6	7 1/4	7 1/4
2	6	6	6	7 1/2	14
3	8	8	8	10	19
4	9	9	9	11 1/2	30
5	9	9	9	12	42
6	10	10	10	14	52



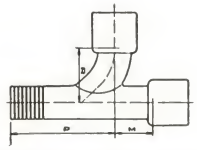
272A or B, 1/4 and 1/8-in. Bends



273E—Vent T Fitting



272D—Twin Elbow



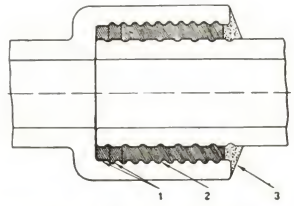
273-C—Single Sanitary T

Bore, in.	N, in.	O, in.	Wt., lbs.
1	4	8	2 1/2
1 1/2	4	8	3 1/2
2	4	8	4 1/2
3	4	8	8 1/2
4	6	10	12 3/4
5	6	10	17
6	6	10	23

Bore, in.	J, in.	H, in.	K, in.	Wt., lbs.
1	8	4	4 1/2	5 1/2
1 1/2	8	4	5 1/2	6
2	8	4	5 3/4	7
3	8	4	7	9
4	12	6	8 1/2	20
5	12	6	10 1/2	26
6	12	6	11 1/2	35

Bore, in.	N, in.	O, in.	Wt., lbs.
1	4	8	4 1/2
1 1/2	4	8	6
2	4	8	7
3	4	8	11
4	6	10	20
5	6	10	29
6	6	10	36

Bore, in.	P, in.	M, in.	R, in.	Wt., lbs.
1	8	4	4	5
1 1/2	8	4	4	6
2	8	4	5	7
3	8	4	5	10
4	12	6	6	22 1/2
5	12	6	6	27
6	12	6	7	38

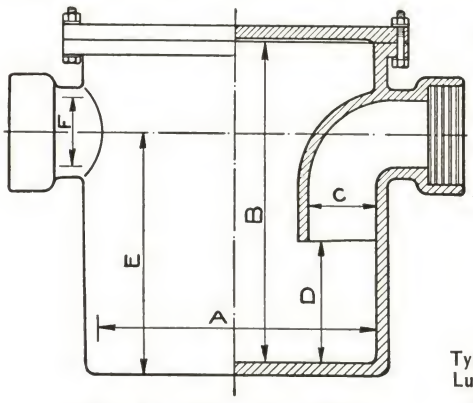


Method of Packing Bell and Spigot Joint

No. 1—Pure asbestos wicking; one ring for vertical and 2 rings for horizontal lines.

No. 2—Knight G-K Compound poured.

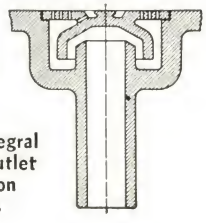
No. 3—Topping Material.



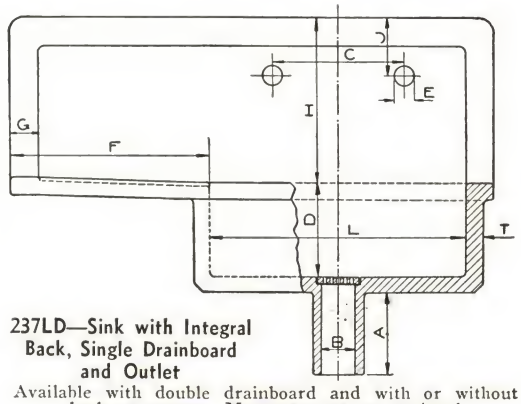
401—Knight-Ware Style "B" Sumps

401—KNIGHT-WARE STYLE "B" SUMPS

A	18 1/2	24
B	24	36
C	4	4
D	12	15
E	17	28
F	4	4
Wt., lb.	175	400



Type A—Integral Lute Trap Outlet Available on All Sinks



237LD—Sink with Integral Back, Single Drainboard and Outlet

Available with double drainboard and with or without back or aprons. Measurements are optional

JENKINS BROS.

Manufacturer of Valves and Mechanical Rubber Goods

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JENKINS BRONZE VALVES—FITTED WITH JENKINS RENEWABLE DISC

These Jenkins Valves offer the advantages of the genuine Jenkins Renewable Composition Disc. Made of various compositions to suit specific service conditions, the Jenkins Disc combines a resiliency that assures tight closing, with an unusual durability. The disc holder affords full protection for the entire rim of the disc and permits easy renewal. Many other superior features of design are described in the Jenkins Catalog.

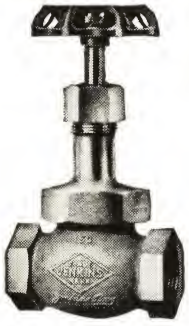


Fig. 106-A, Globe

REFERENCE CHART TO FIGURE NUMBERS OF JENKINS BRONZE VALVES

Pressures	Globe		Angle		Horizontal Check		Angle Check		Swing Check		Y or Blow-off		Quick Opening	
	Scrd.	Flgd.	Scrd.	Flgd.	Scrd.	Flgd.	Scrd.	Flgd.	Scrd.	Flgd.	Scrd.	Flgd.	Globe	Angle
Standard	106-A	107-A	108-A	109-A	117-A	316-A	118-A	317-A	352	353	124	125	941	943
Medium	600	.....	602	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
250 lb. extra heavy	801	802	803	804	807	808	809	810	.....	.....	.....	.....	.....	.....
300 lb. extra heavy	128	129	130	131	263	133	132	133a	260	262	134	135	246	248
Extra heavy—Special hard bronze	721	722	723	724	727	729	728	730	731	732	733	734	.....	.....

Consult Jenkins No. 23 Catalog for full details.

JENKINS BEVEL-SEAT "REGRIND-RENEW" VALVES

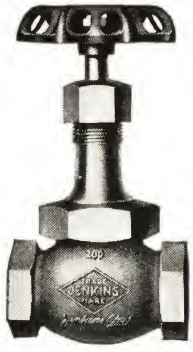


Fig. 890, Globe

Among the many excellent points of these valves is the Jenkins Improved Seating Arrangement for Regrinding Valves. Its special design allows you to regrind the valve more times without any damaging effect. Easily renewable and made of a special corrosion and erosion resistant alloy, both disc and seat ring have long life. The Jenkins Catalog gives complete details about the complete line covered in the chart below.

REFERENCE CHART TO FIGURE NUMBERS OF JENKINS BEVEL-SEAT "REGRIND-RENEW" VALVES

Pressures	Globe		Angle		Horizontal Check		Angle Check		Swing Check		*Globe		*Angle		*Horizontal Check		*Angle Check	
	Scrd.	Flgd.	Scrd.	Flgd.	Scrd.	Flgd.	Scrd.	Flgd.	Scrd.	Flgd.	Scrd.	Flgd.	Scrd.	Flgd.	Scrd.	Flgd.	Scrd.	Flgd.
Standard	890	.....	892	....	896	.....	898	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Medium	950	951	952	953	756	757	758	759	762	763	795	796	797	798	946	947	948	949
Extra heavy	970	971	972	973	966	967	968	969	962	963	982	983	984	985	994	995	996	997

*Bolted bonnet valves. Medium patterns in 2½ and 3-in. sizes. Extra heavy patterns in 1½, 2, 2½ and 3-in. sizes. Consult Jenkins No. 23 Catalog for full details.

JENKINS PLUG-SEAT "REGRIND-RENEW" VALVES

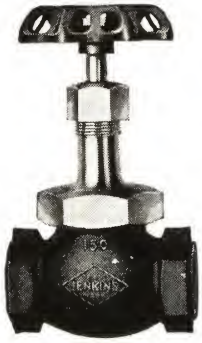


Fig. 956, Globe

Made with a plug-type seat which affords a larger area of seating surface, and permits throttling without cracking the seat, these Jenkins Valves are excellent for severe service conditions. Fig. 976 and Fig. 978, made for 300 lb. service, have a plug and seat of our JX500 special alloy steel exceeding 500 Brinell hardness . . . it practically nullifies wear and danger of wire drawing. Fig. 956, for 200 lb. service, and other valves in the line have a plug and seat ring made of a special nickel alloy of 300 Brinell hardness.

REFERENCE CHART TO FIGURE NUMBERS OF JENKINS PLUG-SEAT "REGRIND-RENEW" VALVES

Pounds Pressures (W.S.P.)	Globe		Angle		*Globe		*Angle	
	Scrd.	Flgd.	Scrd.	Flgd.	Scrd.	Flgd.	Scrd.	Flgd.
150	894	.....	895	.....	.....	.....	.....	.....
200	956	957	958	959	.....	.....	.....	.....
250	1156	977	1158	979	.....	989	.....	991
300	976	.....	975	.....	988	.....	990	.....

*Bolted bonnet valves made in sizes 1½, 2, 2½ and 3 in. Consult Jenkins catalog for full details.

JENKINS BRONZE GATE VALVES

Every feature of demonstrated worth to valve users is incorporated in Jenkins Bronze Gate Valves. Their advanced design is a result of Jenkins' 70 years experience. Remarkably strong bronze metals and painstaking craftsmanship add extra stamina and quality that mean extra years of low-cost performance.



Fig. 370, Gate

REFERENCE CHART TO FIGURE NUMBERS OF JENKINS BRONZE GATE VALVES

Pounds pressure		Solid Wedge Stationary Spindle		Solid Wedge O. S. & Y.		Solid Wedge Traveling Spindle		Split Wedge Traveling Spindle		Split Wedge Union Bonnet Traveling Spindle	
Steam	O.W.G.	Screwed	Flanged	Screwed	Flanged	Screwed	Flanged	Screwed	Flanged	Screwed	Flanged
125	200	370	371	368	369	47	48	62	63	62–U	.....
*125	200	674	675	676	677	.....	.....	.....	.....	.....	.....
150	225	670	671	672	673	49	50	64	65	.....	.....
200	300	270	271	275	276	.....	.....	.....	.....	.....	.....
250	400	280	281	282	283	.....	.....	.....	.....	.....	.....
**300	.....	735	736	737	738	.....	.....	.....	.....	.....	.....

Steam and Oil, Water, Gas

*Sizes 3½ in.
**Superheated steam to 700° F.

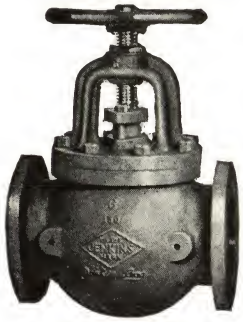


Fig. 142, Globe

JENKINS IRON BODY VALVES—Renewable Disc Type

Reserve strength distinguishes these valves that incorporate a Jenkins Renewable Composition Disc. Bodies are unusually heavy and of the highest grade of gray iron, commonly termed "semi-steel." This metal has an average tensile strength of over 35,000 lbs. per sq. in. Cast bronze seat rings screw into the body in all sizes. Details in Jenkins Catalog.

REFERENCE CHART TO FIGURE NUMBERS OF IRON BODY RENEWABLE DISC-TYPE VALVES

Pressures	Globe		Angle		Horizontal Check		Angle Check		Swing Check		Y or Blow-off		Automatic Eq. Stop and Check	
	Scrd.	Flgd.	Scrd.	Flgd.	Scrd.	Flgd.	Scrd.	Flgd.	Scrd.	Flgd.	Scrd.	Flgd.	Scrd.	Flgd.
Standard	141	142	143	144	151	153	152	153a	294	295	296	297	.....	.....
Medium	774	775	776	777	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Extra Heavy	162a	162	163a	163	265	266	267	268	338	339	336	337	291	293

Consult Jenkins No. 23 Catalog for full details.

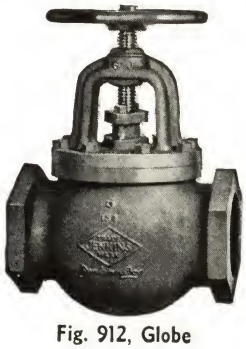


Fig. 912, Globe

JENKINS IRON BODY REGRINDING VALVES

These valves have the advantage of the Jenkins Improved Bevel Seat Ring and Disc design. Because the diameter of the disc is scientifically correct in relation to the seat, you can regrind the valve more times without damaging the disc. The valve body is heavily constructed of highest grade gray iron, and other special features are provided that fit these valves for long, hard service.

FIGURE NUMBERS OF IRON BODY REGRINDING VALVES

Pressures	Globe		Angle		Horizontal Check		Angle Check	
	Scrd.	Flgd.	Scrd.	Flgd.	Scrd.	Flgd.	Scrd.	Flgd.
Standard	912	913	914	915	928	929	930	931
Medium	918	919	920	921	.....	.....	.....	.....
Extra Heavy	922	923	924	925	934	935	936	937

Consult Jenkins No. 23 Catalog for full details.

JENKINS IRON BODY GATE VALVES

Make a point-for-point comparison with other iron body gate valves. See the many superior features which Jenkins offers. Let your own judgment tell you whether a "Jenkins" is your "best buy."

REFERENCE CHART TO FIGURE NUMBERS OF IRON BODY GATE VALVES

Pressures	Solid Wedge						Double Disc				Hub End		U-Bolt			
	Inside Screw		O. S. & Y. Rising Spindle		Quick-opening Sliding Stem and Lever		Inside Screw		O. S. & Y. Rising Spindle		Double Disc	Solid Wedge	Bronze Mounted		All-iron	
	Scrd.	Flgd.	Scrd.	Flgd.	Scrd.	Flgd.	Scrd.	Flgd.	Scrd.	Flgd.			Scrd.	Flgd.	Scrd.	Flgd.
Standard	325	326	650	651	334	335	872	873	874	875	883	327	42	43	40	41
Medium	251	255	277	253	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Extra Heavy	203a	203	204a	204	.....	.....	876	877	878	879	.....	.....	.....	.....	.....	.....

Consult Jenkins No. 23 Catalog for full details.

All-Iron Gates with solid iron double face wedge; made with screwed bonnets in sizes ¼, ⅜ and ½ in.; or with bolted bonnets in sizes 3¼ in. and up.

U-bolt Iron Body Gates combining quality at low first cost are made in sizes ¼ to 4 in.; either all-iron or bronze mounted.

All-Iron Globe and Angle Valves are made with screwed bonnets, sizes ½ to 2 in.

Radiator Valves

A wide variety is covered in Jenkins Catalog. Regular and low bonnet patterns; globe, angle, offset globe. Corner valves in straight or offset patterns, right or left hand. A black composition wheel is regularly fitted, but bronze wheel or lock shield and key are available. Finishes include chromium plate. Radiator gate valves are also obtainable.

Fire Line Valves

Types and sizes of Underwriters' approved angle and gate patterns for any building or service. For data see Jenkins Catalog.

KAUSTINE COMPANY, INC.

Engineers and Manufacturers of Sewage Disposal Equipment

MAIN OFFICE AND FACTORY

PERRY, N. Y.

Consult Telephone Directory for Local Offices

PRODUCTS AND ENGINEERING SERVICE

Kaustine Armco Ingot Iron Septic Tanks, Kaustine Super-Septic Tanks, Kaustine System Septic and Chemical Toilets, Kaustine Automatic Syphons, Kaustine Sewage Ejectors, Kaustine Multiple Distribution Chambers, Kaustine E-Z Drain Tile Connectors, Kaustine Grease Separators, Kaustine Chemicals.

Kaustine TRADE MARK

Kaustine Products are endorsed by Public Health Authorities.

With its corps of engineers at the home office and in the field, KAUSTINE COMPANY, INC., can adequately cope with *all* problems relating to sewage disposal. Architects using this service are relieved of the details of sewage treatment plant design and installation. Simply state the requirements of the particular job. KAUSTINE COMPANY, INC., will furnish all of the necessary plans and specifications, without cost or obligation. Literature, containing valuable information respecting the various types of appurtenances which go to make up complete sewage treatment plants, as well as plans showing unusual installations, is available on request.

For Air Conditioning Furnaces, see File Index.

KAUSTINE STANDARD SERIES SEPTIC TANKS



Vertical Septic Tank

These tanks are made in two types. The vertical types (Nos. 62, 63 and 65) are designed for homes and small institutions. The horizontal types (Nos. 85, 810, etc.) are designed for use where larger capacities are required. All are constructed throughout of Armco Ingot Iron, which is noted for its rust-resisting qualities, and are coated inside and out with plastic enamel, which provides additional protection against corrosion.

The vertical tanks are made in 200, 300 and 490-gal. sizes, and are equipped with a removable cover. The horizontal tanks are made in capacities up to 5000 gals. and are provided with two or three manholes, according to size. The manhole covers are securely bolted to the tank sleeve with brass nuts, which eliminates corrosion at this point. This type of cover is easy to remove and insures quick access to the interior of the tank whenever necessary.

The internal design of Kaustine Tanks is unique. Baffle plates are placed at the intake and discharge openings and a sludge baffle is placed near the outlet. This construction utilizes the entire capacity of the tank, yet will not allow either the scum on the top or the sludge at the bottom to be discharged.

In addition to the special features noted above, attention is called to the new sizes and changes of gauges of metal shown in the table below. Information on tanks of larger capacities of the circular type and a free booklet describing installation methods will be furnished on request.



Horizontal Septic Tank

SPECIFICATIONS—STANDARD SERIES

No.	Total cap., gal.	Net working capacity, gal.	Number of people: *Home or Institution	Number of people: School	Number of people: Factory	Dimensions	Tile conn. accommodates	Gauge	Shipping wgt., lbs.
Vertical Tanks									
62	245	200	Up to 6	15	12	38″ dia. x 48″	4″ or 6″	14	220
63	345	300	6 to 9	25	20	46″ dia. x 48″	4″ or 6″	14	285
65	550	490	10 to 18	40	35	52″ dia. x 60″	4″ or 6″	14	390
Horizontal Tanks									
85	550	500	10 to 20	40	35	52″ dia. x 60″	4″ or 6″	14	415
810	1150	1000	20 to 40	80	70	52″ dia. x 10′	4″ or 6″	12	825
815	1675	1500	40 to 75	120	105	65″ dia. x 9′6″	4″ or 6″	12	1130
820	2250	2000	75 to 100	165	140	6′ dia. x 10′8″	6″ or 8″	3/16″	2270
825	2790	2500	100 to 125	210	175	6′ dia. x 13′2″	6″ or 8″	3/16″	2675
830	3350	3000	125 to 150	250	200	6′ dia. x 15′10″	6″ or 8″	3/16″	3095
835	3915	3500	140 to 175	290	235	6′ dia. x 18′6″	6″ or 8″	3/16″	3525
840	4475	4000	160 to 200	330	270	6′ dia. x 21′2″	6″ or 8″	3/16″	3945
845	5065	4500	180 to 225	370	305	6′ dia. x 23′10″	6″ or 8″	3/16″	4395
850	5550	5000	200 to 250	410	340	6′ dia. x 26′4″	6″ or 8″	3/16″	4800
845H	4900	4500	180 to 225	370	305	7′6″ dia. x 14′10″	6″ or 8″	1/4″	5365
850H	5450	5000	200 to 250	410	340	7′6″ dia. x 16′6″	6″ or 8″	1/4″	5790

*Lower figures in home ratings column are recommended by health officials for most satisfactory service. In no instance, even for temporary use, should maximum ratings shown be exceeded.

KAUSTINE SUPER-SEPTIC TANKS



Exterior View



Interior View

Vertical Model—Kaustine Vertical Super-Septic Tanks, available in sizes from 200 to 1500 gals. capacity, are equipped with a patented internal baffle which insures an effluent of the highest quality. The special interior construction prevents the discharge of unsettled sewage when a sudden inrush occurs. Dead areas within the tank are eliminated, which permits a uniform rate of flow of the sewage from inlet to outlet. These features result in a more equitable distribution of sludge in the bottom of the tank, with a more effective bacterial digestion and consequent reduction of sludge volume and a clearer effluent. All Kaustine Super-Septic Tanks are constructed throughout of rust-resisting Armco Ingot Iron and are coated inside and outside with black plastic enamel.

Horizontal Model—Kaustine Horizontal Super-Septic Tanks, available in size from 2250 to 19,800 gals. capacity, are designed to provide economical and effective single tank installations for schools, institutions, etc. Sloping baffles discharge the incoming flow over the entire width of the tank, with no disturbance of sludge and outlet baffles prevent discharge of scum into the disposal field. The tanks are specially shaped to allow for ample sludge, scum and gas areas. Data on special installations furnished on request.



Horizontal Super-Septic Tank

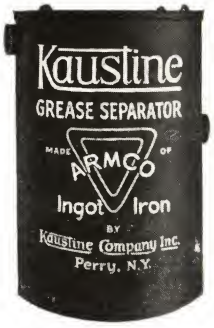
VERTICAL SUPER-SEPTIC TANK SPECIFICATIONS

Cat. No.	Dimensions	Total capacity, gal.	Working capacity, gal.	Number of Persons Designed to Accommodate: Home	Hotel	Factory	School	Approximate shipping wgt., lbs.
112	38″x50″	245	200	7	9	12	15	280
113	48″x50″	390	320	10	12	20	25	360
114	55″x60″	615	535	15-20	30	40	45	800
115	65″x60″	860	735	20-35	40	50	55	1290
116	75″x60″	1150	1000	35-45	60	70	85	1650
117	92″x60″	1700	1500	45-80	90	110	150	1950

HORIZONTAL SUPER-SEPTIC TANK SPECIFICATIONS—STANDARD SIZES

Cat. No.	Capacity, gal.	Length	Height	Width	Thickness of metal	Weight, lbs.: 3/16″	Weight, lbs.: 1/4″
S2250	2250	8′ 4″	7′ 0″	7′ 4″	3/16″ or 1/4″	3600	4300
S2800	2800	10′ 5″	7′ 0″	7′ 4″	3/16″ or 1/4″	4000	4900
S3400	3400	12′ 6″	7′ 0″	7′ 4″	3/16″ or 1/4″	4400	5600
S4000	4000	14′ 10″	7′ 0″	7′ 4″	3/16″ or 1/4″	4900	6300
S4600	4600	16′ 8″	7′ 0″	7′ 4″	3/16″ or 1/4″	5400	6800
S5200	5200	18′ 9″	7′ 0″	7′ 4″	3/16″ or 1/4″	5900	7500
S5800	5800	12′ 6″	9′ 9″	8′ 0″	3/16″ or 1/4″	6500	7400
S7800	7800	16′ 8″	9′ 9″	8′ 0″	3/16″ or 1/4″	7800	9000
S9800	9800	20′ 10″	9′ 9″	8′ 0″	3/16″ or 1/4″	9100	10500
S11800	11800	25′ 0″	9′ 9″	8′ 0″	3/16″ or 1/4″	10400	12100
S13800	13800	29′ 2″	9′ 9″	8′ 0″	3/16″ or 1/4″	11700	13700
S15800	15800	33′ 4″	9′ 9″	8′ 0″	3/16″ or 1/4″	13000	15300
S17800	17800	37′ 6″	9′ 9″	8′ 0″	3/16″ or 1/4″	14400	16900
S19800	19800	41′ 8″	9′ 9″	8′ 0″	3/16″ or 1/4″	16400	21100

KAUSTINE GREASE SEPARATOR



Grease Separator

The Kaustine Grease Separator is designed for use where large amounts of greasy wastes are discharged into the sewage system. Grease prevents proper bacterial action in the septic tank and, in addition, because of its lighter specific gravity when it is discharged into the absorption bed, rapidly clogs up the pores of the earth.

The separator is built of Armco Ingot Iron, with electrically welded seams. The removable cover is securely held in place by brass nuts, a construction which permits of easy access to the interior for cleaning and skimming. The baffles are arranged to provide for the maximum amount of grease and lighter floating solids and yet for the complete removal of the heavier solids. This prevents the possibility of putrefying organic matter from being held at the bottom of the unit. Generous capacities insure rapid coagulation of the grease. If separators of larger capacities than those listed below are required, full information and prices will be gladly furnished on request.

SPECIFICATIONS—KAUSTINE GREASE SEPARATOR

No.	Total gals.	Dimensions, in.		Connection, in.		Weight, lbs. (approx.)
		Dia.	Depth	Inlet	Outlet	
253	40	22	25	2	2	60
254	60	22	36	2	2	85
256	150	32	50	3	3	180

KAUSTINE SYPHON AND SYPHON COMPARTMENT

The Kaustine Syphon Compartment with automatic syphon is designed to receive and retain the effluent until the compartment becomes filled. This gives the absorption bed an opportunity to rest and dry out between dosings. The action of the syphon in discharging the contents of the compartment is entirely automatic.


Syphon and Syphon Compartment

The syphon compartment with syphon is built as a separate unit from the septic tank to permit of installation at the most advantageous point. Like all Kaustine products, the Kaustine Syphon Compartment is made of Armco Ingot Iron. The syphon is heavy cast iron.

SPECIFICATIONS—KAUSTINE SYPHON COMPARTMENT WITH SYPHON

Catalog No.	Dimensions, in.	Capacity, gals.	For use with Septic Tank Numbers	Connection, in.	Syphon outlet, in.	Discharge per min., gals.	Weight, lbs.
151	32x25	50	62, 63	4	3	90	210
152	48x25	110	65, 85, 810, 815	4	3	90	315
153	65x25	220	820, 825, 830	4	3	90	520
*153-D	65x25	220	820, 825, 830	4	3	90	590
154	80x25	330	835, 840	4	3	90	800
*154-D	80x25	330	835, 840	4	3	90	870
155	96x25	440	845, 850	4	3	90	1000
*155-D	96x25	440	845, 850	4	3	90	1070

*These are duplex syphon compartments equipped with two syphons which operate alternately. Each syphon outlet can be connected to a separate tile field and as they work alternately each tile field receives double the rest period. The duplex compartments are recommended particularly for heavy clay soils where drainage is slow.

KAUSTINE SYSTEMS FOR USE WHERE RUNNING WATER IS NOT AVAILABLE

Where running water and public sewage systems are not available, Kaustine chemical toilets or Kaustine septic type toilets that operate without chemical should be used.

Write our main office at Perry, N. Y., of your problem. Engineering service will be furnished promptly.

KAUSTINE SEPTIC TANK, SYPHON AND SYPHON COMPARTMENT COMBINATIONS

To make it convenient to order Kaustine Septic Tanks with the proper syphon and syphon compartment for the capacity septic tank required, various combinations are listed below. Each syphon and syphon compartment is a separate unit, designed for its special purpose. The septic tank provides proper digestion of the sewage and the syphon compartment with syphon provides periodical dosings of the field.

SPECIFICATIONS—KAUSTINE SEPTIC TANKS WITH SYPHON AND SYPHON COMPARTMENTS

Catalog No.	Total capacity, gals.	Syphon discharge per min., gals.	Approx. shipping weight, lbs.
62-151	250	90	430
63-151	350	90	495
65-152	610	90	705
85-152	610	90	730
810-152	1110	90	1140
815-152	1610	90	1445
820-153	2220	90	2840
825-153	2720	90	3290
830-153	3220	90	3695
835-154	3830	90	4380
840-154	4330	90	4800
845-155	4940	90	5395
850-155	5440	90	5800
Kaustine Super-Septic Tanks with Syphon and Syphon Compartments			
112-151	250	90	490
113-151	370	90	570
114-152	645	90	1115
115-152	845	90	1605
116-152	1100	90	1965
117-152	1610	90	2265

Note: If duplex syphon compartments equipped with two syphons are wanted with any of the above combinations, place the letter D after the number. For instance, the 3000-gal. tank with duplex compartment would be No. 830-153-D.

KAUSTINE SEWAGE EJECTORS


Sewage Ejector

The Kaustine Sewage Ejector is a device for pumping the effluent from the tank to the absorption bed on installation where the contour of the grounds is such that a gravitational flow is not possible. It consists of an electrically driven pump, placed in an Armco Ingot Iron tank. The pump, which is specially designed for sewage work, is controlled by an automatic float switch. It is mechanically perfect in design, noiseless in operation and can be installed anywhere. The table below shows the units in single and duplex arrangement. The single unit is satisfactory for a home or small plant. For a public or semi-public installation, however, a duplex unit is recommended. Kaustine Engineers will be glad to consult with you regarding the size and type ejector required.

Single Unit		Double Unit	
Tank size, in.	Capacity, gals.	Tank size, in.	Capacity, gals.
32x50	120	55x60	470
38x50	170	65x60	660
48x50	275	75x60	870

Multiple Absorption Bed Distribution Chambers

The KAUSTINE COMPANY, INC., has designed a series of multiple absorption bed distribution chambers to provide for a more equitable distribution of the effluent over the entire absorption bed area. These chambers are made of Armco Ingot Iron and have from 2 to 8 outlets, placed on the same elevation from which the effluent is simultaneously discharged into the absorption bed area. This prevents overworking the area adjacent to the tank. The chamber may, under certain conditions, be placed to permit the distribution of the effluent in the center of the absorption bed area, eliminating the long runs of tile that would otherwise be necessary.


An 8-Way Distribution Chamber

KAUSTINE TILE CONNECTORS

Kaustine E-Z Drain Tile Connectors are recommended for the installation of absorption bed tile. Their use insures perfect alignment and even spacing of the tiles, and as they are made of heavy, galvanized iron, they are practically indestructible. The connectors are made in two styles, illustrated below.





Style No. 1

Style No. 1 is used where gravel lines bottom of trench and where backfilled soil is firm. Upper half of joint is covered, sealing joint effectively against fillins or earth dams. Lugs on either side go inside the tile and insure proper spacing, are easily bent with the fingers and readily inserted in tile end. Style No. 1 is regularly furnished for 4-in. tile. Connectors for 5 and 6-in. tile can be furnished on request.





Style No. 2

Style No. 2 is designed for installations in sandy, open soil. This type extends entirely around the tile, forming a strong collar which holds tile ends securely in place. Bottom half is slotted and spacing of tile is automatic. Lugs are adjustable, permitting easy adaptation of the connector to any style of tile manufactured and to any irregularities in tile itself. Furnished only for 4-in. tile.

TYPICAL SPECIFICATIONS FOR KAUSTINE EQUIPMENT

The following is offered as a guide for the preparation of specifications covering installation for Kaustine Septic Tanks. The information outlined is essential for obtaining the best material and proper design and to enable contractor and manufacturer to figure prices accurately. These outlines are not intended to describe in detail. Tables and description of the various items as given will enable the specification writer to elaborate the specifications if he so desires. Catalog numbers, dimensions and capacities of tanks, and gauges of metal, are shown in the various tables.

Kaustine Armco Ingot Iron Septic Tanks

Vertical Type—Contractor shall furnish and install a No. ..... Kaustine Armco Ingot Iron Septic Tank to be constructed of 14-gauge pure iron having the following analysis: "carbon, manganese, phosphorus, sulphur and silicon, shall average a total of .06% and a maximum of .10%." Tank to be of ..... gallons net working capacity, and of following dimensions ..... Tank shall be equipped with inlet and outlet connections suitable to accommodate 4 or 6 in. standard pipe or tile. Inlet and outlet connections shall be provided with tile stops. Tank to be electrically welded throughout and to be provided with removable covers held in place with four bolts with brass nuts. Tank shall be coated inside and outside with black plastic enamel applied by the hot dip process.

Kaustine Super-Septic Armco Ingot Iron Tanks

Vertical Type—Contractor shall furnish and install a No. ..... Kaustine Super-Septic Armco Ingot Iron Tank to be constructed of ..... gauge pure iron having the following analysis: "carbon, manganese, phosphorus, sulphur and silicon, shall average a total of .06% and a maximum of .10%." Tank to be of ..... gallons net working capacity and of following dimensions ..... Tank shall be equipped with special Kaustine Super-Septic type circular baffle and inlet and outlet baffles. Tank shall have inlet and outlet connections, suitable to accommodate 4 or 6-in. standard pipe or tile. Inlet and outlet connections shall be provided with tile stops. Tank to be electrically welded throughout and to be provided with removable covers held in place with four bolts with brass nuts and in addition, to have a 14-in. diameter manhole with cover. Tank shall be coated inside and outside with black plastic enamel applied by the hot dip process.

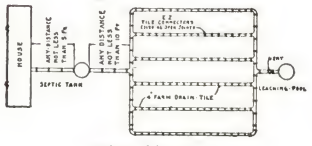
Cylindrical Horizontal Type—Contractor shall furnish and install a No. ..... Kaustine Armco Ingot Iron Septic Tank to be constructed of ..... gauge pure iron having the following analysis: "carbon, manganese, phosphorus, sulphur and silicon, shall average a total of .06% and a maximum of .10%." Tank to be of ..... gallons net working capacity and of following dimensions ..... Tank shall be equipped with inlet, outlet and sludge deposition baffles of standard Kaustine design and with inlet and outlet connection to take .... size standard pipe or tile. Inlet and outlet connections shall be provided with tile stops. Tank shall be equipped with ..... number of 18-in. diameter manholes with covers held in place with bolts with brass nuts. Tank shall be coated inside and outside with black plastic enamel applied hot.

Horizontal Type—Contractor shall furnish and install a No. ..... Kaustine Armco Ingot Iron Super-Septic Tank to be constructed of .... inch pure iron having following analysis: "carbon, manganese, phosphorus, sulphur and silicon, shall average a total of .06% and a maximum of .10%." Tank to be of ..... gallons net working capacity and of the following dimensions: Length ....., width ....., height ..... Tank shall be U-shaped in form, providing a hemispherical bottom and flat top. Tank shall be equipped with three 18-in. diameter manholes with covers securely held in place with bolts with brass nuts. Tank to have inlet and outlet baffles and specially designed sloping baffles and sludge deposition baffles. Inlet and outlet connection shall be ..... inches in diameter and shall be provided with tile stops. Tank shall be coated inside and outside with black plastic enamel applied hot.

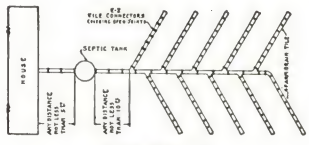
Tile or Drainage Field

Contractor shall install a drainage field in accordance with the plans. Field shall consist of .... feet of 4-in. farm drain tile laid with open joints, each joint connected with Kaustine E-Z Drain Tile Connectors, style ..... Layout of tile field, size of trenches, gravel fill, etc. shall be as shown on the plans.

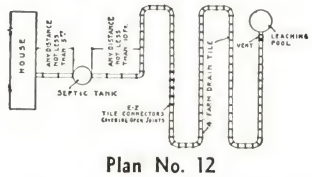
SIMPLE INSTALLATION PLANS



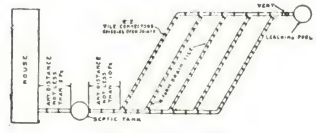
Plan No. 10



Plan No. 11



Plan No. 12



Plan No. 13

Plan No. 10 shows type of installation which provides best distribution and assures proper aeration of effluent. Where soil is semi-porous, leaching pool may be eliminated. If soil is clay a leaching pool size of tank should be provided. *Plan No. 11* should be used only where soil is porous, will readily absorb effluent and where plenty of room is available. *Plan No. 12* should be used where sewage installation is on a hillside, or where ground slopes steeply. Absorption bed is laid in long lines as indicated, practically level around the hill. Short lines carry effluent from one level to next one below. *Plan No. 13* may be used with either porous or non-porous soils. In porous soils leaching pool may be eliminated; in non-porous soils same leaching pool as recommended in Plan No. 10 should be used. In either case, a vent should be provided, as indicated.

INSTALLATION INSTRUCTIONS

Wherever possible do not install septic tank deeper than from 12 to 18 in. underground. Connect tank with absorption bed by means of bell and spigot pipe laid with cemented joints. Grade of the line from house to tank and from tank to bed should be ¼ in. per ft.

In porous soils place a layer of gravel from 8 to 12-in. depth under tile lines in absorption bed. In tight soils increase depth of gravel proportionately.

Drainage from septic tanks should be well removed and away from sources of water supply, such as wells and springs. Sufficient drainage area is necessary for successful operation of the septic tank. Amount of tile should be liberal.

Absorption bed should not be more than 2 ft. beneath surface of ground and, where surface conditions permit, a depth of 12 in. is more desirable. Slope of lines in absorption bed should not be more than 6 in. in 100 ft.

Where conditions do not permit installation of tank according to these requirements consult our Engineering Department, sending full particulars. A request for this engineering service will place you under no obligation.

Daily Capacities of Septic Tanks—For single house, 30 gals. per capita; for schools with showers, 18 to 20 gals. per pupil; without showers, 10 to 12 gals. per pupil; for institutions and villages, 50 gals. per capita.

Depth Underground—For most climates, Kaustine Septic Tanks should be placed 12 in. underground. In colder climates greater depth is recommended.

Grading of Sewer and Tile Lines—From house to tank not less than ¼ in. drop per ft. From tank to absorption bed not to exceed ⅜ in. per ft. Lines in absorption bed, in extremely porous soil, never on grade steeper than 6 in. per 100 ft. In heavier soil, 2 in. per 100 ft. is recommended.

Absorption Bed Material—4-in. farm drain tile, joined with Kaustine E-Z Drain Tile Connectors is satisfactory.

Depth Underground of Absorption Tile—In most climates, 12 in. is satisfactory. In colder climates, depths up to 24 in. may be used. The closer absorption tile is kept to the surface, the quicker the effluent will receive its necessary supply of oxygen.

ATEN SEWAGE DISPOSAL CO., INC.

TELEPHONE
LAckawanna 4-2770

286 Fifth Avenue
NEW YORK, N. Y.

ATEN SEWAGE DISPOSAL SYSTEMS

For Residences, Clubs, Schools, Hotels, Hospitals, Factories or Other Institutions Not Connected With City Sewers

The Aten Sewage Disposal System consists essentially of a septic tank and filtration fields or leaching chambers. A diverting gate, siphon, special fittings and special tile are features promoting automatic and efficient operation.

We contract for the complete installation of our systems, or we can furnish necessary parts (septic tank fittings, metal forms for crowned roofs and reinforced wire forms for concrete work, cast iron manhole collars and covers, siphons, diverting gates, special "Y" branches for tile lines, and special horse-shoe tile) for installation by common labor.

TRADE-MARK

Principles of Sewage Disposal

For systems adapted to individual buildings or groups of buildings the greatest efficiency is attained by settling and digesting the solids in septic tanks and disposing of the sewage effluent from these tanks by filtration through the ground by means of percolation tile drains, leaching chambers or filter beds.

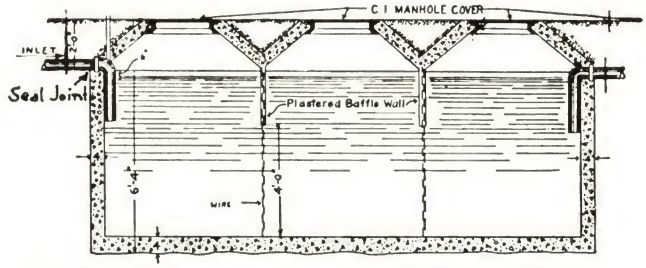
Septic Tank

The Aten Septic Tank consists of an airtight reinforced concrete chamber which receives the sewage, and settles and digests the solids by bacterial action. No chemicals used.

No Wooden Forms Required—After many years of experience and experimentation, we designed a reinforced wire form by means of which a concrete tank can be poured in position without the use of wooden forms. The Aten wire form is embedded and remains in the concrete, thus reinforcing it. This form saves about half the cost of concrete because thinner walls are used; it saves the cost of wooden forms and the time of a carpenter to erect and to take them down.

Filtration Field

The Filtration Field consists of at least two sets of tile lines, especially designed to allow air to reach the sewage and to insure uniform seepage to the soil. A diverting gate permits one set of lines to "rest" while the other is in operation.

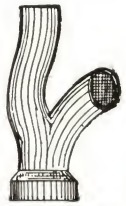


Sectional View of Aten Concrete Septic Tanks in Multiple

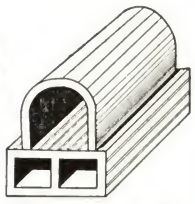
Aten single septic tanks can be furnished with capacities from 550 to 2500 gal. For schools, camps, clubs and factories where greater capacities are required septic tanks are installed in multiple, as shown above

Leaching Chambers

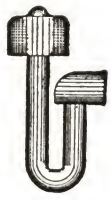
Leaching Chambers are used where land is not available for tile fields. Two or more are used for each septic tank so that one chamber may "rest" while the other is in operation. Constructed of stone, brick, or hollow building block



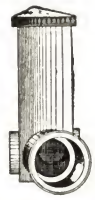
Special Y Branch



Aten Double Tile



Siphon



Diverting Gate

EXPERIENCE

The Company has had more than twenty years' active work in design and construction. The Engineering Staff is qualified through training and experience in sanitary and civil engineering to ably meet all conditions.

A FEW ATEN INSTALLATIONS

W. K. Vanderbilt, Centerport, N. Y.
Piping Rock Club, Locust Valley, N. Y.
Engineers Club, Roslyn, N. Y.
Canada Dry Ginger Ale Factory, Hudson, N. Y.
E. D. Morgan, Wheatly Hills, N. Y.
Thomas Hastings (Carrere & Hastings), Westbury, N. Y.
New and Old High Schools and Three Grade Schools, Oceanside, N. Y.
Cheney Bros. Hospital, South Manchester, Conn.
Nelson Doubleday, Oyster Bay, N. Y.
Dan Beard Outdoor School, Pike County, Pa.
Camp Pok-O-Moonshine, Willsborough, N. Y.
Four Grade Schools, Lynbrook, N. Y.
Department of Parks, New York, N. Y.
Florida East Coast Railways, New Smyrna, Fla.
Montauk Beach Development Corp., Montauk, N. Y.
Four Grade Schools, Valley Stream, N. Y.
Two Grade Schools, Rockville Center, N. Y.
Mrs. C. R. Holms, Port Washington, N. Y.
Grumman Aircraft Factory, Bethpage, N. Y.
Isolation Hospital, Perth Amboy, N. J.
Eddie Cantor, Great Neck, N. Y.
Milton L'Ecluse, Huntington, N. Y.
W. C. Langley, Old Westbury, N. Y.
Carbondale Machinery Co., Carbondale, Pa.
High and Grade Schools, Mineola, N. Y.
Central School, Pine Plains, N. Y.
Mrs. J. P. Donahue, Calverton, N. Y.
Salisbury Country Club, Garden City, N. Y.
S. A. Lewisohn, Harrison, N. Y.
John W. Weber, Shelter Island, N. Y.
Camp Dudley, Westport, N. Y.
High School and Two Grade Schools, Westbury, N. Y.
A. H. Wyatt, Prop., Huellets-on-Lake George, N. Y.
Leake & Watts Home School, Tivoli, N. Y.
Nathan N. Ohrbach, Crugers, N. Y.
Vincent Riggio, Chappaqua, N. Y.
High and Grade School, Bridgehampton, N. Y.
Evangeline Booth, Hartsdale, N. Y.
Supplee Wills Jones Dairy, Woodstown, N. J.
Queen of the Rosary Convent, Amityville, N. Y.
Two Grade Schools, Smithtown, N. Y.
Ieuan Harris, Salisbury, Conn.
Glen Oaks Country Club, Great Neck, N. Y.
Smithtown Theatre, Smithtown, N. Y.
Scanlan Gardens Apartments, Cedarhurst, N. Y.
Cooke Milk & Cream Co., Central Square, N. Y.
Nazareth Trade School, Farmingdale, N. Y.
Delaware County Hospital, Delhi, N. Y.
Sewanhaka High School and Two Grade Schools, Floral Park, N. Y.
Dr. Frederick Prime, Huntington and Shelter Island, N. Y.
St. Joseph's Novitiate, Metuchen, N. J.
Home for the Aged, Hempstead, N. Y.
Dr. Wesley Bowers, Southampton, N. Y.
Col. Henry du Pont, Wilmington, Del.
Henry A. Colgate, Morristown, N. J.
The Dry Milk Company, Jasper, Mo.
Workman's Circle Camp, Sylvan Lake, N. Y.
Westchester Yacht Club, Mamaroneck, N. Y.
Deepdale Golf Club, Great Neck, N. Y.

SAN-EQUIP INC.

Manufacturers of Complete Septic Sewage Disposal Systems

SYRACUSE, N. Y.

FACTORY REPRESENTATIVES

ALBANY, N. Y., W. M. Jenkins, 131 Homestead Ave.
BALTIMORE, MD., H. P. Supplee, 530 No. Charles St.
BIRMINGHAM, ALA., W. T. Mayfield Co., 1409 Webb-Crawford Bldg.
BOSTON, MASS., C. A. Todd, 83 Withington Road, Newtonville, Mass.
BROOKLYN, N. Y., F. Seeley, 1747 58th St.
CHICAGO, ILL., William O'Neill, Jr., 1366 Greenleaf Ave.
DETROIT, MICH., Geo. M. Scott, Box 115, Franklin, Mich.
HELENA, MONT., R. C. Grant, Box 774
HOUSTON, TEX., Allen, Sproull & Allen, 2002 Nance St.
LITTLE ROCK, ARK., E. L. Goldstein, P. O. Box 25
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PHILADELPHIA, PA., W. R. Jouett, 530 Oxford Rd., Brookline, Pa.
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Distributors Are Leading Plumbing Supply Jobbers—Warehouse Service at Principal Cities

Products

San-Equip Cylindrical "Master" Septic Tanks—For schools, factories, hotels, etc.

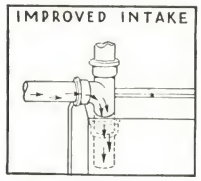
San-Equip Siphon Septic Tanks—Combining treatment tank with siphon discharge.

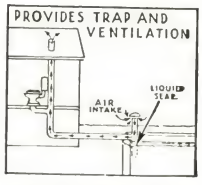
San-Equip Master Septic Tanks—An improved disposal service for homes and camps.

San-Equip Drain Pools—For more efficient septic system drainage.

Construction

For many years San-Equip Septic Tanks have been recognized by architects, engineers and health officials as standard equipment for unsewered areas. Designs follow the best sanitary engineering practice. Improved construction insures maximum durability. All tanks are made of special copper-bearing iron with welded seams. In addition, they are heavily coated with mineral asphalt to protect against the corrosive action of moisture and acids.





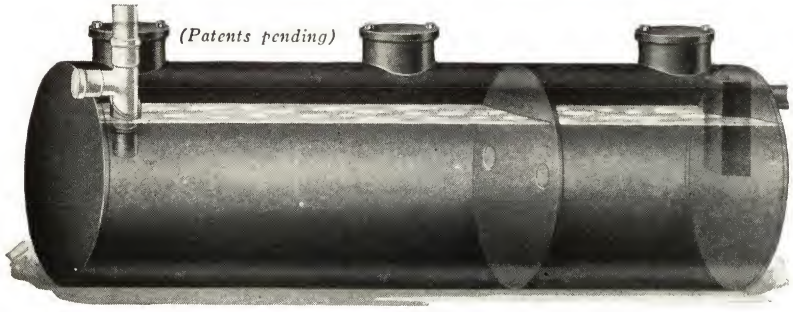


Improved Features

An important improvement in septic tank design is the new San-Equip top intake. By permitting sewage to enter the tank more rapidly it tends to keep the baffle clear and reduce the possibility of clogging. In addition, this new type of intake extends above the ground to serve as a fresh air intake to the house stack. No other trap or vent is required—the liquid seal below liquid level in the tank seals the line against escaping gases.

This improved feature also simplifies installation and servicing. The tank itself can be set at any angle to the house line by turning the T fitting—an advantage where space available is limited. Tank location is marked by the extension above ground and, if ever necessary, provides access to the intake baffle without digging. Intake opening in the tank itself is designed to take standard cast iron or tile sanitary T fitting.

SAN-EQUIP CYLINDRICAL "MASTER" SEPTIC TANKS



Phantom View of Cylindrical "Master" Septic Tank

"Master" Septic Tanks of 500 gal. capacity and up for schools, factories, parks, hotels, etc., are cylindrical type as shown. A full partition divides the tank into separate sludge and effluent chambers to insure thorough digestion and settling out of solids from large quantities of sewage. A safer effluent results from less suspended solids passing into the drainage field. Nos. 905 to 950 have two manholes—larger sizes have three. Electrically welded seams insure the permanent water-tight construction required for these systems.

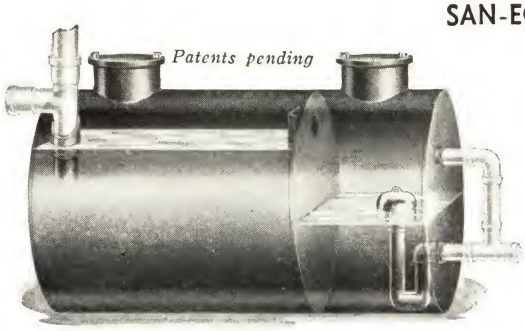
*SIZES AND RATINGS OF CYLINDRICAL "MASTER" TANKS

No.	Total capacity gallons	Working capacity gallons	Number of people			Dia.	Length	Gauge	Size of openings	Shipping weight pounds
			*Home	School	Factory					
905	550	500	10 to 20	40	35	52″	5′	14	4″	425
910	1150	1000	20 to 40	80	70	52″	10′	12	6″	925
915	1725	1500	40 to 75	120	105	52″	15′	12	6″	1300
920	2300	2000	75 to 100	165	140	68″	11′8″	3/16″	6″	2400
925	2875	2500	100 to 125	210	175	68″	14′7″	3/16″	6″	2850
930	3450	3000	120 to 150	250	200	68″	17′6″	3/16″	8″	3300
935	4025	3500	140 to 175	290	235	68″	20′5″	3/16″	8″	3750
940	4600	4000	160 to 200	330	270	68″	23′4″	3/16″	8″	4200
945	5175	4500	180 to 225	370	305	68″	26′3″	3/16″	8″	4650
950	5750	5000	200 to 250	410	340	68″	29′2″	3/16″	8″	5100

Specifications and installation plans for tanks to 10,000 gallons on request

*Ratings shown are maximum based on ordinary operating conditions. Local regulations governing capacities or ratings should be followed where such exist. In no case, even for temporary service should maximum ratings be exceeded.

SAN-EQUIP SIPHON SEPTIC TANKS



An improved horizontal type septic tank that combines treatment chamber and automatic siphon discharge in one compact unit. The siphon discharges at four to eight-hour intervals in sufficient volume to distribute the effluent throughout the entire filter bed. Every foot of the tile field receives its share of the drainage load. Periods of rest between discharges improve the absorption process and speed final disposal. Possibility of overloading or clogging is reduced. A full partition separates the treatment and siphon chambers. Siphon unit is cast iron. Tanks up to 5,000-gal. capacity have two manholes—larger sizes have three.

*SIZES AND RATINGS OF SIPHON SEPTIC TANKS

No.	Total capacity gallons	Siphon discharge gallons	Number of People			Dia.	Length	Gauge	Size of intake	Size of outlet	From bottom of tank to center line of		Shipping weight lbs.
			*Home	School	Factory						Intake T	Outlet	
703	360	60	7	15	12	48″	4′	14	4″	4″	47½″	14″	400
705	550	80	12	25	20	52″	5′	14	4″	4″	51½″	14″	495
707	828	120	25	50	40	52″	7′6″	14	4″	4″	51½″	14″	595
710	1150	160	40	75	60	52″	10′	12	6″	4″	52½″	14″	1025
715	1725	225	70	110	95	52″	15′	12	6″	4″	52½″	14″	1375
720	2300	300	85	155	130	69″	11′8″	3/16″	6″	6″	68″	28″	2475
725	2875	375	115	200	170	69″	14′7″	3/16″	6″	6″	68″	28″	2975

Ask for blueprints of larger sizes to 10,000 gallons.

*Ratings shown are maximum based on ordinary operating conditions. Local regulations governing capacities or ratings should be followed where such exist. In no case, even for temporary service should maximum ratings be exceeded.

SAN-EQUIP "MASTER" SEPTIC TANKS

A horizontal type septic for the average home or camp with many features not found in the ordinary tank of this size. The longer flow of sewage within the tank permits more thorough digestion and settling out of solids. Recommended for general use where a dependable, trouble-free service is required.



*SIZES AND RATINGS OF "MASTER" TANKS

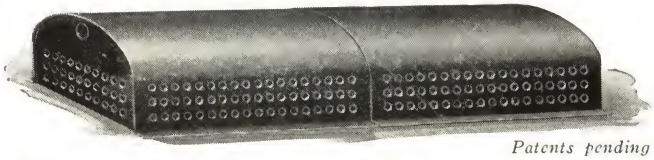
No.	Total capacity gallons	Working capacity gallons	Number of people			Dimensions			Shipping weight pounds
			*Home	School	Factory	Length	Width	Depth	
602	260	225	4 to 7	15	12	60″	26″	42″	255
603	375	335	7 to 10	25	20	60″	34″	48″	310

*Lower figures are recommended by health officials for most satisfactory service. In no instance should maximum ratings be exceeded.

SAN-EQUIP DRAINAGE

San-Equip Drain Pool

A correctly designed seepage pool that furnishes the most satisfactory drainage under average conditions. Perforations around the sides and ends, plus the open bottom provide a larger seepage area where soil conditions are best for final disposal.



Patents pending

No. 160DP—Single section pool 60″ long x 34″ wide x 19″ deep, for use with 200-gal. septics. Weight, 105 lbs.

No. 250DP—Two section pool 96″ long x 34″ wide x 19″ deep, for use with 300-gal. septics. Weight, 173 lbs.

Waterless Toilet Systems

Where sanitary toilet equipment to operate without running water is desired, two types of San-Equip Systems are available. In one system the sewage is treated by bacteria process, in the other by chemical action. Complete catalog information on both types of equipment including sizes, ratings, etc., will be sent on request.

San-Equip Grease Trap

For use in hotels and restaurants or wherever the discharge of large amounts of grease and kitchen waste directly into the septic tank would tend to overload and clog the entire disposal system. Requires occasional skimming.



The grease trap is made of asphalt-coated, copper-bearing iron. Standard openings are 2-in. threaded couplings; 4-in. openings for tile or soil pipe connections can be furnished if specified. Available in two sizes as follows:

No. GT40—40-gal. size 22½″ diam. x 24″ deep, weight 61 lbs.
No. GT60—60-gal. size 22½″ diam. x 36″ deep, weight 79 lbs.
No. GT200—200-gal. size 38″ diam. x 48″ deep, weight 210 lbs.

Engineering Service

Additional information on San-Equip Sewage Disposal Systems will be furnished on request. Our Engineering Department is always available for assistance or advice with your particular disposal problems—without obligation. Write SAN-EQUIP INC., East Brighton and Glen Avenues, Syracuse, N. Y.

MEMORANDA

THE BARRETT COMPANY

Barrett-Holt Roof Drains

NEW YORK, N. Y. CHICAGO, ILL. BIRMINGHAM, ALA.

THE BARRETT COMPANY LIMITED, MONTREAL, QUE.

For Complete Details and Specifications on Barrett Built-up Roofing, Waterproofing, Dampproofing and Barrett Rock Wool Insulation, see File Index

BARRETT-HOLT ROOF DRAINS AND VENT CONNECTIONS

For All Types of Roof Construction

In all types of roof construction, it is of paramount importance that roof drains and vent connections be as effective and permanent as the roof coverings they serve. Twenty years of use have proved Barrett-Holt Roof Leader and Vent Connections to be the most dependable on the market.

For Complete Specifications and Details of Barrett-Holt Roof Drains, see Barrett Reference Manual on Built-up Roofing in File Index.

There is a type for every need. Each consists of a roof fitting with roof locking attachment, a component flashing flange and an expansion joint.

The types used with inside leader pipes are equipped with a cast-metal tile or gravel stop, a strainer plate, and serviceable cast-metal strainer.

Types and Details (Specify by Key Number)

Type 1-LG (Slag or Gravel Surface)
Type 1-LS (Smooth Surface)
Type 1-LM (Metal Covered Gutters)

For flat roofs having interior drainage, where ample working space is provided below roof deck, excepting roofs covered with tile or a similar material.

Type 2-LG (Slag or Gravel Surface)
Type 2-LS (Smooth Surface)

For inclined roofs ranging from 12° to 42° and having interior drainage. The range of variation of the standard connection is from 18° to 28°. For lesser inclines ranging from 12° to 18°, or greater inclines ranging from 28° to 42°, special fittings are furnished.

Type 5-LG (Slag or Gravel Surface)
Type 5-LS (Smooth Surface)
Type 5-LM (Metal Covered Gutters and Roofs)

For flat roofs having interior drainage, where a sump type of roof connection is desired.

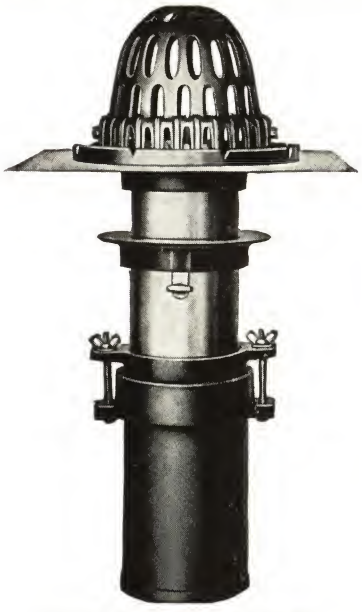
Type 6-LG (Slag or Gravel Surface)
Type 6-LS (Smooth Surface)
Type 6-LM (Metal Covered Gutters and Roofs)

For flat roofs having interior drainage where working space below the roof decks is restricted, excepting roofs covered with tile or a similar material.

Type 6-LT for flat roofs, surfaced with tile or similar material and having interior drainage.

Type 6-VG (Slag or Gravel Surface)
Type 6-VS (Smooth Surface)
Type 6-VT (Tile or Similar Surface)
Type 6-VM (Metal Covered Roofs)

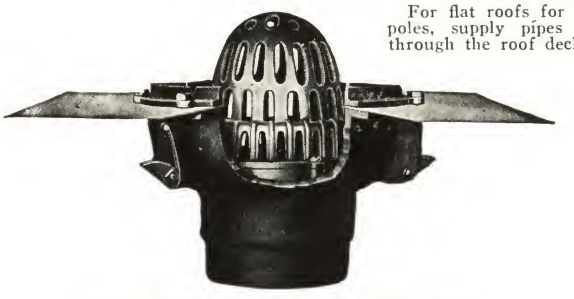
For flat roofs for soil and waste vent stacks, flagpoles, supply pipes or any similar fixture carried through the roof deck.



Type 1 Leader Connection for Flat Roofs



Type 2 Leader Connection for Inclined Roofs



Type 5 Leader Connection for Flat Roofs



Type 6 Leader Connection for Flat Roofs



Type 6 Leader Connection for Tile Surfaced Roofs



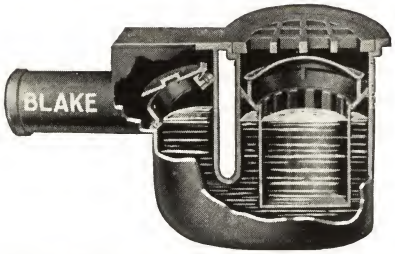
Type 6 Vent Connection for Flat Roofs

BLAKE SPECIALTY CO.

Manufacturers of Brass and Iron Plumbing and Drainage Equipment

1600 Mill Street
ROCK ISLAND, ILL.

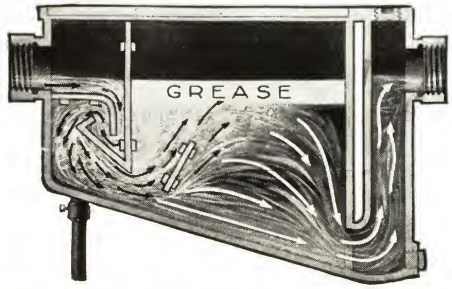
The two pages herein illustrate but a fractional part of Blake products. The Blake line is so long and extensive that it is impossible to completely illustrate it in a catalog of this nature. Send for general edition No. 15 catalog which completely describes and gives engineering data on our complete line of products, which include all types of wall hanging closet equipment, floor, roof, and shower drains and drainage equipment in general. Consult our Engineering Department at any time on any problem you have in connection with drainage, particularly wall hanging closet installations.



K-1146 "ECONOMY" Safety Garage Drain

With back water valve illustrated. Also made without back water valve. Low in price and efficient in operation. Made extra heavy with reinforced strainer. Complete with deflectors and removable mud bucket.

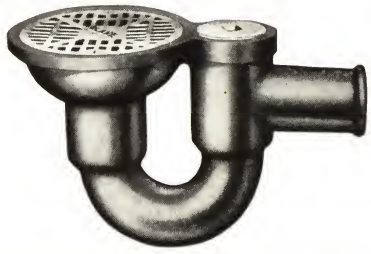
Plain drain furnished with 2 in. I.P. size surface cleanout. Back water trap has cleanout plate large enough to give easy access to the valve. Vented hoods with reinforced grates can be furnished for attachment to top of drain.



K-129 — K-138 Blake Grease Traps—Made in All Capacities

Equipped with patented baffle retarder and sediment interceptor. Sanitary—efficient—absolutely odorless. Will recover 97% or better of pure grease. It is NOT waterjacketed; therefore saves the expense of labor and additional piping and connections from cold water supply.

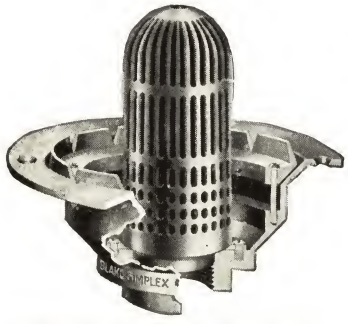
This trap has been on the market for 15 years and thousands of them are in use in packing plants, soap factories, rendering works, sausage plants, hotels, hospitals, clubs, restaurants; also in barracks, camps and hospitals of the U. S. Government.



K-1012 Combined Floor Drain and Deep Seal Trap

With back water valve and threaded brass surface cleanout. Furnished with and without double drainage for any kind of floor construction. Especially adapted for use in garages, boiler rooms, coal rooms, ash pits, also utility rooms where drain is seldom used as the back water valve remains closed at all times preventing sewer gas discharge in case water evaporates from the trap. Either hinged or anti-tilt strainers. Back water valve is all bronze, flapper type.

Threaded surface cleanout is larger than outlet, making it easy to surface. Rugged construction makes it suitable for all uses.



K-106 Safety Waste Roof Drain

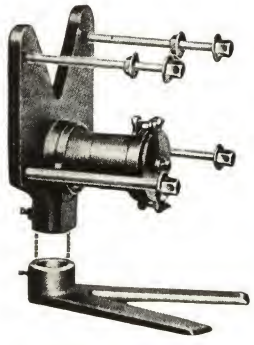
This is one of the finest roof drains on the market. Primarily designed for wood and precast concrete roofs, it is adaptable also for concrete poured roofs.

Furnished with hub or screwed outlet; has heavy metal flashing ring secured to drain body with heavy brass studs. Equipped with heavy dome strainer, large suitable gravel basin, heavy V type slotted gravel stop and large wide flanged body.



K-950 Floor Drain With Straight Outlet —No Trap

Made in plain or back water. Suitable for installation where deeper connections with sewer are to be made and any ordinary soil pipe trap can be used to finish connections and provide waterseal.



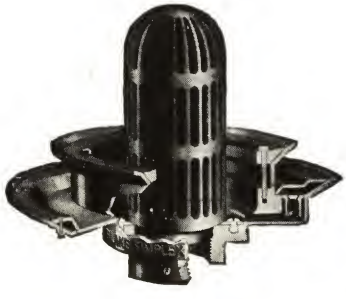
K-90-C Carrier Chair

A very sturdy carrier suitable for any type of installation. This carrier embodies the cantilever type foot support, and like all Blake carriers, is furnished with patented test cap, adjustable threaded closet connection with heavy lock nut and asbestos gasket.



K-1135 OT — Garage Drain, Extra Heavy

Embodies every element of safety. Complete separation of oil, mud and gas. No fire risk. Has open trap with surface cleanout. Cleanout opening is extra large for servicing. Can be furnished with or without back water valve. Suitable for private or public garages or any place where mud and sediment must be separated from water before entering sewer. Made in two sizes—16 x 18 in. and 21 x 30 in.

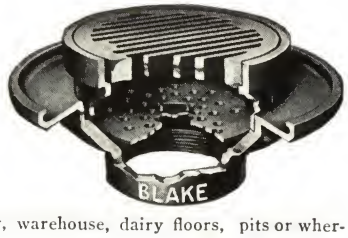


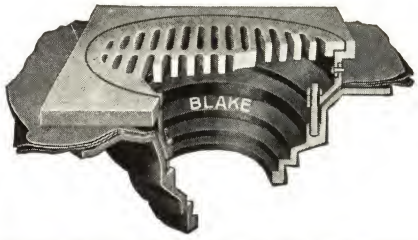
(Left) K-105 Safety Waste Roof Drains

This is a practical trouble-proof roof drain for poured concrete roofs. Standard on U. S. Government work, drain is equipped with heavy dome strainer, large suitable gravel basin, heavy V type slotted gravel top, and large extra heavy flanged body.

(Right) K-42 Safety Waste Industrial Drain

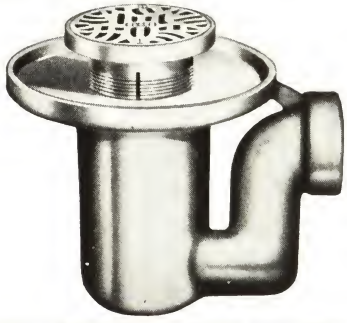
This drain is of extra heavy construction with heavy top grate and supplementary strainer below. Top grate is anti-tilting. Has accessible safety waste outlet, wherein the seepage parts can be cleaned at any time in case of clogging, without damage to floor construction. Recommended for packing house, factory, warehouse, dairy floors, pits or wherever large drainage is necessary.





K-104 Safety Waste Drain for Promenade Deck

Recommended for roofs used as a promenade deck here a dome or beehive strainer would be unsuitable. This drain is made with adjustable grating top fitted into the body of the regular K-106 roof drain shown on opposite page. Top frame also serves as clamping ring and is provided with vertical adjustment to finish flush with roof.



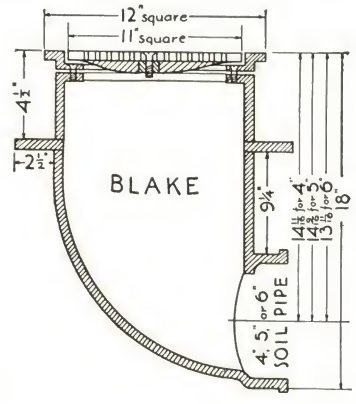
K-30 Safety Waste Drain With Trap Integral

For use in floors, showers and all places with concrete construction where combined drain and trap is desired. Made in both plain and back water. This drain having a deep seal is suitable for use in thick concrete slabs.



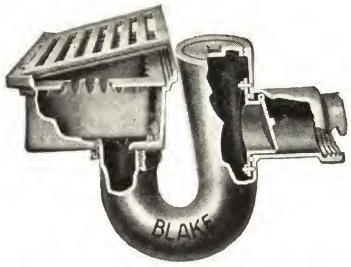
K-50 Safety Waste Drain and Trap

With flushing rim for floors of hospitals or for other similar purposes. Body is of heavy construction and arranged at base of trap for water connection to refill water seal if evaporation is taking place or for flushing out the waste line. Entire strainer head is of heavy red brass and is provided with a hinged strainer. Inside of top receptacle coated with white enamel.



K-710 Swimming Pool Outlet Drain

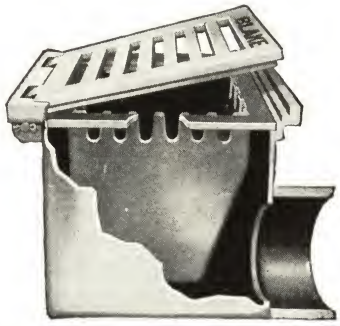
Screw or hub side outlet. Made of extra heavy cast iron with 12 x 12 in. square brass top and 11 in. round brass strainer. Body has an anchor flange as illustrated.



K-48 Industrial Drain With Sand Bucket and Brass Back Water Valve

Recommended where all sediment is to be absolutely intercepted. Bucket lifts out. Trap is cast separate from body of drain and is to be caulked in from top of drain by the contractor, as we ship loose.

A water-tight hinged brass back water valve is fitted into trap, but can be furnished less back water valve. A large brass screw plug cleanout at top permits easy access to the back water valve.



K-44-A Extra Heavy Floor Drain With Mud or Refuse Bucket

An all-purpose drain suitable for schools, warehouses, dairies, coal rooms, etc. Equipped with a removable cast iron bucket which catches all dirt. Strainers are all hinged and extra heavy to withstand trucking. Can be furnished with either hub or screw outlet.



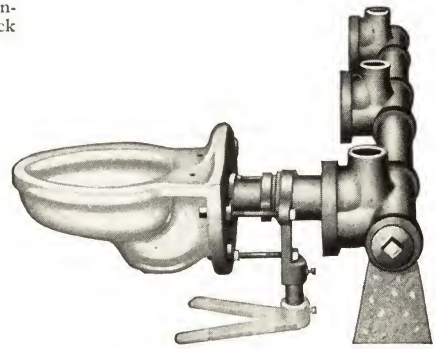
K-44 Heavy Duty Industrial Drain With Safety Pan

The safety seepage parts are accessible at all times and afford a great protection when drains are placed on upper floors. Basket catches all solids and can be lifted out. Recommended for packing houses, dairies, or factories where a strong heavy drain is desired.



K-25 Safety Waste Floor or Shower Stall Drain

For floors, porches and showers where drain is installed without integral trap. Ample adjustment is allowed on strainers for floor levels. With or without flashing rings, furnished with both screwed and hub outlet and can be supplied with any type strainer.



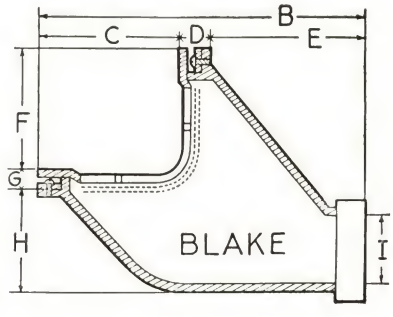
K-151-SP Single TY Wall Hung Closet Fitting

Adaptable for batteries of nine wall hung closets or less. Made for both soil pipe and screw pipe and is adaptable for both blowout and syphon jet wall hanging closets. All Blake TY fittings can be used with any Blake carrier support. Regardless of your problem on jobs requiring wall hung closets, we have the proper material to service you.



K-127-BD Vertical Wall Hung Closet Fittings

Makes wall hanging closets possible in residences. This type of fitting designed for use where space is limited. Practical for homes, hospitals, also secluded toilets in large buildings where it is not possible to reserve utility space for wall hung closets. Can be furnished for either soil pipe or screw pipe and either double or single.



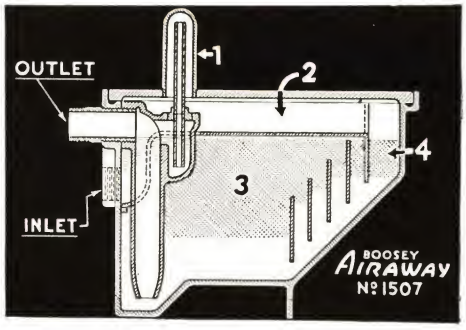
K-709 Angle Shower or Pool Drain

Can be used wherever angle strainer is desirable. Heavy iron body with removable and brass flashing ring. Available for either screw or soil pipe connection. Drain can be used so that outlet is either horizontal or vertical.

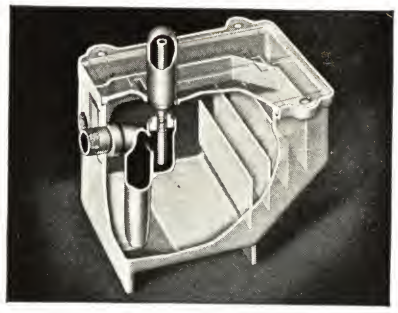
TELEPHONE
Temple 1-6677

NORMAN BOOSEY MFG. CO.

5140 Hamilton Avenue, DETROIT, MICH.



Air-a-way GREASE INTERCEPTORS



(1) The internal Air Relief Vent and Siphon Breaker which eliminates internal head pressure and prevents siphonage.

(2) The Inlet Scupper through which all incoming waste is carried *above* the contents of the interceptor. This allows the accumulated grease in the retaining chamber to remain undisturbed.

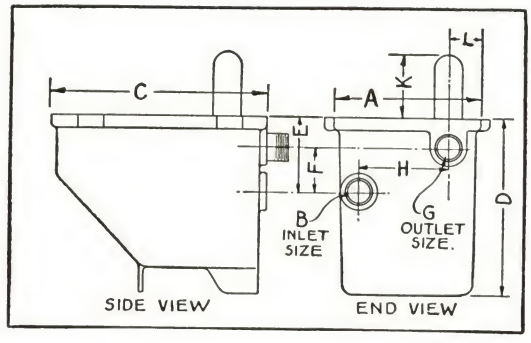
(3) The currentless Grease Retaining chamber into which the grease is guided after being separated from the waste water. The series of baffle plates directs the flow current along the bottom of the interceptor, *beneath* the retaining chamber. As the accumulated grease remains out of the flow current, it cannot become churned up by the incoming waste water and carried out with the flow. *Grease does not build up in the flow-way until the approximate retaining capacity of the interceptor has been reached.*

(4) The Self-clogging Flow-Way is one of the most important features of the Boosey AIR-AWAY Grease Interceptor. As illustrated, when retained grease has reached a depth in the flow-way, as indicated, *and allowed to congeal during an inactive period,* the interceptor becomes clogged. The congealed grease must be removed before the fixture can be used again. *Additional grease cannot pass through the interceptor to the sewer.* As the depth of grease in the flow-way is less than in any other section of the interceptor it will congeal more quickly and firmly at that point.

The Boosey AIR-AWAY Grease Interceptor is efficient in operation, inexpensive to install and neat in design. Made of cast iron, it is regularly furnished with an enameled finish. If specified, the AIR-AWAY can be furnished with porcelain enameled finish, inside or outside.

Wherever tested at rated capacities, by State or municipal plumbing departments, the AIR-AWAY has been approved as being superior to code requirements. It is made in eight sizes to meet the requirements of various types of installations. Specify it by name and number—Boosey AIR-AWAY, No. 1507.

Note: *Outside water cooler can be furnished, when specified.*



INTERCEPTORS DIMENSIONS AND LISTS

Plate No.	Waste size, in.	Flow per minute, gal.	Grease, lbs.	Measurements in inches											Approx. shipping weight less cooler, lbs.	List, tapped	List, hub	Add for water cooler	Add for aluminum basket	Add for porcelain enamel outside
				A	B	C	D	E	F	G	H	J	K	L						
1507-OO	1½	5	7	8½	1½	12	11	5⅝	3⅞	1½	5	1¾	6	1¾	70	$ 25.00	.....	.....	Quoted on Application	$ 18.00
1507-O	1½–2	10	15– 20	10½	1½–2	12½	14	6⅜	4	1½–2	5⅜	2⅜	6	3	90	30.00	$ 31.50	.....		22.00
1507-A	1½–2	12	20– 25	11½	1½–2	15	14	6⅛	3⅝	1½–2	6¹¹⁄₁₆	2½	6	3	120	40.00	41.50	$ 5.50		30.00
1507-B	1½–2	14	25– 30	12	1½–2	17	14	5¹⁵⁄₁₆	3¾	1½–2	6⅝	2⅜	6	3	140	55.00	56.50	6.00		35.00
1507-C	2	16	30– 40	14	2	20	14	6⅛	3⅞	2	8	2¼	6	3	160	70.00	71.50	7.50		40.00
1507-D	2	20	50– 60	14	2	20	18	6⅛	3⅞	2	8	2¼	6	3	200	105.00	108.20	7.50		50.00
1507-E	2 –3	25	80–100	18	2 –3	24	18	8¾	5¼	3	5⅞	3½	6	5	280	162.00	165.20	18.00		70.00
1507-G	3 –4	35	120–180	18	3 –4	24	29	10¼	6⅛	3 –4	9¼	4⅛	6	6½	490	250.00	255.00	22.00		122.50

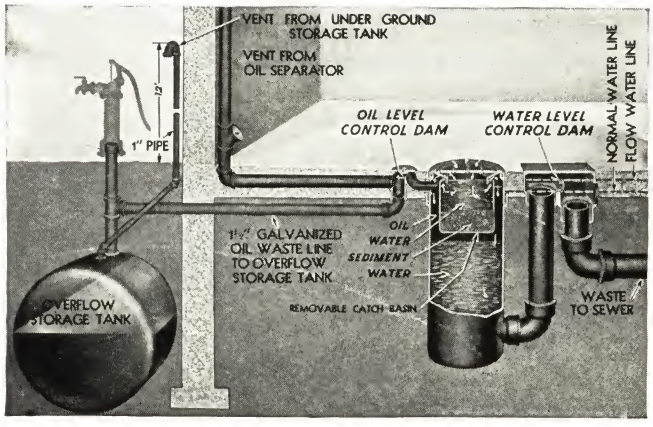
BOOSEY GASOLINE AND OIL SEPARATORS—EFFICIENT AND ECONOMICAL

Boosey gasoline and oil separators are recommended for all types of commercial buildings where volatile liquids or other types of petroleum products are habitually discharged to the public sewers. They are constructed of cast iron, permanent, durable and leak-proof. All parts, waste and vent connections are accessible. The amount of maintenance required is reduced to a minimum and consists of periodically removing the separated gasoline and oil from the overflow storage tank and the necessary emptying of sediment from the catch basin.

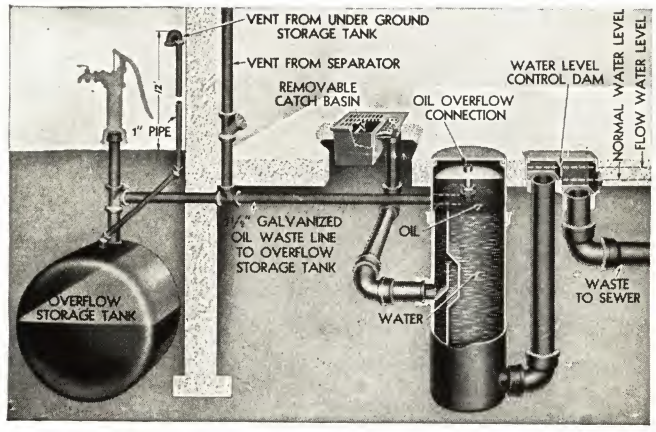
No. 1610 is a combined separator and floor drain. It is particularly adaptable for installation in dry-cleaning plants, manufacturing plants and garage wash racks. The strainer in the separator body and the cover of the water level control chamber are extra heavy to carry traffic if necessary. The No. 1610 operates at a very high rate of efficiency at a flow rate of 20 gallons per minute. This is equal to the discharge of three ¾-in. hose connections.

No. 1612 is recommended for all installations where two or more drains are required. It does not function as a drain, but receives the discharge from the auxiliary drains. The No. 1612-A floor drain (as illustrated) was designed for use in conjunction with this separator. All sediment is intercepted at each drain where it can easily be removed. An intermediate strainer in the drain also acts as a flow retarder in the event that several drains are used simultaneously. The proven efficiency of the No. 1612 is in excess of 90%. The covers of the separator body and water level control chamber is extra heavy.

For operating efficiency, installation economy and low maintenance cost, specify Boosey No. 1610 and No. 1612 Gasoline and Oil Separators.



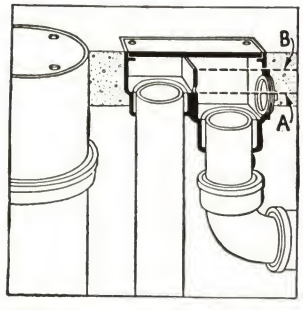
A Typical Installation of the Boosey No. 1610 Gasoline and Oil Separator



A Typical Installation of the Boosey No. 1612 Gasoline and Oil Separator

OPERATING PRINCIPLES OF THE BOOSEY No. 1610 AND 1612 GASOLINE AND OIL SEPARATORS

The operating principles of the No. 1610 and No. 1612 are extremely simple. No valves, floats or other movable parts are required. The successful and efficient operation is based upon the difference in the specific gravities of the water and the petroleum products. The separation of such petroleum products from the waste water, by gravity, is accomplished by means of the dam in the water level control chamber at the separator outlet. During operation the normal water level rises to the flow water level. In the No. 1610 the flow water level is 1 in. below the dam in the oil level control chamber. In the No. 1612 the flow water level is ½ in. below the oil overflow fitting.



When separator is in operation, normal water level "A" rises to flow water level "B." When this occurs, gasoline and oil are discharged from the separator and directed to the overflow storage tank

The rising of the level in the water level control chamber causes the water to rise accordingly in the separator body. Therefore, all oil or gasoline of a depth greater than 1 in. above the oil level dam in the No. 1610 (and ½ in. above the oil overflow fitting in the No. 1612) is taken off through the oil overflow line and directed to the storage tank.

Caution: When installing either the No. 1610 or the No. 1612 separator, the top of the water level control chamber must be installed at the exact level of the separator body.

Any deviation from that level would be detrimental to the efficient operation of the separator.

COMPOUND INJECTOR & SPECIALTY CO.

GEORGE J. DEHN, S. E., President

Inventors, Designers and Sole Manufacturers Dehn's Sanitary Safeguards

THE PIONEERS SINCE 1897

LONG DISTANCE TELEPHONE
Austin 1861, 1862

419-421 North Laramie Avenue, CHICAGO, ILL.

CABLE ADDRESS
"Compound Chicago"

The Original-Dehn's "PEERLESS" "RE-TAR-DO" FLOCONTROL—"CLOG"—Heavy Duty Garage and Floor Drain with Refuse Separator and Retainer ELIMINATES CLOGGED DRAINAGE SYSTEMS THE PAST QUARTER OF A CENTURY UNIVERSALLY INSTALLED

For installation in buildings where the flowing water carries mud, sand and other refuse, the Original Dehn's "PEERLESS" Heavy Duty Floor Drains are the most convenient, practical, satisfactory and economical. The bar grate and body are extra heavy, for heavy duty furnished with RE-TAR-DO "FLOCONTROL" baffle and with 4 in. outlet only.

Dehn's "PEERLESS" Drains should be installed in every automobile garage, gasoline station and industrial building where automobiles are housed and maintained as a shop for the maintenance and repairs of automobiles as a business or storage of automobiles. The mud, sand and other refuse washed from automobiles, vehicles, etc., will accumulate in the receptacle. The "PEERLESS" drain is constructed on the RE-TAR-DO "FLOCONTROL" principle, hence the refuse cannot be forced out of the Retainer. The accumulated refuse and solids, when filled to capacity in the receptacle, will "CLOG" the Garage Drain, stopping all the water from flowing through the drain, indicating that the solids and refuse must be removed to permit the drain to function again. Eliminate refuse in Drainage Systems.

Dehn's "PEERLESS" Heavy Duty Garage Drainage Systems permit a continuous circulation of air through the air chamber in the Garage Drains regardless of the doors or windows being closed; the fresh air inlet at the side of the building permits the air to circulate continuously through the air chamber of the drain and escape through the vent stack through the roof; hence no danger of gas fumes in the garage or building.

Fig. No. 0-60-A—Furnished with Automatic Back Water Valve with 4-in. iron pipe threaded brass cleanout plug, with 4-in. hub end outlet, iron top and strainer. Heavy Duty. Each $44.00.

Fig. No. 0-6025-A—Furnished less Automatic Back Water Valve, with 2-in. iron pipe threaded brass cleanout plug, with 4-in. spigot end outlet, iron top and strainer. Heavy duty. Each $36.00.

Fig. No. 0-6050-A—Furnished less Back Water Valve with 2-in. iron pipe threaded brass cleanout plug, with 4-in. hub end outlet iron top and strainer. Heavy Duty. Each $36.00.

Fig. No. 0-6055-A—Furnished with 4-in. hub side outlet, iron top and strainer. Heavy Duty. Each $26.00.

Fig. No. 0-6060-A—Furnished with 4-in. hub bottom outlet, iron top and strainer. Heavy duty. Each $26.00.

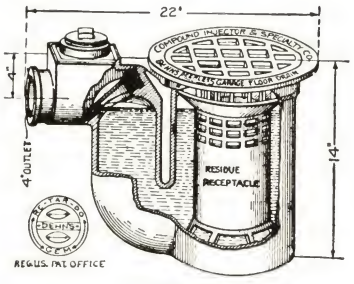
Fig. No. 0-6065-A—Furnished with 4-in. iron pipe threaded side outlet, iron top and strainer. Heavy Duty. Each $26.00.

Fig. No. 0-6070-A—Furnished with 4-in. iron pipe threaded bottom outlet, iron top and strainer. Heavy Duty. Each $26.00.

Fig. No. 0-6075-A—Furnished with Water-tight Expansion Joint Shelf, with 4-in. Hub Side Outlet, iron top and strainer. Heavy Duty. Each $36.00.

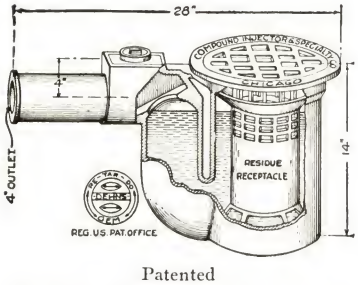
Dehn's "PEERLESS" Heavy Duty Garage and Floor Drains	Fig. No. 0-60	Fig. No. 0-6025	Fig. No. 0-6050	Fig. No. 0-6055
Diameter of top, inches	12	12	12	12
Depth over-all, inches	14	14	14	14
Size of outlet, inches	4	4	4	4
Length over-all, inches	22	28	22	13
Approximate weight, pounds	100	100	100	90
Price, A, iron top and strainer, each	$44.00	$36.00	$36.00	$26.00
Price, B, brass top and strainer, each	78.00	67.00	67.00	57.00

Dehn's "PEERLESS" Heavy Duty Garage Floor Drains	Fig. No. 0-6060	Fig. No. 0-6065	Fig. No. 0-6070	Fig. No. 0-6075
Diameter of top, inches	12	12	12	12
Depth over-all, inches	14	14	14	14
Size of outlet, inches	4	4	4	4
Length over-all, inches	13	13	13	13
Approximate weight, pounds	90	90	90	100
Price, A, iron top and strainer, each	$26.00	$26.00	$26.00	$36.00
Price, B, brass top and strainer, each	57.00	57.00	57.00	67.00



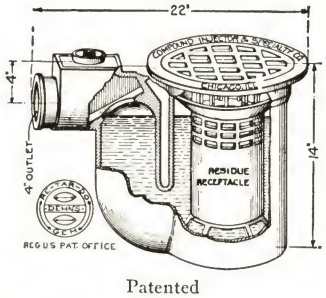
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Fig. No. 0-60 With Automatic Back Water Valve With 4-in. Iron Pipe Threaded Brass Cleanout Plug



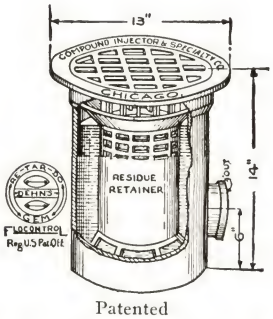
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Fig. No. 0-6025 With 4-in. Spigot End Outlet Without Backwater Valve



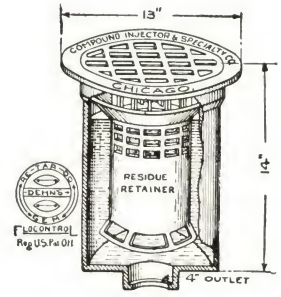
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Fig. No. 0-6050 With 4-in. Hub Outlet Without Back Water Valve



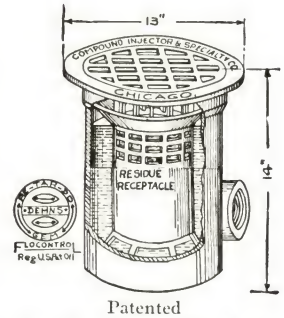
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Fig. No. 0-6055 With 4-in. Hub Side Outlet



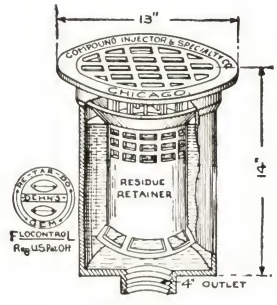
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Fig. No. 0-6060 With 4-in. Hub Bottom Outlet



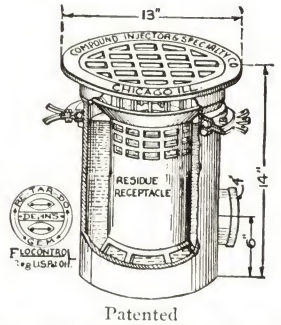
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Fig. No. 0-6065 With 4-in. Iron Pipe Threaded Side Outlet



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Fig. No. 0-6070 With 4-in. Iron Pipe Threaded Bottom Outlet



Patented

Fig. No. 0-6075 With 4-in. Hub Side Outlet With Water-tight Expansion Joint Shelf

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RE-TAR-DO DEHN'S GEM

FLOCONTROL

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The Original-Dehn's "PEERLESS" "RE-TAR-DO" FLOCONTROL—"CLOG"—Heavy Duty Garage and Floor Drains with Refuse Separator and Retainer

Eliminate Clogged Drainage Systems and Petromortis in Automobile Garages

The Original Dehn's "PEERLESS" "DEEP SEAL" Floor Drain with Water-Tight Expansion Joint Shelf and Anchor.

Dehn's Floor Drains are especially designed for fireproof and concrete constructed buildings. In the past, it has been experienced when installing the ordinary floor drains, in concrete with cement, mosaic or tile floors, it is impossible to make a water-tight joint on the floor at the drain. This results in the water leaking through the ceiling on the floor below, damaging merchandise or other materials and causing serious loss.

Dehn's "PEERLESS" "DEEP SEAL" Floor Drains with these improvements with water-tight expansion joint shelf and anchors are positively guaranteed that the water will not find an opening at the drain to leak through the ceiling.

Dehn's fixtures are indispensable for use in toilets, bathrooms, laundries, swimming pools, factories, and store buildings, etc., where the drain is installed above the basement. Install these. They have no equal. No weepholes to permit the sewerage to back up and contaminate the surface around the drains, a dangerous and hazardous construction.

Dehn's water-tight expansion joint-shelf and anchors can be furnished for every type and size of "PEERLESS" line Floor Drains.

Fig. No. 0-6080-A—Furnished with Water-tight Expansion Joint Shelf, with 4-in. Hub Bottom Outlet, iron top and strainer. Heavy Duty. Each $36.00.

Fig. No. 0-6085-A—Furnished with Water-tight Expansion Joint Shelf, with 4-in. iron pipe threaded side outlet, iron top and strainer. Heavy Duty. Each $36.00.

Fig. No. 0-6090-A—Furnished with Water-tight Expansion Joint Shelf, with 4-in. iron pipe threaded bottom outlet, iron top and strainer. Heavy Duty. Each $36.00.

Dehn's "PEERLESS" Heavy Duty Garage and Floor Drains	Fig. No. 0-6080	Fig. No. 0-6085	Fig. No. 0-6090
Diameter of top, inches	12	12	12
Depth over-all, inches	14	14	14
Size of outlet, inches	4	4	4
Length over-all, inches	13	13	13
Approximate weight, pounds	100	100	100
Price, A, iron top and strainer, each	$36.00	$36.00	$36.00
Price, B, brass top and strainer, each	67.00	67.00	67.00

Dehn's "PEERLESS" Heavy Duty Garage Floor Drains	Fig. No. 0-61	Fig. No. 0-6125	Fig. No. 0-6150	Fig. No. 0-6175
Diameter of top, inches	15	15	15	15
Depth over-all, inches	23	23	23	23
Size of outlet, inches	4	4	4	4
Size two vent hubs, inches	2	2	2	2
Length over-all, inches	24	24	18	24
Approximate weight, pounds	175	200	160	175
Price, A, iron top and strainer, each	$48.00	$60.00	$44.00	$56.00

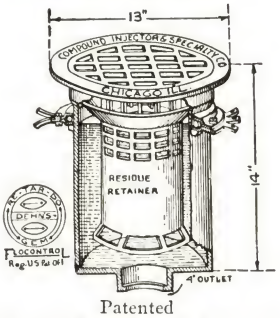
THE ORIGINAL—WITH VENTED HOOD—FIG. NO. 0-62—DEHN'S "PEERLESS" "RE-TAR-DO" "FLOCONTROL" "CLOG" HEAVY DUTY GARAGE AND FLOOR DRAIN WITH REFUSE SEPARATOR AND RETAINER ELIMINATE CLOGGED DRAINAGE SYSTEMS

Diameter of top, inches	20	20	21	21	21	21
Depth over-all, inches	20	24	30	38	46	54
Size of waste outlet, inches	4	4	4	4	4	4
Two vent hubs, inches	2	2	4	4	4	4
Approximate weight, pounds	235	250	375	425	500	600
Price, A, iron top and strainer, each	$60.00	$70.00	$90.00	$110.00	$130.00	$150.00

In the past quarter of a century our Dehn's "PEERLESS" Garage Floor Drains with Refuse Separators and Retainers have been universally installed for every type of installation and that they have proven their worth is clearly demonstrated by the infringers and imitators who are attempting to duplicate our "PEERLESS" Garage Floor Drains and other merchandise of our manufacture.

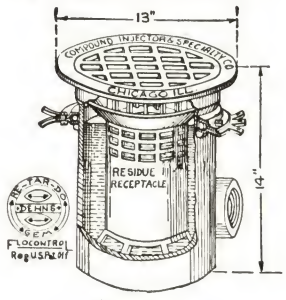
Use Our Schedule for Capacities and You Will Succeed in Obtaining the Desired Results.

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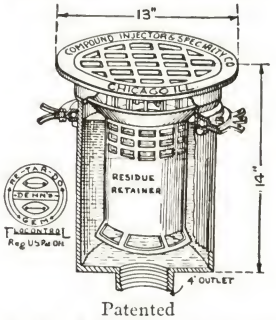
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Fig. No. 0-6080 With 4-in. Hub Bottom Outlet With Water-tight Expansion Joint Shelf



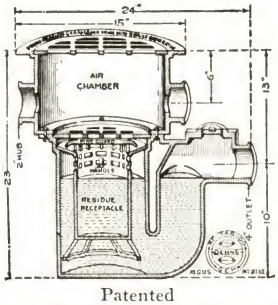
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Fig. No. 0-6085 With 4-in. Iron Pipe Side Outlet With Water-tight Expansion Joint Shelf



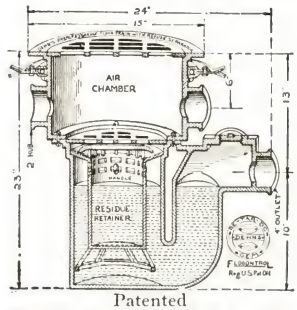
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Fig. No. 0-6090 With 4-in. Iron Pipe Bottom Outlet With Watertight Expansion Joint Shelf



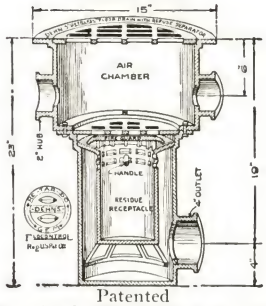
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Fig. No. 0-61 With Vented Hood With 4-in. Hub Side Outlet



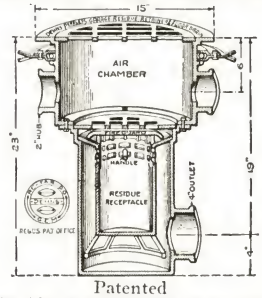
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Fig. No. 0-6125 With 4-in. Hub Side Outlet With Watertight Expansion Joint Shelf, With Vented Hood



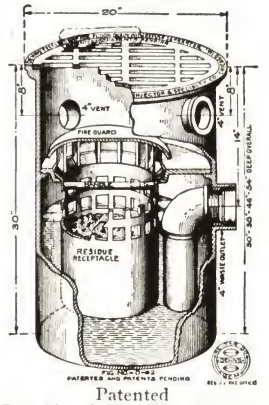
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Fig. No. 0-6150 With 4-in. Hub Side Outlet With Vented Hood



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Fig. No. 0-6175 With 4-in. Hub Side Outlet With Watertight Expansion Joint Shelf, With Vented Hood



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Fig. No. 0-62—The Original Dehn's "PEERLESS" Heavy Duty Garage and Floor Drains With Vented Hood

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Reg. U. S. Pat. Office

SPECIFICATIONS AND SCHEDULE OF CAPACITIES OF GARAGE DRAINAGE INSTALLATION SYSTEMS

The Original with Vented Hood Fig. No. 0-62—Dehn's "PEERLESS" "RE-TAR-DO" FLOCONTROL—"CLOG"—Heavy Duty Garage and Floor Drains with Refuse Separator and Retainer

RE-TAR-DO DEHN'S GEM FLOCONTROL

Reg. U. S. Pat. Office

Eliminate refuse in Garage Drainage Systems and Petromortis in Automobile Garages, Shops for Maintenance and Repair of Automobiles, and Industrial Buildings. The exhaust fumes and gases from automobiles kill annually a great many motorists and engineers. Install the Original Vented Hood Dehn's "PEERLESS" Heavy Duty Garage and Floor Drain with Refuse Separators and Retainers. They are constructed on the RE-TAR-DO FLOCONTROL principle.

Class A.—Where not more than one automobile is housed, one 15 in. diameter of top and 22 in. deep "PEERLESS" Garage Drain shall be installed. Fig. No. 0-61.

Class B.—Where from one to three automobiles are housed, one 20 in. diameter of top and 20 in. deep "PEERLESS" Garage Drain shall be installed. Fig. No. 0-62, 20x20 in.

Class C.—Where from three to six automobiles are housed, one 20 in. diameter of top and 24 in. deep "PEERLESS" Garage Drain shall be installed. Fig. No. 0-62, 20x24 in.

Class D.—Where from six to fifteen automobiles are housed, one 21 in. diameter of top and not less than 30 in. deep "PEERLESS" Garage Drain shall be installed. Fig. No. 0-62, 21x30 in.

Class E.—Where from fifteen to twenty-five automobiles are housed, one 21 in. diameter of top and not less than 38 in. deep "PEERLESS" Garage Drain shall be installed. Fig. No. 0-62, 21x38 in.

Class F.—Where from twenty-five to thirty-five automobiles are housed, one 21 in. diameter of top and not less than 46 in. deep "PEERLESS" Garage Drain shall be installed. Fig. No. 0-62, 21x46 in.

Class G.—Where from thirty-five to forty-five automobiles are housed, one 21 in. diameter of top and not less than 54 in. deep "PEERLESS" Garage Drain shall be installed. Fig. No. 0-62, 21x54 in.

Class H.—Where from forty-five to sixty automobiles are housed, three 21 in. diameter of top and not less than 30 in. deep "PEERLESS" Garage Drain shall be installed. 3 Fig. No. 0-62, 21x30 in.

Class I.—Where from sixty to seventy-five automobiles are housed, three 21 in. diameter of top and not less than 38 in. deep "PEERLESS" Garage Drains shall be installed. 3 Fig. No. 0-62, 21x38 in.

Class J.—Where from seventy-five to one hundred automobiles are housed, three 21 in. diameter of top and not less than 46 in. deep "PEERLESS" Garage Drains shall be installed. 3 Fig. No. 0-62, 21x46 in.

Class K.—Where from one hundred to three hundred automobiles are housed, three 21 in. diameter of top and not less than 54 in. deep "PEERLESS" Garage Drains shall be installed. 3 Fig. No. 0-62, 21x54 in.

Schedule of Capacity governed by specifications as above and referred to as authority

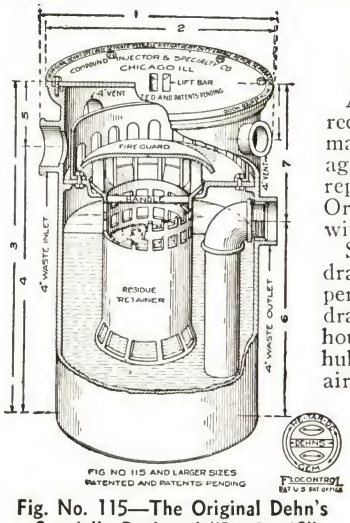


Fig. No. 115—The Original Dehn's Specially Designed "PEERLESS" Air-Tight Heavy Duty Refuse Separators With Automatic Vented Hood

The Original Combination with Automatically Vented Hood—Fig. No. 115 Dehn's Specially Designed "PEERLESS" "RE-TAR-DO" FLOCONTROL—"CLOG"—Air-Tight Heavy Duty Garage and Floor Drain with Refuse Separator and Retainer

Architects, Sanitary Engineers and Contractors protect the health and life of their clients by recommending and installing the original with vented hood Dehn's "PEERLESS" Heavy Duty Automatically Vented Garage Drainage System, a practical, economical and satisfactory garage drainage system that will eliminate petromortis in automobile garages, shops for the maintenance and repair of automobiles, and industrial buildings where automobiles are housed or stored. Install the Original Dehn's Specially Designed "PEERLESS" Air-Tight Heavy Duty Garage and Floor Drain with Refuse Separator and Retainer. Their installation protects health, life and property.

Specially designed to be installed in basements or pits of buildings and garages when floor drains are required to be located on several floors above the first floor. This construction will permit discharging any number of Floor Drains into the "PEERLESS" Air-Tight Specially designed drain. This system of drainage installation for large and high buildings where automobiles are housed above the first floor has proven very satisfactory and economical. With the two 4-in. vent hub openings extended to the outside of the building it permits a continuous circulation of fresh air through the air chamber in the Separator.

THE ORIGINAL WITH AUTOMATICALLY VENTED HOOD—FIG. NO. 115—DEHN'S SPECIALLY DESIGNED "PEERLESS" AIR-TIGHT HEAVY DUTY GARAGE REFUSE SEPARATOR AND RETAINER

Fig. No. 115—"PEERLESS" Air-Tight Refuse Separators	Class L	Class M	Class N
Diameter of top, inches	21	21	21
Depth over-all, inches	38	46	54
Size of waste inlet and outlet, inches	4	4	4
Two vent hubs, inches	4	4	4
Approximate weight, pounds	450	550	650
Price, A, iron top and strainer, each	$150.00	$200.00	$250.00

SPECIFICATIONS AND SCHEDULES OF CAPACITIES OF GARAGE DRAINAGE INSTALLATION SYSTEMS

The Original with Automatically Vented No. 115—Dehn's Specially Designed "PEERLESS" Air-Tight Heavy Duty Garage and Floor Drain with Refuse Separator and Retainer

Class L.—Where from fifteen to seventy-five automobiles are housed, one 21 in. diameter of top and not less than 38 in. deep "PEERLESS" Garage Drains shall be installed. 1 Fig. No. 115, 21x38 in. Air-Tight RE-TAR-DO FLOCONTROL Refuse Separators.

Class M.—Where from twenty-five to one hundred automobiles are housed, one 21 in. diameter of top and not less than 46 in. deep "PEERLESS" Garage Drains shall be installed. 1 Fig. No. 115, 21x46 in. Air-Tight RE-TAR-DO FLOCONTROL Refuse Separators.

Class N.—Where from seventy-five to two hundred automobiles are housed, one 21 in. diameter of top and not less than 54 in. deep "PEERLESS" Garage Drains shall be installed. 1 Fig. No. 115, 21x54 in. Air-Tight RE-TAR-DO FLOCONTROL Refuse Separators.

A Perfect Installation

Fig. No. 0-62—Dehn's "PEERLESS" Heavy Duty Automatically Vented Garage Drainage System

This installation is required to be installed in all cities where rigid plumbing and drainage ordinances and inspection exist

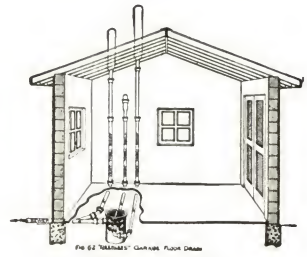


Plate No. 110

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A New Invention and Departure from Past and Present Methods

DISTINCTIVELY DIFFERENT

The Original Dehn's "PEERLESS" RE-TAR-DO FLOCONTROL CLOG Heavy Duty Garage Floor Drain Combined with Oil, Gasoline, Grease and Refuse Separator with Heavy Duty Bar Grate or with Air-Tight Heavy Duty Cover for Installation Flush with the Floor. Automatically Vented.

Automatically Operated in Separating and Retaining Oils, Grease and Refuse.

RE-TAR-DO DEHN'S GEM FLOCONTROL
Reg. U. S. Pat. Office

The "PEERLESS" RE-TAR-DO FLOCONTROL Oil Separators are constructed along the same lines as the Original Dehn's "PEERLESS" RE-TAR-DO FLOCONTROL CLOG Heavy Duty Garage and Floor Drains with Refuse Separator and Retainer.

For installation in all establishments where the flowing water carries the gasoline, oils, grease and other inflammable materials, the mud, sand and other refuse washed from automobiles, vehicles, etc., and accumulate in the receptacle. These separators are constructed on the RE-TAR-DO FLOCONTROL principle. All the solids and refuse discharged into the separator will remain in the receptacle. The accumulated refuse and solids, when filled to capacity in the receptacle, will "CLOG" the separator, no by-pass, stopping all the water from flowing through the separator, indicating that the solids and refuse must be removed to permit the separator to function again. The 2-inch vent hub openings properly connected will permit the circulation of a continuous flow of fresh air through the air chamber in the separator to purify the air in the garage to prevent accidents and avoid explosions.

This construction Automatically separates and discharges the gasoline, oils and naphtha through the outlet opening into the oil line and the storage tank. All waste, vent and oil lines are connected with the Oil Separator below the floor, eliminating pipe lines and other hazardous obstructions from extending above the floor.

All hydraulic and sanitary laboratories that have tested our Oil, Gasoline and Grease Separators and Retainers have proven them to be 95% or more efficient in separating and retaining oils, gasoline, grease and refuse.

You will observe our Oil, Gasoline, Grease and Refuse Separators and Retainers are furnished complete for installation. No valves to regulate. No floats to depend upon. Automatically adjusted and vented. No floor obstruction. Only one fixture to install. "This is a floor drain and Oil Separator combined." Deep Seal waste outlet. Eliminating leaky joints, all confusion and hazards. The most convenient, practical, efficient, sanitary safety, satisfactory and economical and function 100%. They are the best all around.

Architects and Engineers (Sanitary and Construction) in cities and in localities where sewage disposal and septic tank systems are in operation and where rigid Plumbing and Drainage Ordinances and Inspection exist, experience that it shall be unlawful to use or attach any garage, dye, cleaning or other establishment with the public sewers where gasoline, oils or other inflammable materials are used, unless a system of mud, gas, oils, grease and refuse (cast iron) separators are installed.

Recommended by Sanitary Engineers, Health Authorities, Fire Prevention or Sanitary Bureaus and Plumbing Inspectors.

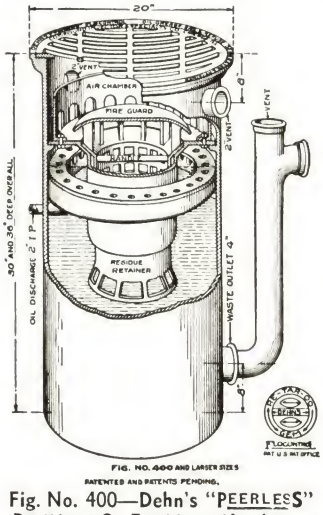


Fig. No. 400—Dehn's "PEERLESS" RE-TAR-DO FLOCONTROL Automatic Gas, Oil and Refuse Separator with Vented Hood and Heavy Duty Bar Grate

For installation in public and private garages, gasoline stations and industrial buildings	Fig. No. 400 No. 36 Bar grate
Diameter of top, inches	20
Depth over all, inches	36
Size of waste outlet, inches	4
Size of oil outlet, inches	2
Size two vent hubs, inches	2
Flow water per hour, gallons	1380
Approximate weight, pounds	450
Price A, heavy duty bar grate, each	$164.00

For installation in establishments where gasoline, oils or other inflammable materials are used or stored	Fig. No. 401 No. 36 Air-tight cover
Diameter of top, inches	20
Depth over all, inches	36
Size of waste outlet, inches	4
Size of waste inlet, inches	2
Size of oil outlet, inches	2
Size two vent hubs, inches	2
Flow of water per hour, gallons	1380
Approximate weight, pounds	450
Price A, air-tight heavy duty cover, each	$164.00

The fittings above the 4-inch waste outlet are not included or furnished regularly unless separately ordered. The 4-inch extra heavy Sanitary Tee and 4-inch extra heavy Clean-out Ferrule with brass plug, if desired, add NET $3.50.

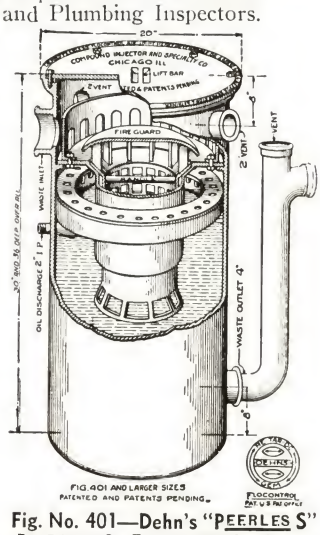


Fig. No. 401—Dehn's "PEERLESS" RE-TAR-DO FLOCONTROL Automatic Gas, Oil and Refuse Separator with Vented Hood and Air-Tight Heavy Duty Cover

The Original-Dehn's "ACME" "DEEP SEAL" Continuous Pipe Trap Floor Drains

FIG. NO. 7—WITH BACK WATER VALVE AND CLEANOUT

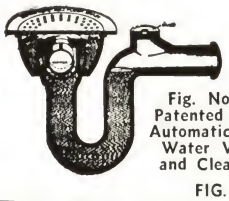


Fig. No. 7. Patented With Automatic Back Water Valve and Cleanout

Size of Outlet inches	Depth of Water Seal inches	Diameter of Top inches	Depth Over All inches	Length Over All inches	Receiver Above Outlet of Trap inches	Approximate Weight pounds	Price, each A Iron Top and strainer	B Brass Top and strainer	C N. P. Brass Top and Strainer or chromium finish
2	4	9	11	18	2	25	$ 8.00	$14.00	$16.00
3	4	9	13	20	2	40	11.00	18.00	20.00
4	4	12	15	22	2	55	15.00	23.00	26.00

FIG. NO. 9—WITH AUTOMATIC BACK WATER VALVE AND CLEANOUT

Size of Outlet inches	Depth of Water Seal inches	Diameter of Top inches	Depth Over All inches	Length Over All inches	Receiver Above Outlet of Trap inches	Approximate Weight pounds	Price, each A Iron Top and strainer	B Brass Top and strainer	C N. P. Brass Top and Strainer or chromium finish
2	4	9	11	18	2	25	$ 7.50	$13.50	$15.50
3	4	9	13	20	2	35	10.00	17.00	19.00
4	4	12	15	24	2	55	15.00	23.00	26.00

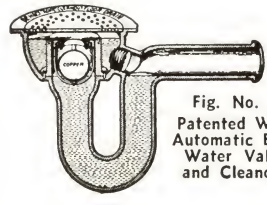


Fig. No. 9. Patented With Automatic Back Water Valve and Cleanout

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Reg. U. S. Pat. Office

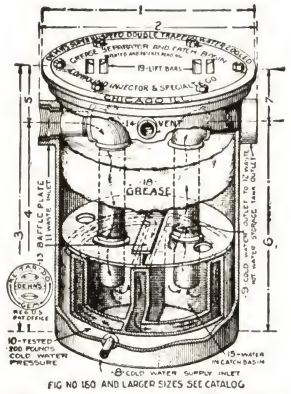
The Original Dehn's "SUPER HI-SPEED" RE-TAR-DO FLOCONTROL Heavy Duty Double Trapped Water Chilled and Non-Water Chilled Grease Separators and Retainers With Extra High Speed Coagulation

RE-TAR-DO DEHN'S GEM FLOCONTROL

Reg. U. S. Pat. Office

Dehn Patented Round Body Deep Seal Type

Non-Foul Air By-Pass, Heavy Duty 95 to 99.1% Test Efficiency



(Patented and Patents Pending)

Fig. No. 150 and Larger Sizes Dehn's "SUPER HI-SPEED" Water Chilled Grease Separator and Retainer. Tested 200 Lbs. Cold Water Pressure

Regularly fitted with separate inside pre-tested extra heavy Cold Water Chilling Units tested 200 lbs. hydrostatic pressure. Water pressure regulator not required on supply.

Recommended especially for U. S. Government barracks dining rooms, prison mess halls, restaurants, large cafeterias, hotel kitchens, etc. Made in a graduated range of sizes to "receive direct" and "pass indirect" all liquid disposal and elimination from kitchen apparatus, scalding and cooking utensils, etc. Operation is positive against either hot or cold liquid temperatures, for the separation and retention of grease, fats, oils, naphtha or paraffin from entering sewer pipe lines.

Grease capacities of all traps are rated and measured conforming to U. S. standard governing weights and measures. Regularly furnished painted finish with threaded inlets and outlets. Also hub connections when specified.

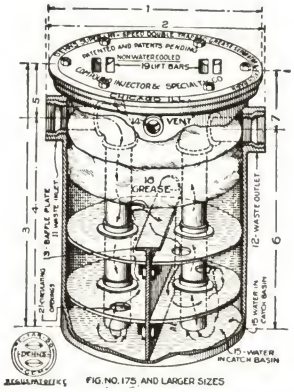
Tests and Schedules—All hydraulic and sanitary laboratories that have tested our Grease Separators and Retainers have proved them to be 95% or more efficient in separating and retaining oils, grease and refuse.

A part of the report of the Milwaukee Sewerage Commission is reproduced below.

Milwaukee, Wisconsin, March 29, 1933

REPORT OF THE MILWAUKEE SEWERAGE COMMISSIONER CHIEF ENGINEERING RESEARCH CHEMIST LABORATORY TEST OF DEHN'S "SUPER HI-SPEED" RE-TAR-DO FLOCONTROL DOUBLE TRAPPED WATER CHILLED GREASE SEPARATOR AND RETAINER

Date 1932 Nov.	Gallons Water Used in Test	Temp. of Water Beginning of Run °F.	Pounds of Grease Used in Test	Pounds Grease Recovered	¾" Water Connection Under Full Pressure 60 lbs.	Cooler Water Temp. in °F.	Cooler Water Temp. out °F.	Temp. in Trap End of Run °F.	Duration of Test in Minutes	Rate of Flow G.P.H.	Percentage of Grease Recovered in Trap	Remarks
10	100	180	10	9.91		54	66	163	27.5	220	99.1	
10	100	178	10	9.87		54	66	161	20.0	300	98.7	Net Capacity 16 Gallons Water retained in retainer.
14	100	183	10	9.89		69	78	165	15.0	400	98.9	
14	100	181	10	9.78		53	61	161	15.0	400	97.8	
14	100	180	10	9.60		69	79	160	12.0	500	96.0	
14	100	180	10	9.58		55	68	162	10.0	600	95.8	Manufacturer's flow rating 600 G. P. H.
15	100	180	10	9.35		53	68	161	8.5	700	93.5	Full Trap capacity.



(Patented and Patents Pending)

Fig. No. 175 and Larger Sizes Dehn's "SUPER HI-SPEED" Non-Water Chilled Grease Separators and Retainers

THE ORIGINAL—FIG. NO. 150 AND FIG. NO. 175 AND LARGER SIZES DEHN'S "SUPER HI-SPEED" RE-TAR-DO FLOCONTROL HEAVY DUTY DOUBLE-TRAPPED WATER CHILLED AND NON-WATER CHILLED GREASE SEPARATORS AND RETAINERS

Dehn's "SUPER HI-SPEED" Water Chilled Grease Separators														Dehn's "SUPER HI-SPEED" Non-Water Chilled Grease Separators			
Fig. No. 150 and arger sizes	Number meals served per day	*Price painted each	Approx. weight, pounds	Grease capacity pounds	Flow water per hour, gallons	Net capacity water retained gallons	1 Diameter of top, inches	3 Depth over all, inches	4-6 Floor to center of waste, inlet and outlet openings, inches	5-7 Top to center of waste, inlet and outlet openings, inches	8-9 Cold water supply inlet and outlet, inches	11-12 Waste inlet and outlet openings, inches	14 Local vent openings, inches	Approx. weight, pounds	*Price painted each	Number meals served per day	Fig. No. 175 and larger sizes
150-A	275	$100.00	300	45	252	8	20	20	16	4	1¼	2	2	240	$ 80.00	160	175-A
151-A	380	125.00	360	70	278	11	20	24	20	4	1¼	3	2	260	100.00	250	176-A
152-A	562	165.00	420	96	408	16	20	30	25	5	1¼	3	2	300	130.00	385	177-A
153-A	750	250.00	480	130	560	20	20	36	31	5	1¼	3	2	350	165.00	525	178-A
154-A	1290	580.00	1500	238	1032	54	32	36	29	7	2	4	3	900	450.00	970	179-A
155-A	1860	680.00	2000	348	1488	69	32	42	34	8	2	4	3	1050	500.00	1400	180-A
156-A	2550	780.00	2150	535	2040	90	32	48	38	10	2	6	3	1200	600.00	2000	181-A
157-A	3950	900.00	2500	738	3160	107	38	48	38	10	2	6	4	1300	685.00	2975	182-A
158-A	4800	1030.00	2800	903	3840	132	38	54	44	10	2	6	4	1500	790.00	3600	183-A
159-A	5700	1180.00	3100	1067	4560	157	38	60	50	10	2	6	4	1750	940.00	4275	184-A

*Price painted inside and outside. Furnished enameled inside. Enameled inside and outside. Prices on application.

Use Our Schedule for Capacities and You Will Succeed in Obtaining the Desired Results

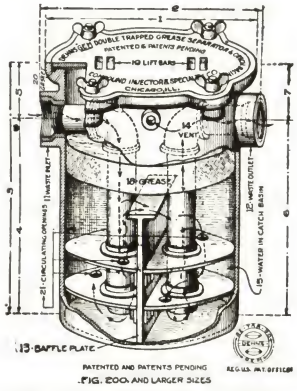
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RE-TAR-DO DEHN'S GEM FLOCONTROL
Reg. U. S. Pat. Office

The Original Dehn's "GEM" RE-TAR-DO FLOCONTROL Double Trapped Grease Separators and Retainers Water Chilled and Non-Water Chilled

We relieve the Architects, Sanitary and Construction Engineers of the responsibility of any guess work in selecting the kind and size Grease and Oil Separators for all installations.

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Reg. U. S. Pat. Office



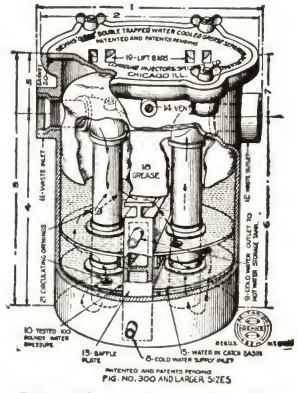
(Patented and Patents Pending)
Fig. No. 200 and Larger Sizes, Dehn's "GEM" FLOCONTROL Double Trapped Non-Water Chilled Grease Separator

IMPORTANT—Size of Inlet and Outlet Waste Openings

The Original Dehn's "GEM" RE-TAR-DO FLOCONTROL Separators furnished with 1½ inches and larger sizes iron pipe threaded or hub connections conveniently located for connecting with the kitchen sinks, dishwashing machines, utensil washing sinks, glass rinsing machines or vegetable washing vats or other similar fixtures.

The waste opening sizes shown in our catalog are based on thorough tests made with all sizes of separators using various volume of flow gallons water per hour which resulted in retaining 95% or more grease and refuse in the Separators.

These tests point out the importance, when ordering our grease separators and retainers that you adhere strictly to the sizes and capacities appearing opposite each Figure Number shown in the catalog.



(Patented and Patents Pending)
Fig. No. 300 and Larger Sizes, Dehn's "GEM" FLOCONTROL Double Trapped Water Chilled Grease Separator

THE ORIGINAL—FIG. NO. 200 AND FIG. NO. 300 AND LARGER SIZES DEHN'S "GEM" RE-TAR-DO FLOCONTROL DOUBLE TRAPPED NON-WATER CHILLED AND WATER CHILLED GREASE SEPARATORS AND RETAINERS

Dehn's "GEM" FLOCONTROL Non-Water Chilled Grease Separators														Dehn's "GEM" FLOCONTROL Water Chilled Grease Separators			
Fig. No. 200 and larger sizes	Number meals served per day	*Price painted each	Approx. weight pounds	Grease capacity pounds	Flow water per hour gallons	Net capacity water retained gallon	1 Diameter of top inches	3 Depth over all inches	4–6 Floor to center of waste inlet and outlet openings inches	5–7 Top to center of waste inlet and outlet openings inches	8–9 Cold Water Supply Inlet and Outlet Inches	11–12 Waste inlet and outlet openings inches	14 Local vent opening inches	Approx. weight pounds	*Price painted each	Number meals served per day	Fig. No. 300 and larger sizes
200-A	55	$ 25.00	85	15	80	3½	15	13	9	4	¾	1½	1½	100	$ 38.00	75	300-A
201-A	75	28.00	100	24	120	4½	15	15	11	4	¾	1½	1½	115	42.00	100	301-A
202-A	110	36.00	110	36	180	6	15	18	14	4	¾	2	1½	125	50.00	150	302-A
203-A	185	46.00	140	50	240	8	15	24	20	4	¾	2	1½	175	65.00	250	303-A
204-A	260	60.00	165	65	280	10	15	30	26	4	¾	2	1½	200	80.00	350	304-A
205-A	160	80.00	240	55	252	10	20	20	16	4	1¼	2	2	285	95.00	260	305-A
206-A	250	100.00	260	68	278	13	20	24	20	4	1¼	3	2	300	115.00	330	306-A
207-A	385	130.00	280	110	408	18	20	30	26	4	1¼	3	2	325	150.00	512	307-A
208-A	525	165.00	300	140	560	23	20	36	31	5	1¼	3	2	330	200.00	700	308-A
209-A	305	115.00	280	78	310	16	23	24	19	5	1¼	3	2	390	140.00	390	309-A
210-A	430	160.00	340	125	448	22	23	30	25	5	1¼	3	2	425	185.00	575	310-A
211-A	610	195.00	375	168	648	28	23	36	31	5	1¼	4	2	485	220.00	810	311-A
212-A	350	145.00	320	120	428	21	25	24	19	5	1¼	4	2	410	175.00	535	312-A
213-A	700	200.00	380	173	672	28	25	30	25	5	1¼	4	2	490	235.00	825	313-A
214-A	910	250.00	425	212	910	36	25	36	31	5	1¼	4	2	540	285.00	1120	314-A
215-A	970	450.00	900	238	1032	54	32	36	28	8	1½	4	3	1350	500.00	1290	315-A
216-A	1400	500.00	1050	348	1488	69	32	42	34	8	1½	4	3	1600	575.00	1860	316-A
217-A	2000	600.00	1200	535	2040	90	32	48	38	10	1½	6	3	1850	650.00	2550	317-A
218-A	2975	685.00	1300	738	3160	107	38	48	38	10	2	6	3	2100	780.00	3950	318-A
219-A	3600	790.00	1500	903	3840	132	38	54	44	10	2	6	3	2400	910.00	4800	319-A
220-A	4275	940.00	1750	1067	4560	157	38	60	50	10	2	6	3	2800	1030.00	5700	320-A

FIG. NO. 425 AND LARGER SIZES THE ORIGINAL DEHN'S "GEM" RE-TAR-DO FLOCONTROL PLASTER, HAIR, FEATHER, FISH AND REFUSE SEPARATOR AND RETAINER

Dehn's "GEM" Refuse Separators Fig. No. 425 and larger sizes	Flow gallons water per hour	Net capacity gallons water retained	1 Diameter of top inches	3 Depth over all inches	4–6 Floor to center of waste inlet and outlet openings inches	5–7 Top to center of waste inlet and outlet openings inches	Waste inlet and outlet openings inches	Local vent opening inches	Approximate weight pounds	Price Painted inside and outside each
425-A No. 13-1	44	3½	15	13	4	9	1½	1½	85	$45.00
426-A No. 15-1	60	5	15	15	4	11	1½	1½	95	52.00
427-A No. 18-1	80	6	15	18	4	14	2	1½	110	65.00
428-A No. 24-1	148	8½	15	24	4	20	2	1½	150	80.00
429-A No. 30-1	208	11	15	30	4	26	2	1½	175	95.00

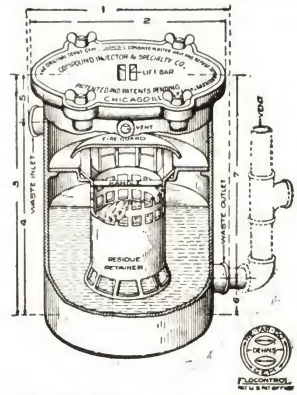


Fig. No. 425 and Larger Sizes, Dehn's "GEM" RE-TAR-DO FLOCONTROL, Plaster, Hair, Feather, Fish and Refuse Separator

Furnished enameled inside. Enameled inside and outside. Prices upon application.

Prices do not include any fittings.

Use Our Schedule for Capacities and You Will Succeed in Obtaining the Desired Results

Copyright 1939 by the COMPOUND INJECTOR & SPECIALTY CO.

THE H. W. COVERT COMPANY

339 East 48th Street, NEW YORK, N. Y.

For Covert Fireplace Specialties, see File Index

ANTI-CLOG FLOOR DRAINS

For Use in Factories, Garages, Dairies, Stable Areas, etc.

ANTI-CLOG FLOOR DRAINS

With Removable Dirt Box

Advantages of Removable Dirt Box

The dirt box set inside the drain body catches all dirt, sand and debris, which, if allowed to pass through the drain, would cause a stoppage in the drain pipe. The dirt box is equipped with a handle to facilitate removal when it is to be emptied and also has seepage holes to allow no water to remain in the box to stagnate or freeze.

Construction

Anti-clog Drains are made of heavy cast iron, with either bottom or side outlet. The body is of one piece, there being no joints to loosen and allow seepage into the floor.

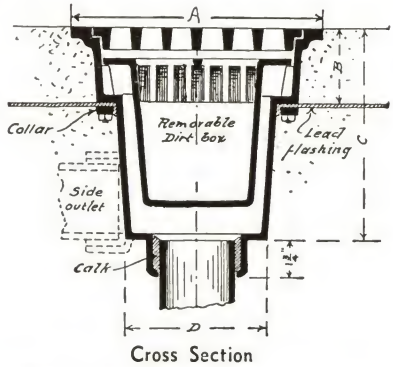
Drains installed on upper floors may be provided with lead flashings which are worked into the waterproofing section and render the floor around the drain watertight.

Bottom Outlet Anti-Clog Drains are caulked from the inside which makes it simple for the plumber to accomplish a satisfactory, watertight connection.

When it is required to have the trap within the drain, we can furnish a bell trap and replace the dirt box with a strainer plate.

DIMENSIONS

No.	A	B	C	D	Size outlet, in.
9	9	1¼	6	5	3
10	10	3½	8¼	6	3
12	12	3¾	10	6	3 or 4
15½	15½	3¾	9¼	8¾	4, 5 or 6
16	15½	3¾	13	8	4, 5 or 6
24	24	3¾	12½	15¼	4, 5 or 6



Cross Section

Specification

Furnish and install as shown on plans Covert Anti-clog Drains with removable dirt boxes [with] [without] lead flashings with [side] [bottom] outlet, made by THE H. W. COVERT COMPANY, 339 East 48th Street, New York, N. Y.



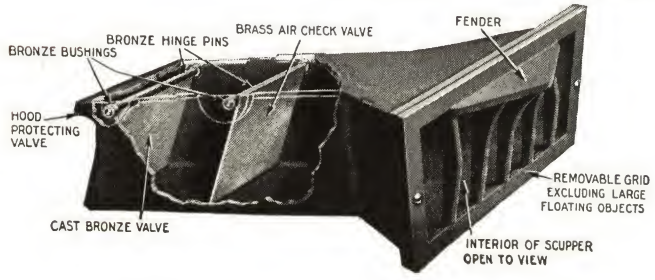
All Dirt Is Retained in the Dirt Box



Dirt Easily Removed from Dirt Box

Anti-clog Floor Drain with Removable Dirt Box

"WATERTITE" HOODED WINDPROOF SCUPPERS



Installed in outside walls on floors of industrial buildings to carry off water in case of fire or accidental sprinkler discharge. Scuppers prevent the interruption of production, and the loss of business through damage to stocks and machinery. Insurance companies recognize the value of the protection scuppers afford and grant a reduction in insurance rates on scuppered buildings and contents. Scuppers are not expensive, are easy to install and in time pay for their own cost and earn dividends thereafter. Special folder sent on request.

ESTABLISHED 1891

CRAMPTON-FARLEY MANUFACTURING CO.

Manufacturers of Backwater Trap Floor Drains for Over 30 Years

221 Main Street, KANSAS CITY, MO.

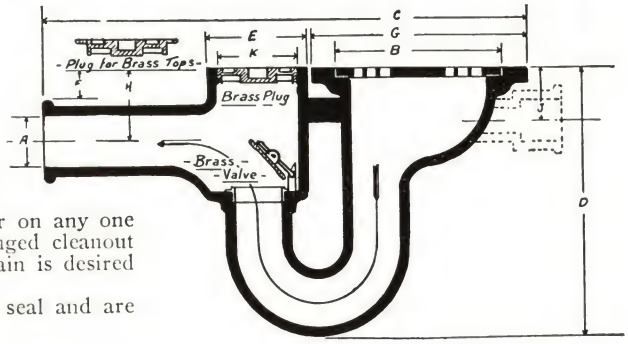


Used on many gov't projects

GATEWAY FLOOR DRAINS

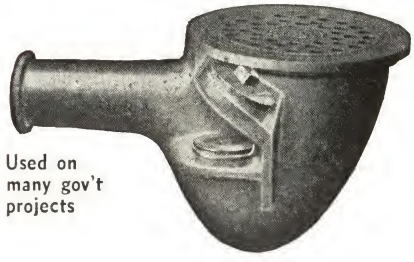
The brass valve is submerged and is placed in a horizontal position to avoid concentrated wear on any one segment of the seat. Flanged cleanout plug is furnished when drain is desired with brass top.

All sizes have full 4-in. seal and are made of heavy cast iron.



DIMENSIONS, GATEWAY FLOOR DRAINS

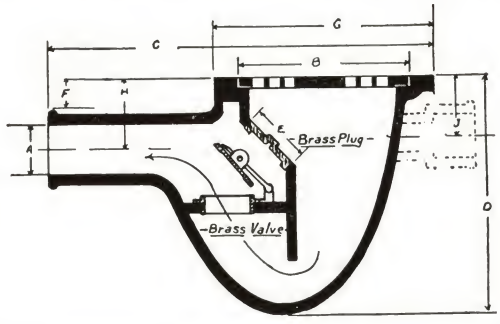
No.	Wt., lb.	Style outlet	Back inlet, in.	A in.	B in.	C in.	D in.	E in.	F in.	G in.	H in.	J in.	K in. plug	Iron top	
2	22	S. P.	.....	2	6 5/8	19	10 3/16	4 1/2	1 1/2	7 7/8	2 7/8	.....	3 1/4	$ 9.00	Nickel, chromium plated or polished brass tops furnished when desired.
3	55	S. P.	.....	3	9 3/8	24 5/8	13	5 1/2	2 1/16	10 5/8	3 15/16	.....	3 1/4	16.00	
4	65	S. P.	.....	4	11 1/2	28	14 1/2	6 3/8	2	13	4 5/16	.....	4	24.00	
D-2	22	I. P.	.....	2	6 5/8	15 5/8	10 3/16	4 1/2	1 3/8	7 7/8	2 7/8	.....	3 1/4	9.60	
2-R	24	S. P.	1 1/2 I.P.	2	6 5/8	19	10 3/16	4 1/2	1 1/2	7 7/8	2 7/8	1 15/16	3 1/4	9.60	
2-H	24	S. P.	2 S.P.	2	6 5/8	19	10 3/16	4 1/2	1 1/2	7 7/8	2 7/8	2 1/2	3 1/4	10.00	
3-H	60	S. P.	2 S.P.	3	9 3/8	24 5/8	13	5 1/2	2 1/16	10 5/8	3 15/16	2 7/8	3 1/4	17.00	
4-H	70	S. P.	2 S.P.	4	11 1/2	28	14 1/2	6 3/8	2	13	4 5/16	2 7/8	4	25.00	



Used on many gov't projects

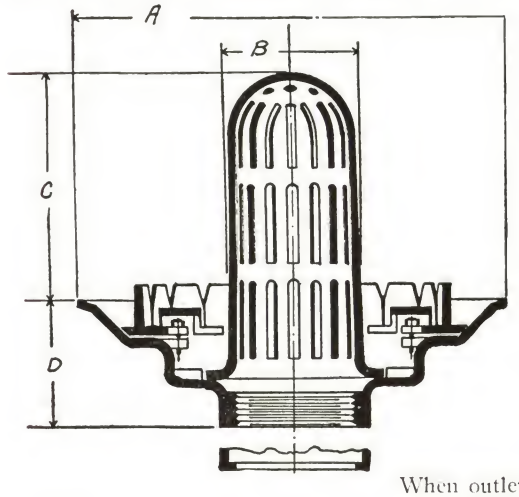
SIGNET FLOOR DRAINS

The bowl-like construction of this drain makes it very accessible for removing sediment. The brass valve is submerged. It is placed in a horizontal position to avoid concentrated wear on any one segment of the seat. The slight water pressure required to raise the cap, keeps the thin seat rim clean. Heavy cast iron body.



DIMENSIONS, SIGNET FLOOR DRAINS

No.	Wt., lb.	Style outlet	Back inlet, in.	A in.	B in.	C in.	D in.	E in. plug	F in.	G in.	H in.	J in.	Iron top	
2	20	S. P.	.....	2	6 5/8	13 3/8	7 3/4	2 1/2	1 5/16	7 3/4	2 11/16	.....	$ 8.00	Nickel, chromium plated or polished brass tops furnished when desired.
3	50	S. P.	.....	3	11 3/8	21 1/2	12	3 1/4	2	13	4	.....	16.00	
4	65	S. P.	.....	4	13	24 1/4	14	4	2	14 3/4	4 3/8	.....	22.00	
D-2	19	I. P.	.....	2	6 5/8	11 7/8	7 3/4	2 1/2	1	7 3/4	2 1/2	.....	8.60	
D-2-R	22	I. P.	1 1/2 I.P.	2	6 5/8	11 7/8	7 3/4	2 1/2	1	7 3/4	2 1/2	1 3/4	9.20	
2-R	22	S. P.	1 1/2 I.P.	2	6 5/8	13 3/8	7 3/4	2 1/2	1 5/16	7 3/4	2 11/16	1 7/8	8.60	
3-H	55	S. P.	2 S.P.	3	11 3/8	21 1/2	12	3 1/4	2	13	4	2 3/4	17.00	
4-H	70	S. P.	2 S.P.	4	13	24 1/4	14	4	2	14 3/4	4 3/8	2 3/4	23.00	



No. 135 ROOF DRAIN

Dome strainer is non-tilting. Top of body and underside of clamping ring have machined surfaces. Gravel guard is 1¼ inches high and is integral with clamping ring. Gravel guard is secured to body with four brass bolts which enter inside of sediment chamber.

When bottom flange for concrete roof is desired, so specify and add to list price $2.00.

DIMENSIONS No. 135 ROOF DRAIN

Outlet	Weight	A	B	C	D	List price
2″	62 lbs.	18″	7 1/8″	7 1/2″	5 1/8″	$16.00
3″	62 lbs.	18″	7 1/8″	7 1/2″	5 1/8″	16.00
4″	62 lbs.	18″	7 1/8″	7 1/2″	5 1/8″	16.00
5″	62 lbs.	18″	7 1/8″	7 1/2″	5 1/8″	19.50
6″	62 lbs.	18″	7 1/8″	7 1/2″	5 1/8″	21.50

When outlet is desired for inside caulking, so specify

WRITE FOR OUR COMPLETE CATALOGUE

THE IMPERIAL BRASS MANUFACTURING CO.

Imperial Automatic Primer for Floor Drains

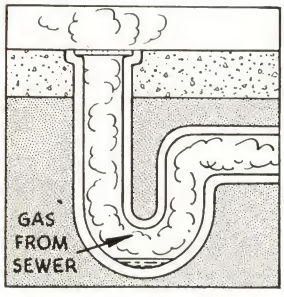
Keeps Drain Traps Securely Sealed with Fresh, Clean Water

1200 West Harrison Street, CHICAGO, ILLINOIS

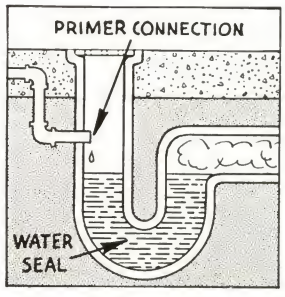
For Watrous Flush Valves, Imperial "Floatless" Automatic Electric Sump Pumps and Watrous Liquid Soap Dispensers see Our Separate Catalogs

Used to Protect Against Sewer Gas Where Floor Drain Is Infrequently Used or Where Forced Warm Air Heating Is Installed

The Imperial Automatic Primer is a completely automatic device for maintaining and changing water in drain traps, thus safeguarding the building against foul odors and escape of sewer gas and sewer vermin.



Sewer gas enters building here. Note that the water seal in this trap has been broken by evaporation or syphonage

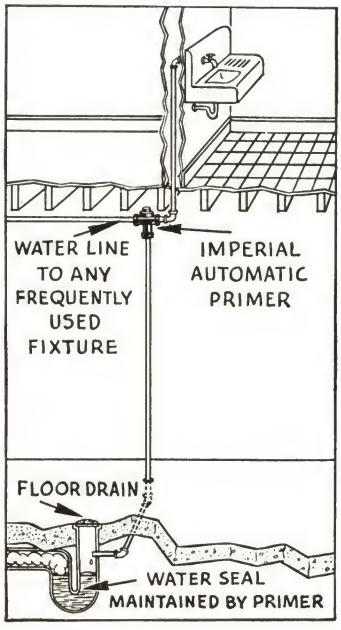


This drain, equipped with automatic primer, is safely sealed with fresh, clean water . . . No sewer gas or vermin can enter

This primer completely solves the problem created by the floor drain which is used only at infrequent intervals. Drains of this type have long been recognized as danger points in the plumbing system due to the fact that the water seal in the trap—being replenished only at long intervals—frequently is broken by evaporation. This leaves an open duct through which sewer gas and sewer vermin are free to enter the building.

Especially is this a problem in basements where forced warm air heating plants are installed. In such basements evaporation of the trap seal is apt to be accelerated and when the seal is broken, there is danger of foul air being drawn from the sewer and circulated through the building.

The Imperial Automatic Primer effectively protects against this danger by automatically keeping the drain trap filled with fresh, clean water. Trap primers of this type are now required by the building codes of many cities.



Installation and Operation

The Imperial Automatic Primer is installed on any convenient cold water supply line—such as the line to a sink or a lavatory—and every time water is drawn through this line the primer operates causing a small amount of water to flow down to the drain trap to which it is connected. This water replenishes the water in the trap which has been lost through evaporation or syphonage.

Primer Operation—Operation of primer is simple and positive. There are no springs, no complicated parts to break or get out of order.

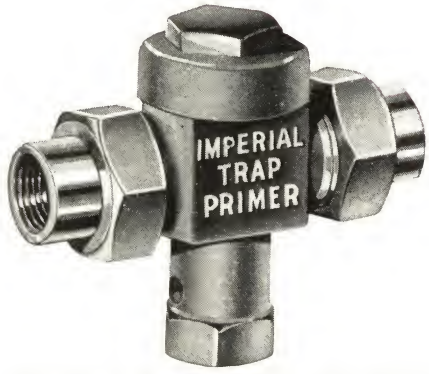
Primer operates in either direction. When water is drawn through the line to which the primer is attached it moves against a vane. This vane, in turn, lifts a stirrup frame, thereby opening the valve slightly allowing a small amount of water to pass through to the drain. (Amount of water discharged at each cycle of operation is negligible from the standpoint of water consumption and effect on fixture flow.)

Water discharged must pass an atmospheric opening which prevents any possibility of back syphonage.

Gives a Lifetime of Service—Low in Cost

The Imperial Automatic Primer is designed to give automatic trouble-free service over the full life of the building in which it is installed.

Features—Among the features which insure its reliability are: (1) it has no springs or other breakable parts; (2) it is constructed of non-rusting materials throughout; (3) it is self-cleaning; (4) both its seat and its cleanout rod are constructed of monel metal.



Imperial Primers are tested to a hydrostatic pressure of 125 lbs. per sq. in.

Low Cost Protection—The Imperial Primer retails for $5.00. Installation is simple and inexpensive.

Made by an Outstanding Manufacturer of Sanitary Equipment

Imperial Automatic Primers are the product of an organization which has for many years been recognized as an outstanding manufacturer of successful sanitary equipment, and which has experience approximating half a century in the manufacture of brass and bronze devices of all kinds.

Other plumbing products of THE IMPERIAL BRASS MFG. CO. include Watrous Flush Valves, Watrous Liquid Soap Dispensers and Imperial Floatless Sump Pumps. (See File Index.)

Catalog Numbers, Sizes, List Price

No. M-1201—Imperial Automatic Primer with ½" union connections. List Price, Each.....$5.00

No M-1203—Imperial Automatic Primer with ¾" male union connections. List Price, Each.....$5.00

Typical Specifications for Architects and Engineers

An automatic primer that will furnish water to the seal of traps under basement floor drains shall be installed on the (½" or ¾") cold water service where indicated. A ½" drain connection shall be made from primer to floor drain.

The primer shall be of a design that will pass a small amount of water to seal of trap under variable pressures without any appreciable diminish of the flow of water to the fixture, it shall embody no springs, and it shall not permit back syphonage of the sewer system into the water service. Primers shall be tested to a hydrostatic pressure of 125 lbs. per sq. in.

The primer shall be equal to the "Primer" as manufactured by THE IMPERIAL BRASS MFG. CO., Chicago, Ill.

Josam PRODUCTS

STANDARD OF AMERICA

JOSAM MODERATOR MIXING VALVE — PAGE 3

JOSAM ADJUSTABLE SUPPORT FOR WALL CLOSETS AND URINALS — PAGE 17

JOSAM ADJUSTABLE CLOSET OUTLET CONNECTIONS AND BENDS — PAGE 17

JOSAM SHOCK ABSORBERS FOR QUIETING WATER HAMMER — PAGE 9

JOSAM INTERCEPTORS FOR DENTAL AND SURGICAL SINKS, HAIR, LINT, PLASTER — PAGE 16

JOSAM INTERCEPTORS FOR GREASE – ''J'' SERIES – NOT WATER-COOLED — PAGE 14

JOSAM INTERCEPTORS FOR OIL, NAPHTHA AND GREASE — PAGE 15

JOSAM ROOF DRAINS, EXPANSION JOINTS, AND VENT STACK SLEEVES — PAGES 10,11

JOSAM SWIMMING POOL EQUIPMENT INLETS, OUTLETS, OVERFLOWS, EJECTORS — PAGES 12,13

JOSAM BACKWATER SEWER VALVES A POSITIVE PROTECTION AGAINST BACKWATER — PAGE 9

JOSAM GARAGE AND INDUSTRIAL TYPE FLOOR DRAINS WITH AND WITHOUT SEDIMENT CONTAINERS — PAGES 7,8,15

JOSAM DOUBLE DRAINAGE FLOOR, SHOWER AND URINAL DRAINS — PAGE 6

JOSAM NON-CLOG TRIPLE DRAINAGE SEDIMENT ARRESTING FLOOR DRAINS — PAGES 4,5

JOSAM ENGINEERING SERVICE – DETAIL SHEETS STANDARD SPECIFICATION BROCHURES — PAGE 2

JOSAM MANUFACTURING CO.

MAIN SALES AND ENGINEERING OFFICE
EMPIRE BUILDING CLEVELAND, OHIO
FACTORY AND FOUNDRY
MICHIGAN CITY, INDIANA

Josam Representatives in U. S. and Canada Page 18

THERE ARE NO SUBSTITUTES FOR JOSAM PRODUCTS

PRODUCTS and INDIVIDUALIZED SERVICE

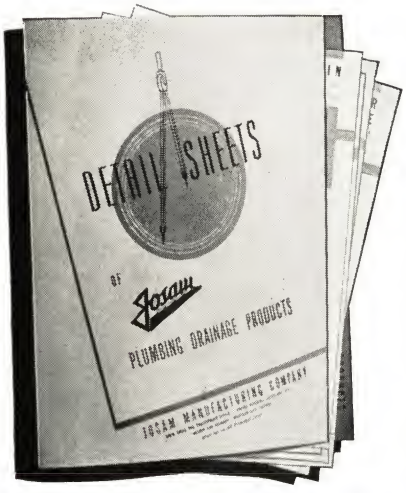
The JOSAM MANUFACTURING COMPANY, for over a quarter of a century, has produced drainage equipment to successfully solve the most difficult industrial drainage problems. A few of these Josam Products are shown in this catalog.

When you specify a Josam Product—you are not experimenting—you are assured of proper design, good materials, the highest quality workmanship, ease of installation and a successful job from start to finish.



JOSAM STANDARD SPECIFICATIONS FOR PLUMBING DRAINAGE SYSTEMS

Josam again initiates a service to architects with this series of "Standard Specification Brochures," for reference and guidance, giving plumbing drainage specifications for 119 types of buildings. These reference books are something specification men will readily appreciate . . . an authoritative means of checking plumbing drainage specifications. . . .



JOSAM DETAIL SHEETS

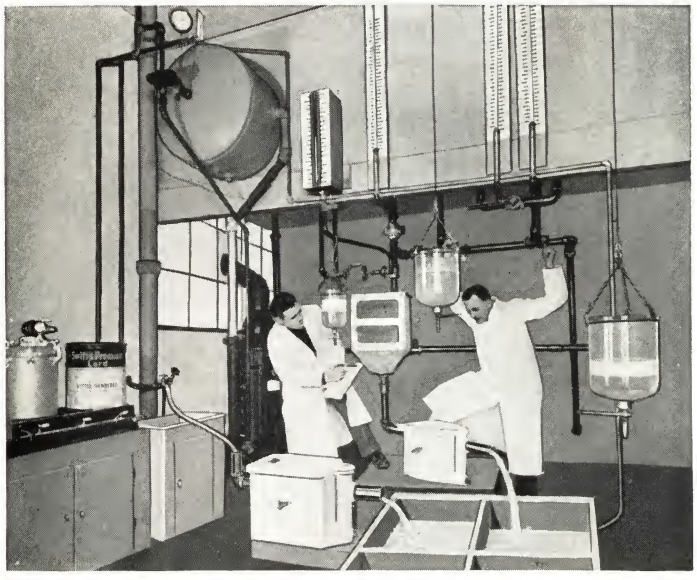
Detail Sheets giving practical installation and engineering information for various Josam Products, are available to architects and engineers, upon request. These Detail Sheets show all up-to-the-minute improvements in Josam Products.

JOSAM TREATISE ON SWIMMING POOLS

A recently published 48-page book on construction, sanitation and operation of swimming pools. Includes layouts and plans of all types of swimming and wading pools, construction details, pool water supply, etc.

AN EXCELLENT WAY TO DETERMINE AND APPRECIATE THE REFERENCE AND GUIDANCE VALUE OF JOSAM STANDARD SPECIFICATIONS AND JOSAM DETAIL SHEETS, IS TO APPLY THESE SERVICES TO YOUR PRESENT PROJECTS.





One department of the Josam Research Laboratory, Michigan City, Indiana, where research and tests are being continually conducted to determine and provide authoritative recommendations for the solving of difficult or unusual plumbing drainage problems.

ENGINEERING SERVICE

Research and Development

Years of practical experience . . . in designing and installing plumbing systems are available to you through the services of the Josam Engineering Staff. Hundreds of unusual drainage requirements have been satisfactorily met. Often, it has been necessary to design a special type of drain to fully meet the requirements and to provide the utmost protection for buildings and contents. Josam makes available to you exhaustive information concerning the installations of the proper types of drainage facilities to meet troublesome situations.

To avail yourself of Josam Engineering Service, get in touch with the nearest Josam Representative listed on page 18, or write direct to Josam Engineering Department at Cleveland, Ohio.

JOSAM MANUFACTURING COMPANY

ENGINEERING AND SALES DEPARTMENT—EMPIRE BUILDING—CLEVELAND, OHIO

JOSAM MODERATOR MIXING VALVE

PROVIDES POSITIVE PROTECTION AGAINST ACCIDENTAL SCALDING

Mechanically Simple

Here is a mixing valve that *will not* fail in an emergency . . . will positively shut off scalding water . . . or instantly reduce it to a safe temperature when the cold water is accidentally or unknowingly shut off or diminished.



Made in Concealed or Exposed Types

AUTOMATIC SHUT-OFF UNIT

- **No Springs to Stick**
- **No Diaphragm to Wear Out**
- **No Hesitant Controls**
- **Easy to Repair if Ever Necessary**

With no parts to fail . . . with no complicated mechanism to get out of order, the Josam Moderator Mixing Valve not only overcomes the inadequacies of prior type devices of its kind but minimizes the likelihood of repair.

SIMPLE, POSITIVE OPERATION—LOW COST

Notwithstanding its superior design, the Josam Moderator Mixing Valve costs no more than other mixing valves. It is priced for universal use and because its maintenance costs are insignificant, actually costs less in the long run.

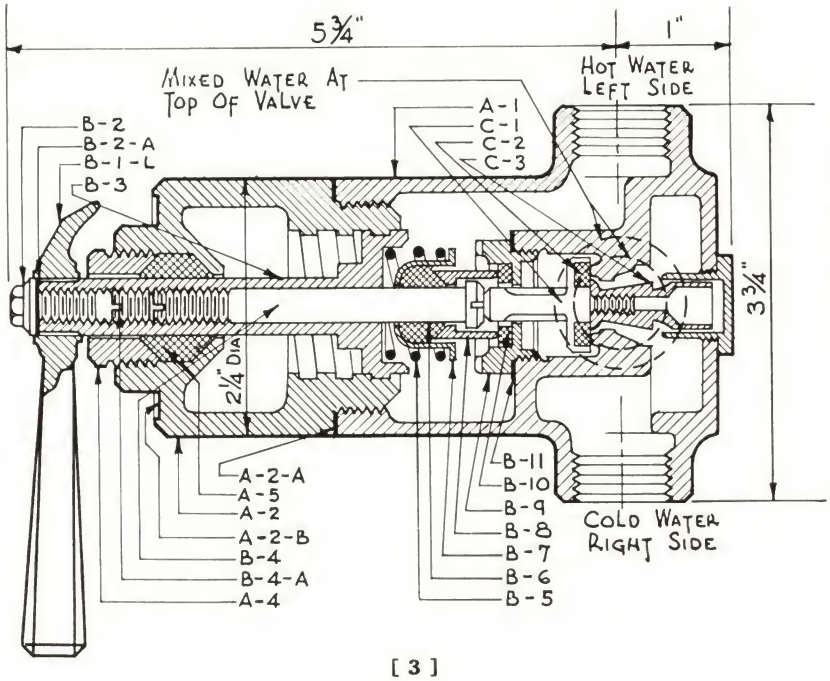
Hydraulic-type action is the secret of the certain, instantaneous action of the Josam Moderator Mixing Valve. The simplicity of its operation positively prevents an accident due to scalding . . . because the shuttle valve is operated by the pressure and flow of both the hot and cold water, resulting in these distinct advantages:

ADVANTAGES OF JOSAM MODERATOR MIXING VALVE

1. Single handle controls both hot and cold water, thereby preventing selection of wrong fixture handle.
2. Turning the handle from "off" position delivers cold water first. Temperature is increased by further turning of the handle.
3. Desired maximum temperature is controlled by a slight adjustment of the temperature regulator which regulates the amount of hot and cold water entering the mixing chamber when the control handle is in full turned position.
4. Hot water *will not flow* if there is no cold water pressure when valve is turned on.
5. Hot water *will shut off* simultaneously if cold water pressure fails completely during operation of the valve.
6. Hydraulic action of shuttle valve automatically proportions flow of hot and cold water to compensate for sudden increase or decrease of hot or cold water pressures, thereby maintaining equalized temperatures.

PARTS LIST

A-1	BODY
A-2	COVER
A-2-A	GASKET
A-2-B	DIAL
A-4	GLAND NUT
A-5	PACKING
B-1-L	HANDLE
B-2	LOCK NUT
B-2-A	GASKET
B-3	STEM
B-4	AUXILIARY STEM



PARTS LIST (Continued)

B- 4-A	GRUB SCREW
B- 5	SPRING
B- 6	PACKING
B- 7	COLLAR
B- 8	SOCKET
B- 9	HOT WATER DISC.
B-10	WASHER
B-11	GASKET
C- 1	STEM DISC
C- 2	WASHER
C- 3	GUIDE CUP

Josam PRODUCTS

GENERAL APPLICATIONS

•

SERIES
5400
5410
5420
5440

•

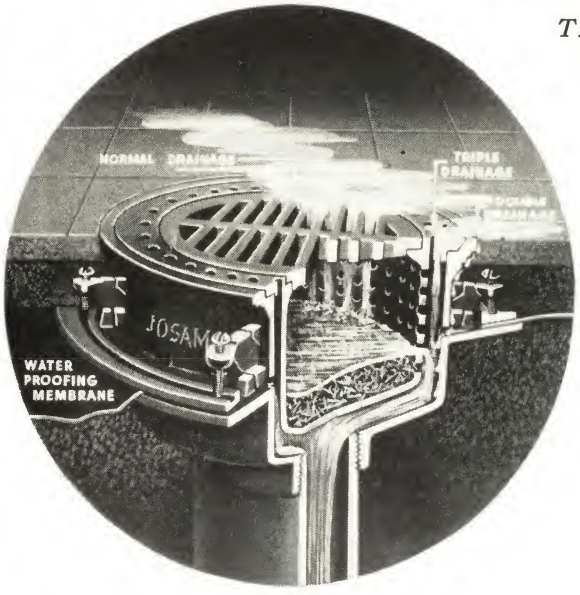
Areaways
Basements
Storage Rooms
Basement Equipment Rooms
Toilet and Wash Rooms
Boiler Rooms
Coal Rooms
Yards
Driveways
Ash Pits
Large Kitchens

in

Residences
Warehouses
Industrial Plants
Public Buildings
Hotels
Institutions
Breweries
Clubs

JOSAM NON-CLOG TRIPLE DRAINAGE SEDIMENT ARRESTING FLOOR DRAINS

Maintain Flow from Floor Surface at All Times

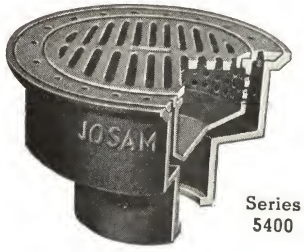


The Non-Clog Sediment Container Prevents Either Sediment or Floating Solids from Entering Drain Body or Channels of Auxiliary Flow

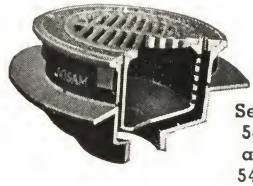
Josam Non-clog Drains are a definite improvement in Sediment Arresting types, to the extent that surface flow is maintained at all times, and all solids, particularly floating material, are intercepted.

Flooded floors resulting from clogged drains, traps or pipes, often create decidedly insanitary conditions, as well as damage to buildings and contents, besides the inconvenience and expense of cleaning out traps and drains. Josam Non-clog Drains prevent such occurrences.

Assembly is foolproof as it is compulsory to install the container which supports grate, before grate can be installed.



Series 5400


Series 5410 and 5420


Series 5440

SERIES 5400X

Light Service type, cast iron japanned, without double drainage flange, with non-clog sediment container.

SERIES 5410—Light Service

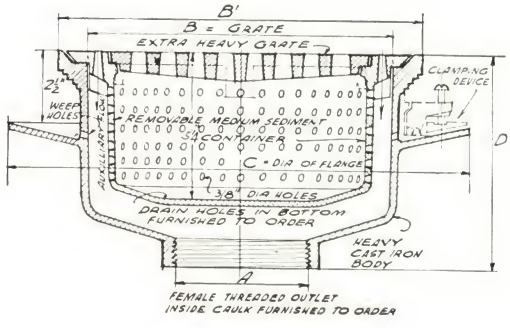
SERIES 5420—Medium Service

Light service triple drainage type, cast iron japanned, with non-clog shallow sediment container.

SERIES 5440

Heavy duty triple drainage type, cast iron japanned, with non-clog medium sediment container.

Optional
Galvanized Iron
Brass Top
All Brass
Clamping Device
Backwater Valve
Square Top
Hinged Grate
Primer Tapping
Side Outlet
Bottom drain holes in sediment container
Female tapped, inside caulk or spigot bottom outlet
Female tapped, hub or spigot side outlet

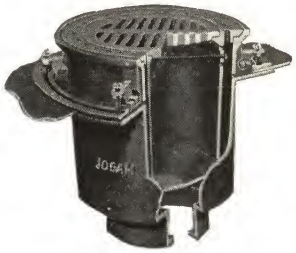


Type	Dimensions in inches					Weight lbs.
	A Outlet	B Grate	B'	C	D	
SERIES 5400X						
5402X	2	7 3/8	9	.....	5	14
5403X	3	7 3/8	9	.....	5	14
5404X	4	7 3/8	9	.....	5	14
SERIES 5410						
5412	2	7 3/8	9	12 1/2	4 1/2	20
5413	3	7 3/8	9	12 1/2	4 1/2	20
5414	4	7 3/8	9	12 1/2	4 1/2	20
SERIES 5420						
5422	2	7 1/2	9	12 1/2	5	22
5423	3	7 1/2	9	12 1/2	5	22
5424	4	7 1/2	9	12 1/2	5	22
SERIES 5440						
5443	3	10 3/4	12 1/2	16	7 1/8	58
5444	4	10 3/4	12 1/2	16	7 1/8	58
5445	5	10 3/4	12 1/2	16	7 1/8	58
5446	6	10 3/4	12 1/2	16	7 1/8	58

See the Following Pages for Other Types of Non-Clog Triple Drainage Drains

JOSAM NON-CLOG TRIPLE DRAINAGE FLOOR DRAINS

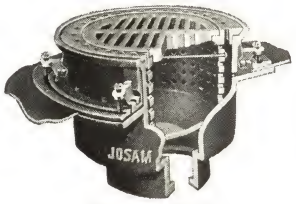
Deep Container — Heavy Duty Type



Series 5600X

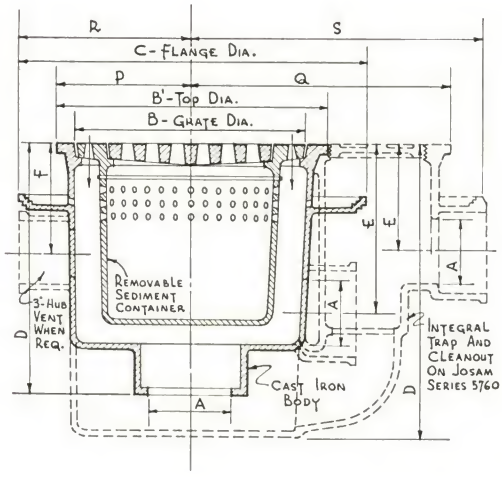


Series 5700X



Series 5730X

Series 5760 same as 5730X, except with Trap and Flush Floor Cleanout Back Water Valve, when desired.



SERIES 5600X

Extra heavy triple drainage type, cast iron japanned, with non-clog deep sediment container, 3 in. hub local vent when so ordered.

SERIES 5700X

Heavy duty, triple drainage type, cast iron japanned, with non-clog medium sediment container, 14 in. or 18 in. grate.

SERIES 5730X

Extra heavy duty triple drainage type, cast iron japanned, with non-clog deep sediment container, 14 in. or 18 in. grate.

SERIES 5760

Extra heavy duty triple drainage type, combined drain and trap with 6 in. threaded brass top cleanout, cast iron japanned, with non-clog deep sediment container, hub outlet, 14 in. or 18 in. grate.

OPTIONAL FOR 5600X-5700X-5730X

Galvanized iron—brass top—clamping device—backwater valve—square top—female threaded, inside caulk or spigot bottom outlet—female threaded, hub or spigot side outlet—hinged grate—primer tapping—bottom drain holes in sediment container—3 in. hub local vent on Series 5730X.

OPTIONAL FOR 5760

Galvanized iron—brass top—clamping device—flap type backwater valve—hinged grate—primer tapping—bottom drain holes in sediment container—3-in. hub local vent.

Type	Dimensions in inches							Wght., lbs.
	A Outlet	B Grate	B′	C	D*	E*	F*	
SERIES 5600X								
5603X	3	10¾	12½	16	13½	9½	6	86
5604X	4	10¾	12½	16	13½	9	6	86
5605X	5	10¾	12½	16	13½	8½	6	86
5606X	6	10¾	12½	16	13½	8	6	86
SERIES 5700X								
5703X	3	14	16	22	12	.....	.....	164
5704X	4	14	16	22	12	.....	.....	164
5705X	5	14	16	22	12	.....	.....	164
5706X	6	14	16	22	12	.....	.....	164
5713X	3	18	21	27	15	.....	.....	270
5714X	4	18	21	27	15	.....	.....	270
5715X	5	18	21	27	15	.....	.....	270
5716X	6	18	21	27	15	.....	.....	270
5718X	8	18	21	27	15	.....	.....	270

Type	Dimensions in inches							Wght., lbs.
	A Outlet	B Grate	B′	C	D*	E*	F*	
SERIES 5730X								
5733X	3	14	16	22	15	10½	6½	200
5734X	4	14	16	22	15	10	6½	200
5735X	5	14	16	22	15	9½	6½	200
5736X	6	14	16	22	15	9	6½	200
5743X	3	18	21	27	18	16	6½	320
5744X	4	18	21	27	18	15½	6½	320
5745X	5	18	21	27	18	15	6½	320
5746X	6	18	21	27	18	14½	6½	320

*Decrease 1¼ in. when furnished with female threaded outlet.

SERIES 5760

Type	A Outlet	B Grate	D*	E*	P	Q	R	S	Wght., lbs.
5762	2	14	18	7¾	7¾	15¼	11	17½	230
5763	3	14	18	7¼	7¾	15¼	11	17½	230
5764	4	14	18	6¾	7¾	15¼	11	17½	230
5772	2	18	18	7¾	10½	17½	13½	20	360
5773	3	18	18	7¼	10½	17½	13½	20	360
5774	4	18	18	6¾	10½	17½	13½	20	360

*Add ½ in. when furnished with brass top.

SERIES 5900

Removable Deep Sediment Container, Floating Solids Retainer, Bail Handle, Cone Sediment Trap, Extra Heavy Grate, Heavy Duty, Large Capacity, Garage and Industrial Type, Cast Iron Japanned.

Application—Suitable for garage floors and wash racks, service driveways or roadways, industrial plants, oil refineries, boiler rooms, coal rooms, ash pits, dairies, laundries, packing plants, cold storage plants, warehouses and other heavy service requirements where efficient interception of sediment and floating solids as well as positive protection against stoppage of flow, are primary considerations.

SERIES 5800

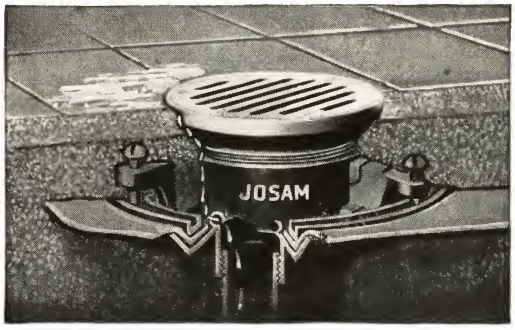
Drain is similar to Series 5900 but with side outlet and without trap or cleanout.



Series 5900

See the Following Pages for Other Types of Non-Clog Triple Drainage Drains

JOSAM DOUBLE DRAINAGE FLOOR, SHOWER AND URINAL DRAINS

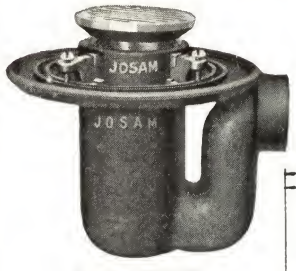


Josam Double Drainage Drains prevent leakage around the drain, by catching the seepage which occurs around the drain in the double drainage flanged cup, located below the floor and drainage level, and providing for its return into the drain line through the weep holes provided at the low level of the flanged cup.

Josam originated the adjustable strainers of various sizes and types, threaded for adjustment, insuring positive connection.

SERIES 200AC

Heavy cast iron body with adjustable N.P. brass strainer for meeting variations in level or thickness of floors. Strainers can be furnished to fit all standard makes of receptors. Furnished with or without flashing clamping device.



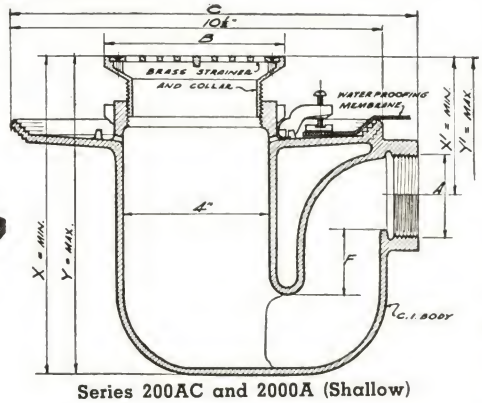
Series 200AC

SERIES 2000AC

Same construction as Series 200AC, but designed for shallow construction.



Series 2000AC



Series 200AC and 2000A (Shallow)

SERIES 300C

Cast iron body adjustable N.P. brass strainer for meeting variations in level or thickness of floors. Suitable where construction requires drain without trap or where an independent trap is installed. Strainers furnished for all standard makes of receptors. With or without flashing clamping device.

SERIES 1400C

Drain without trap. Threaded adjustable brass angle strainer provides means for meeting variation in level or thickness of floors. Eccentric bushing provides lateral adjustment. With or without clamping device.

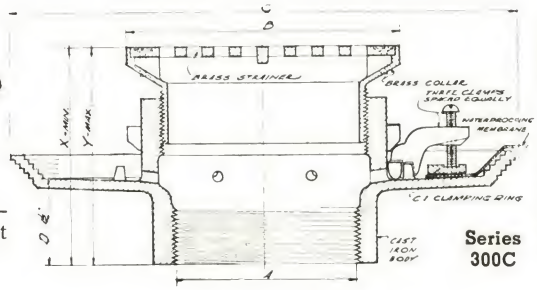
OPTIONAL

Galvanized iron — all brass — white metal or chrome plated top. Threaded, hub, or spigot side outlets; threaded, caulk or spigot bottom outlets.



Series 300C

Series 300RC—same as 300C, but with side outlet.

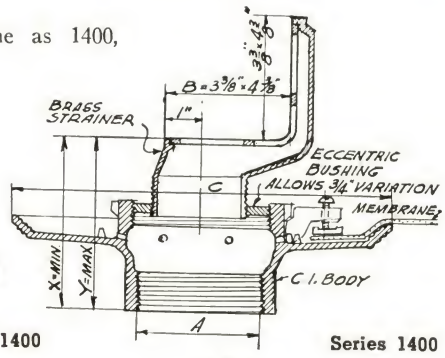


Series 300C

Series 1700—same as 1400, but with trap.



Series 1400



Series 1400

Type	Dimensions in inches									Wt. lbs.
	A	B	C	D	F	X	Y	X'	Y'	
SERIES 200AC and 2000A										
242A	2	4	11½	....	2¾	8⅞	10⅛	3¼	4½	20
253A	3	5	12½	....	2¼	9⅞	10⅝	3¾	4½	23½
263A	3	6	12½	....	2¼	10⅝	11⅜	4½	5¼	24
264A	4	6	15½	....	2⅛	11⅞	12⅝	4¾	5½	36
SERIES 300C										
341½	1½	4	7¾	1½	....	3¼	3⅞	....	....	7
342	2	4	7¾	1½	....	3¼	3⅞	....	....	7
352	2	5	9¼	1½	....	3¼	4	....	....	9
353	3	5	9¼	1½	....	3¼	4	....	....	9
363	3	6	9¼	1½	....	3¼	5⅛	....	....	10
364	4	6	10¼	1½	....	3¾	4½	....	....	11½

Also furnished with 7", 8" or 10" strainers.

Type	Dimensions in inches							Wt., lbs.
	A Outlet	B Strainer Size	B Strainer Type	C	X	Y		
SERIES 1400C								
1401½	1½	3⅜x4⅜	42K	9¼	3¾	4½		9
1402	2	3⅜x4⅜	42K	9¼	3¾	4½		9
1403	3	3⅜x4⅜	42K	9¼	3¾	4½		12
1404	4	3⅜x4⅜	42K	10¼	3¾	4½		12
1411½	1½	6¼x6½	43K	9¼	3¾	5½		12
1412	2	6¼x6½	43K	9¼	3¾	5½		12
1413	3	6¼x6½	43K	9¼	3¾	5½		12
1414	4	6¼x6½	43K	10¼	3¾	5½		14

See the Following Pages for Other Types of Floor, Shower and Urinal Drains

JOSAM DOUBLE DRAINAGE FLOOR DRAINS OR CESSPOOLS



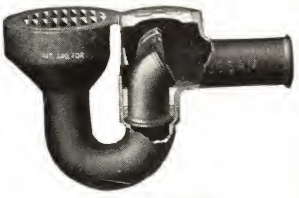
Series 510



Series 530A



Series 560AG
Series 660 — Same design but larger and heavier construction.



Series 750A
Series 750HF — Same but with double drainage flange.

SERIES 510

Especially recommended where shallow floors call for a drain with a low overall height.

Cast iron japanned body, anti-tilting grate.

SERIES 530A

Extra heavy type for floors requiring large drainage facilities and especially desirable where floor is subjected to heavy trucking. Supplementary strainer prevents clogging of waste line. Cast iron body, extra heavy anti-tilting grate.

SERIES 560AG

For use where a heavy duty drain with an easily removable sediment bucket is required.

This drain is of sufficient strength to withstand heavy trucking.

Heavy cast iron japanned body, anti-tilting grate, sediment bucket.

SERIES 750A

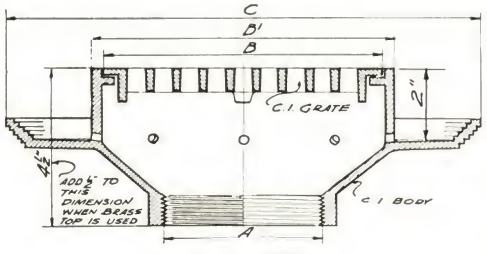
Recommended where combined drain and trap with back water valve is desired.

Cast iron japanned body, anti-tilting grate, angle type all brass back water valve.

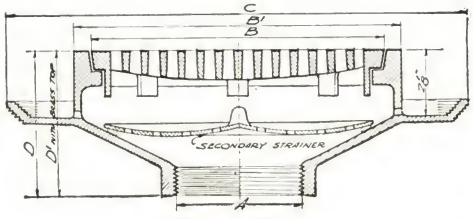
Type	Dimensions in inches								Weight, lbs.
	A	B	B′	C	D	D′	F	G	
SERIES 510									
512	2	8	8¾	13½	.....	.....	.....	.....	18
513	3	8	8¾	13½	.....	.....	.....	.....	18
514	4	8	8¾	13½	.....	.....	.....	.....	18
524	4	11	12⅜	17	.....	.....	.....	.....	40
525	5	11	12⅜	17	.....	.....	.....	.....	40
526	6	11	12⅜	17	.....	.....	.....	.....	40
SERIES 530A									
532A	2	10	11	15	5	5½	.....	.....	40
533A	3	10	11	15	5	5½	.....	.....	40
534A	4	10	11	15	5	5½	.....	.....	40
544A	4	14	15¼	19¼	5	5⅝	.....	.....	68
545A	5	14	15¼	19¼	5	5⅝	.....	.....	70
546A	6	14	15¼	19¼	5	5⅝	.....	.....	70
548A	8	14	15¼	19¼	5¼	5⅞	.....	.....	75
SERIES 560AG									
562AG	2	10	11	16	10	.....	.....	.....	59
563AG	3	10	11	16	10	.....	.....	.....	59
564AG	4	10	11	16	10	.....	.....	.....	59
SERIES 660									
664	4	14	15¼	21	13	.....	.....	.....	129
665	5	14	15¼	21	13	.....	.....	.....	129
666	6	14	15¼	21	13	.....	.....	.....	129
SERIES 750A									
752A	2	.....	.....	20¾	4¼	.....	4	4	40
753A	3	.....	.....	21¾	4	.....	5	5	52
754A	4	.....	.....	23¾	4½	.....	5	6	70

OPTIONAL

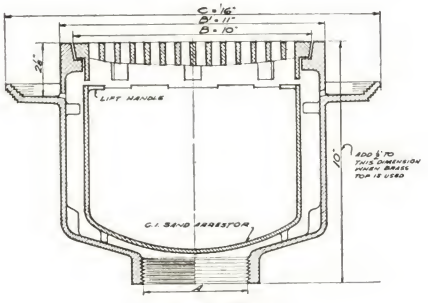
Galvanized iron or all brass body—brass, white metal or chrome plated top—threaded, inside caulk or spigot bottom outlet; threaded, hub or spigot side outlet, with or without flashing clamping device—spun copper ball back water valve in bottom outlet drains—angle type brass back water valve in 750 AF series.



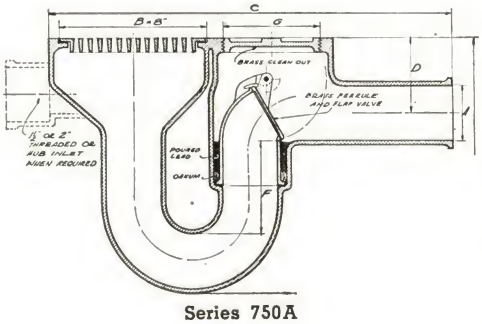
Series 510



Series 530A



Series 560AG



Series 750A

See the following pages for other types of floor drains

Josam PRODUCTS

GENERAL APPLICATIONS

•

SERIES
7000
1080
850A

Boiler Rooms
Coal Rooms
Ash Pits
Areaways
Basements
Driveways
Scale Pits
Elevator Pits
Large Kitchens
Cold Storage Rooms
Bottling Rooms
Courts
Operating Rooms

•

SERIES
1600

Gutters
Parapet Balconies
Terraces
in
Schools
Dairies
Laundries
Warehouses
Packing Houses
Public Buildings
Prisons
Institutions
Garages
Industrial Plants
Hospitals

JOSAM FLOOR, AREAWAY AND GUTTER DRAINS



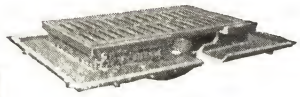
Series 7000



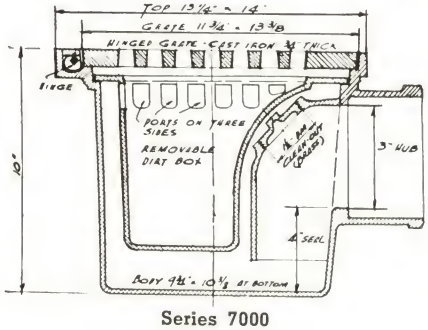
Series 1080



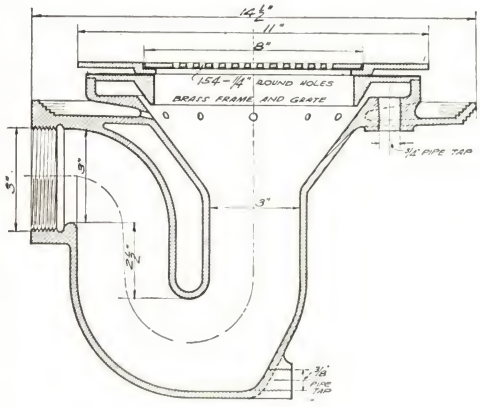
Series 850A



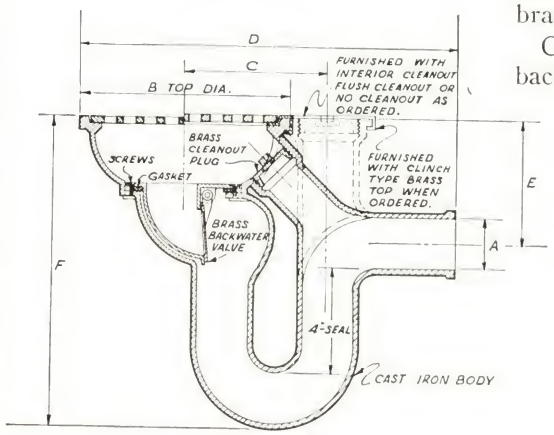
Series 1600



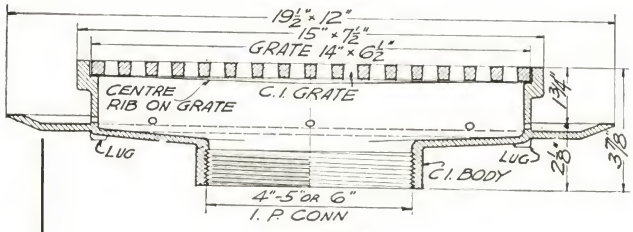
Series 7000



Series 1080



Series 850A



Series 1600

SERIES 7000

Shallow rugged construction, ample waterway, and large storage capacity for sediment.

The threaded brass cleanout in the trap leg above the water line affords easy cleaning of trap or waste line.

Heavy cast iron japanned body, removable sediment container, threaded brass cleanout, hub outlet, unless otherwise specified.

SERIES 1080

Flushing rim and baked white enamel interior, insure complete sanitation. Opening for jet is provided to permit trap to be easily flushed and cleaned. Trap is self-cleansing with no fouling spaces.

Cast iron japanned body with baked white enamel interior, polished brass top with special hinged, perforated, brass grate, recessed female threaded outlet, unless otherwise specified.

Vacuum breaker should be provided on supply lines to series 1080 and 1080A drains.

Series 1080A—Identical with series 1080 but without trap.

SERIES 850A

With exposed flush cleanout.

A recently designed combined drain and trap which provides a moderately priced unit of ample dimensions, rugged construction, and with a practical and positive removable all-brass back water valve and seat.

Cast iron japanned body and grate, spigot outlet, with brass backwater valve, unless otherwise specified.

Series 860A—With internal cleanout.

Series 870A—Without cleanout.

SERIES 1600

Heavy cast iron japanned body, anti-tilting rectangular grate, female threaded outlet, unless otherwise specified.

Type	Dimensions in inches A Outlet	Dimensions in inches B Grate	Weight lbs.
SERIES 7000			
7003	3	11¾x13⅜	60
7004	4	11¾x13⅜	60
SERIES 1080			
1082	2	8	53
1083	3	8	53
SERIES 1600			
1604	4	14x6½	33
1605	5	14x6½	34
1606	6	14x6½	35

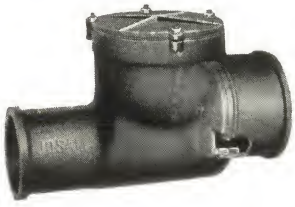
Type	Size, in.	Weight lbs.
SERIES 850A		
852A	2	25
853A	3	38
854A	4	52
SERIES 860A		
862A	2	25
863A	3	38
864A	4	52
SERIES 870A		
872A	2	25
873A	3	38
874A	4	52

See the following pages for other types of floor Drains

JOSAM OPEN SEAT BACKWATER SEWER VALVES

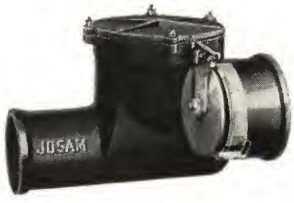
JOSAM BACKWATER SEWER VALVES PROTECT PROPERTY, EQUIPMENT AND MERCHANDISE

Floor drains and fixtures will act as open inlets rather than outlets, allowing water and sewage to enter basements and cause damage when there is excessive rain, tidewater or inadequate sewer carry-off. When this occurs, damage to property, equipment, and merchandise results . . . foundations are undermined, equipment is ruined, and merchandise destroyed. This can be eliminated by the installation of Josam Open Seat Backwater Sewer Valves at proper points in the main drain line and branches where floor drains and fixtures are installed in the basement.



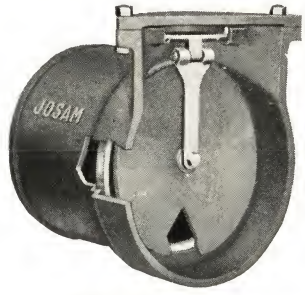
SERIES 1170
(Side Swing Flap)
With Iron Bolted Down Cleanout Cover. Sizes 2 to 30 in.

SERIES 1180
(Side Swing Flap)
With Brass Threaded Cleanout Cover. Sizes 2 to 8 in.



SERIES 1100
(Vertical Swing Flap)
With Iron Bolted Down Cleanout Cover. Sizes 2 to 30 in.

SERIES 1140
(Vertical Swing Flap)
With Brass Threaded Cleanout Cover. Sizes 2 to 8 in.



SERIES 1100½

When placed at the discharge end of sewer lines, the Josam Flap Valve is an absolute safeguard against back flow of sewage. Sizes 2 to 30 in.

GENERAL DESCRIPTION

Josam Backwater Sewer Valves are available with either vertical or side-swing brass flaps. The valve bodies for Josam Backwater Sewer Valves are the same for both the vertical and side-swing flaps. The valve body directly beyond the flap or disc is offset 1½ in. to 3½ in. below the valve seat depending on size of valve, which precludes the possibility of fouling the valve.

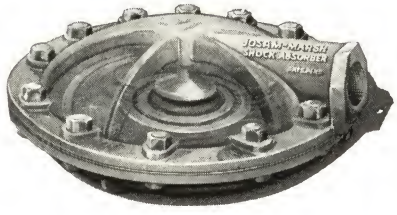
GENERAL CONSTRUCTION

Cast-iron japanned body, hub inlet and spigot outlet, bolted down cleanout cover 2 in. larger than outlet for easy accessibility, unless otherwise specified. Can be provided with hub connection for use with the tile sewer pipe, when so specified. Also furnished with machined faced and drilled flanged ends. To bring cleanout flush with floor level, extensions of variable heights are furnished at additional cost.

JOSAM SHOCK ABSORBER

Subdues Water Hammer—Relieves Strain—Prevents Breaks—Not an Air Chamber

Josam Shock Absorbers quiet water hammer and absorb thrust and vibration in water supply lines. It will accomplish permanently, without recharging with air, rewashing, adjusting or servicing, all that several air chambers of any type will do, in addition to fulfilling its own duty of Pipe Insurance.



Description

The component parts of the Josam Shock Absorber indicate the completion of extensive research and practical tests which have revolutionized obsolete methods of trying to quiet water hammer and insure permanency of plumbing water supply systems. Regularly tested to stand water pressure at 100 lbs. Furnished for higher pressures when so specified.

SUGGESTED LOCATION: Install Josam Shock Absorber at the end of all long runs, spaced approximately every 100 ft., and at top and bottom of Hot and Cold Water Risers.

Also at end of batteries of fixtures, or close to the individual fixture it is intended to serve. Can be installed at any angle.

SIZE REQUIRED: The Shock Absorber should be the same size as the pipe to which it is connected. When pipe size exceeds 2 in., more than one Shock Absorber should be installed.

Recommended Uses

For quieting water hammer in pipe lines, relieving strain and preventing damage to piping systems by absorbing and dispelling shocks arising from quick closing valves—faucets—closet flush valves—house pumps and appliances.

Type	Size	Diameter
M- ½	½	7½
M- ¾	¾	7½
M-1	1	9
M-1½	1½	11½
M-2	2	14½

Recommended Applications

For water pumping systems—sewage ejectors — closets in battery — water heaters — drinking fountains—self-closing hydrants—laundries—auto wash—overland oil lines—liquid pipe lines of any kind—automatic dish washers—swimming pool circulating pumps and concrete mixing machines.

Josam PRODUCTS

GENERAL APPLICATIONS

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SERIES
410S
460GS
450G

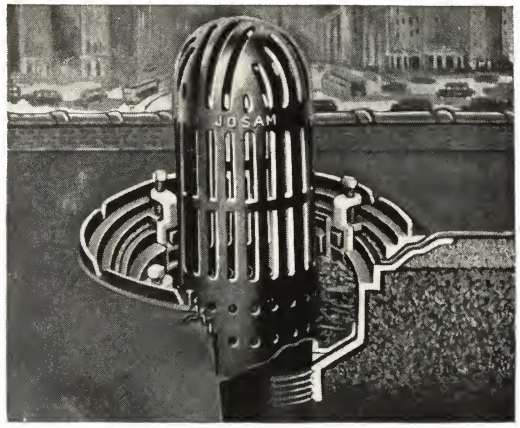
Flat Roof
of
Concrete
Cement
Cement Tile
Hollow Tile
Gypsum
Pre-Cast Slab
Wood
Composition

JOSAM ROOF DRAINS

FEATURES

The sediment cup or retainer is located below the roof level, thereby providing for the accumulation of sediment and other debris in the retaining space and permitting and providing for the outlet of water at a much greater flow than any other design.

The dome strainer and sediment cup has an outlet area considerably greater than the outlet area of the pipe line to which it is connected.



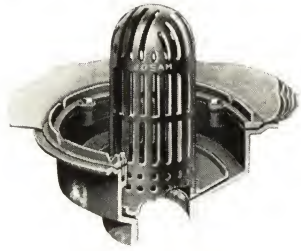
Removing the sediment cup and strainer does not interfere with the clamping ring and the watertight connection with the roofing. The clamping devices used on Josam roof drains are Josam designs and provide a positive unperforated water-tight leak-proof connection.



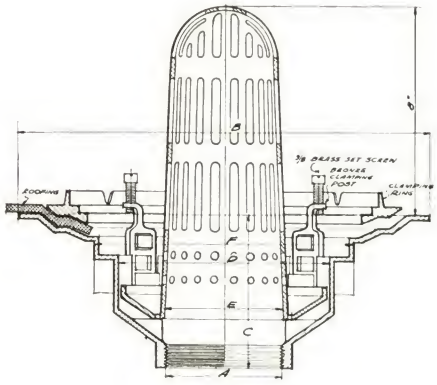
Series 410S



Series 450G



Series 460GS



Series 410S

Roof Drains shown on this page can also be furnished promenade type

Type	Dimensions in inches						Weight, lbs.
	A	B	C	D	E	F	
SERIES 410S							
412S	2	16	6	8 3/8	5	10 1/4	38
413S	3	16	6	8 3/8	5	10 1/4	38
414S	4	16	6	8 3/8	5	10 1/4	38
415S	5	17 1/4	6	9 3/8	5 1/2	11 3/8	48
416S	6	18 1/4	6	10 3/8	6 1/2	12 1/4	56
418S	8	20 1/8	7	12 1/4	8 1/2	14 1/2	70

SERIES 450G				SERIES 460GS			
Type	Outlet	Top	Weight	Type	Outlet	Top	Weight
452G	2"	8"	13 lbs.	462GS	2"	12"	30 lbs.
453G	3"	8"	13 lbs.	463GS	3"	12"	30 lbs.
454G	4"	8"	13 lbs.	464GS	4"	12"	30 lbs.
455G	5"	8"	14 lbs.	465GS	5"	12"	30 lbs.

SERIES 410S

The large body diameter and height of the removable combined dome strainer and sediment cup, assures ample drainage area both above and below the roof line. The improved type gravel stop clamping ring holds the roofing felts to the drain body by means of four heavy bronze adjustable clamping posts.

Heavy cast iron japanned body, combined dome strainer and sediment cup, female threaded outlet, unless otherwise specified.

SERIES 460GS

A recently developed roof drain moderately priced, having the removable combined dome strainer and sediment cup feature and clamping ring.

Heavy cast iron japanned body and dome strainer, female threaded outlet, unless otherwise specified.

SERIES 450G

For use in formed and lined valleys or gutters not less than 8 in. in width. The metal or other lining of the valley or gutter, or the roofing material is held firmly in place, without perforation, by the clamping ring which is fastened by three brass bolts, making a water-tight connection between roofing material and drain.

Cast iron japanned body, removable dome strainer, female threaded outlet, unless otherwise specified.

OPTIONAL

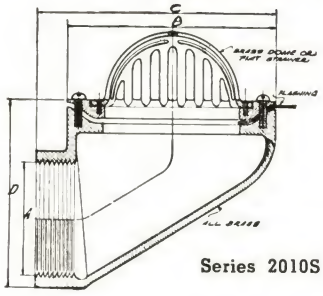
Galvanized; all brass; brass dome; square top flange; female threaded, inside caulk or spigot bottom outlet; threaded hub or spigot side outlet.

See the Following Pages for Other Types of Roof Drains

JOSAM ROOF DRAINS



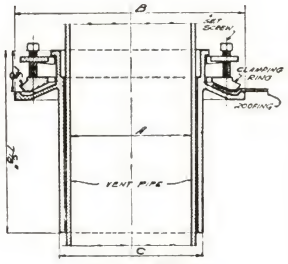
Series 2010S



Series 2010S



Series 610A



Series 610A

JOSAM ALL-BRASS CORNICE, BALCONY OR SILL DRAIN

SERIES 2010S

For draining overhanging cornices, small balconies and similar areas in order to prevent drip to lower portions of building structure. Collar acts as clamping ring holding flashing securely in place. All brass, shallow type body, 45° or 90° off vertical. Also furnished with flat or beehive strainer.

JOSAM VENT STACK SLEEVE

SERIES 610A

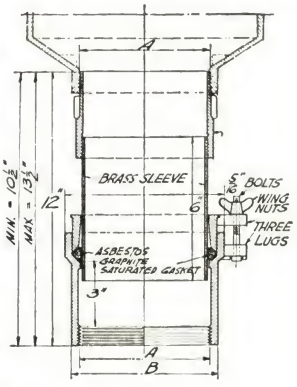
For use in flat roofs where a watertight connection between vent stack and roof is desired. The clamping ring securely holds the roofing felts in place. Space between vent pipe and sleeve should be filled with roofers elastic cement or oakum and poured lead joint, thereby making a watertight joint between sleeve and pipe.

Also for use in supporting base of flag pole.

Cast iron japanned body, clamping ring and pressure ring with brass set screws, unless otherwise specified.

JOSAM EXPANSION JOINT





Series 6000—Expansion Joint

SERIES 6000

For use with any Josam Drain, in any line where there is expansion and contraction. The heavy gauge brass sleeve has a smooth non-corrosive surface working freely against a graphite saturated, round, braided asbestos packing ring. The ring is held in place by means of a gland ring which is tightened by three wing nuts, thereby assuring a watertight and airtight joint.

Heavy cast iron japanned body and ring, brass sleeve, male threaded top and female threaded bottom, unless specified with hub top and spigot bottom.

Type	Dimensions in inches A	B	C	D	Wt., lbs.
SERIES 2010S					
	Outlet	Strainer			
2012S	2	4⅜	5	4	5
2013S	3	5¾	6⅜	5	7½
2014S	4	5¾	6⅜	6	9½
SERIES 610A					
	Vent pi				
611½ A	1½	6	2¾	.....	8
612 A	2	6¾	3¼	.....	9
612½ A	2½	7	3¾	.....	10
613 A	3	7½	4¼	.....	11
614 A	4	8¾	5¼	.....	15
615 A	5	9¾	6¼	.....	20
616 A	6	10¾	7¼	.....	22
618 A	8	1	9½	.....	24
SERIES 6000					
	Pipe diam.				
6002	2	3⅛	3⅝	.....	7
6003	3	4⅛	4⅝	.....	12
6004	4	5⅛	5⅝	.....	15
6005	5	6⅛	6⅝	.....	18
6006	6	7⅛	7⅝	.....	20
6008	8	9½	9⅝	.....	32

JOSAM ROOF DRAIN WITH INTEGRAL EXPANSION JOINT

SERIES 410SEJ

All movable parts are accessible from inside the roof drain from roof level, by simply removing the dome.

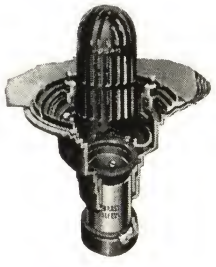
This is a feature which is entirely new and does not exist on any other make of expansion joint or roof drain.

It prevents expansion joint from being buried in wall or other inaccessible places.

The vertical space for installation of a combined unit is less than for roof drain and separate expansion joint.

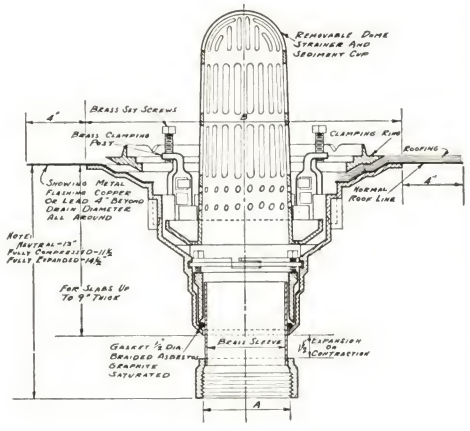
The design of drain body, clamping ring and dome is identical to Josam Series 410S roof drain.

Regularly furnished cast iron drain body, dome and clamping ring with brass clamping posts. Integral expansion joint with brass sleeve, cast iron gland ring and locking ring, brass compression screws, asbestos gasket, female threaded outlet. Spigot outlet when so specified.



Series 410SEJ

Type	Dimensions in inches A Outlet	B Strainer	Weight, lbs.
SERIES 410SEJ			
412SEJ	2	16	46
413SEJ	3	16	54
414SEJ	4	16	57
415SEJ	5	17¼	66
416SEJ	6	18¼	75
418SEJ	8	20⅛	95



Series 410SEJ
Also Series 420SPEJ—With Promenade Top

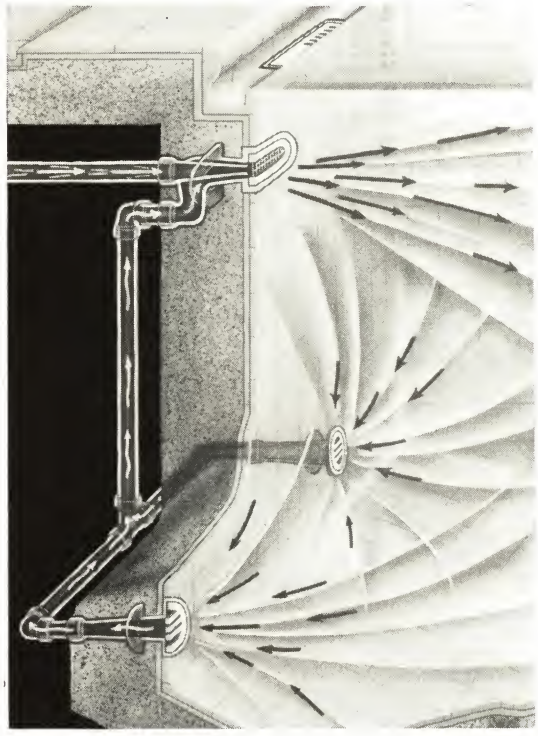
GENERAL APPLICATIONS

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Swimming and Wading Pools in Schools Colleges Clubs Hotels Institutions Residences Parks

JOSAM SWIMMING POOL EQUIPMENT

EJECTOR AND INLET CONNECTIONS



Believing that proper and adequate circulation of swimming pool water is most essential to the sanitation of that pool, the JOSAM MANUFACTURING COMPANY have developed a novel type of Ejector and Inlet Connection, which in combination with each other provide approximately 90% circulation — where previously a 25% to 40% circulation was considered very good. This unit consists of an Ejector, which by virtue of created syphonic action built up in it by the pressure line, attracts up to 20% from the pool, through the inlets, causing continuous circulation which is in line with the Sanitary and Health Codes governing the operation of swimming pools. This scheme of circulation eliminates what previously were portions of the pool which never circulated—and in consequence were absolute "dead spots."

Residual in these dead spots were either high or low, depending upon the closeness of the supply to these particular spots. With the Josam Ejector and Inlets, residual is considerably more constant throughout the pool and in consequence cleanliness and purity of pool water is advanced to a higher plane.

All brass or cast iron or galvanized cast iron bodies in 1 x 1½ x 2½ in. size connections. These units can be placed in sidewalls of pool or in bottom—depending upon the shape, size and nature of the pool and the requirements of turnover.

JOSAM SCUM GUTTER DRAINS



Series 2200E

All brass drain for minimum size swimming pools. Rectangular in shape with 1½, 2, 2½ or 3 in. outlets. 1½ and 2 in. size outlets have 3¾ x 2¼ in. top. 2½ and 3 in. outlets have 5⅜ x 2½ in. top.



Series 2290E

All brass drain for narrow gutters, concave strainer. Top dimension is 9 x 1½ in. with either 1½ or 2 in. outlet.



Series 2250E

For use in large pools. Cast iron body and brass strainer. Top dimension with 2, 2½ or 3 in. outlet.



Series 2280

All brass drain for gutters exceeding 3 in. in width.

This particular unit is also provided with flange for fastening waterproofing membrane. Specify 2280-F when flange is required. Top dimension 9 x 3 in. with 1½, 2 or 3 in. outlet.

All Josam Scum Gutter Drains have slots paralleling the direction of flow into scum gutter. All Josam Scum Gutter Drains are female lapped outlet, but can be provided with spigot outlet when so required.

JOSAM SWIMMING POOL EQUIPMENT (Continued)

MAIN OUTLET DRAINS

The Josam Main Outlet Drains provide adequate free grate area and large interior of drain body to assure slow velocity of water from pool and to prevent the possibility of suction at main outlet location.

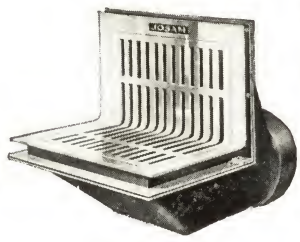
Series 1580

For large pools, Josam Series 1580 Main Outlet Drains (not illustrated) offers a sectional idea of main outlet which assures slow velocity of outgoing water and screened top, which is a help towards maintaining quick movement of water through filters.

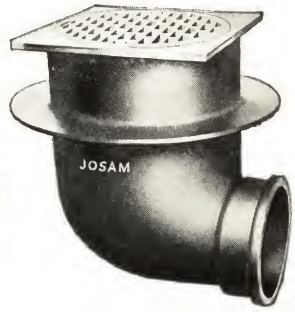
Units are 30 in. long by 24 in. wide and any number required can be arranged in single or combined units.



Series 5805



Series 1200



Series 590M

Series 5805

This unit, for medium or small pools, provides a minimum size drain for bottom outlet pools. Square top aligns with tile joints.

Made in 2, 3 or 4 in. bottom outlet, with or without clamping device. 8x8 in. grate with 10x10 in. top.

Series 1200

This reversible angle type main outlet drain provides either vertical or horizontal outlet, depending upon piping condition of pool. Designed so that in the event of horizontal face becoming clogged, the vertical face will provide ample drainage. 4, 5 or 6 in. outlet, each face 10x6 in.

Series 590M

For large drains, this vent provides large interior area, combined with ample waterway through grate. Used single or in multiples, this drain assures definite slow velocity of out-going water.

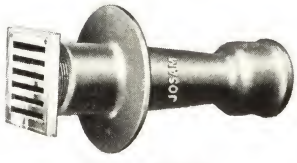
4, 5 or 6 in. outlet with 11 in. grate. 8 or 10 in. outlet with 14 in. grate.

Any of the units described above can be furnished with cast iron japanned or galvanized bodies; with brass tops, either nickel-plated, polished brass or chromium-plate; and in female lapped, inside caulk or hub outlet.

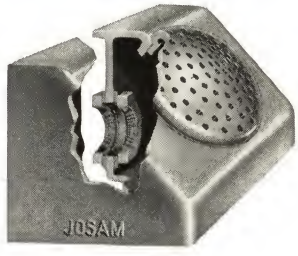


Series 320CF

ADDITIONAL TYPES SWIMMING POOL INLETS



Series 2240H



Series 2150 (Angle)
Series 2100 (Straight)
Spray Head



Series 2230FY

Series 320CF

This unit provides an inlet connection with fan shaped discharge which can be set to provide the incoming water at any desired angle.

Made in 1½, 2, 3 or 4 in. connection size and with provision for waterproofing attachment when desired.

Series 2240H

For use as overflow or inlet connection.

Adjustable square strainer provides for the variation in wall construction. Made with 4x4 in., 5x5 in. and 6x6 in. strainer with 2, 3, or 4 in. connection. Anchor flange for use in masonry or for the attaching of waterproofing membrane is provided.

Series 2230FY

This all-brass connection has a 45° inlet from the supply and is used as inlet or underwater supply for the movement of top layer of water toward scum gutters.

Face plate is 1x1½ in. and is procurable in 1½ or 2 in. connection size.

Series 2150 (Angle) Series 2100 (Straight) Spray Head

This unit provides a spray nozzle for use as ornamental supply to pool. The unit is obtainable in two designs, namely vertical or angular types. All brass construction. 2 in. connection. The diffused spray obtainable does not affect the eyes or ears of bathers.

VACUUM CONNECTIONS



Series 310CV

Designed for installation in walls of pool with provision for water-proofing attachment.

For any type of connection in 1½, 2, 3 and 4 in. outlet and with 1½ or 2 in. connection size.



Hair Inceptor with Blow-out Connection

JOSAM HAIR INTERCEPTOR for Swimming Pools Types H and H.H.

Particularly adaptable as hair catcher on swimming pools but also for use on any pressure line to pumps, floats, filters, water softeners for the interception of hair, lint, gravel and other solids; preventing their entry into the equipment and thus saving possible damage.

Heavy cast iron body with gasket tight cover. Bronze screens and blow-out connection.

The blow-out connection assists in cleaning as it is not necessary to shut down equipment for this temporary relief.

Made in 2, 3, 4, 5, and 6 in. size Type H and in 8 or 10 in. size Type H.H.

In addition to the above we manufacture lane markers, over-flows, ladders, adjustable inlet connections—angles, scum gutter drainer and similar swimming pool equipment. Consult the Engineering Department at Cleveland for assistance in pool layouts and the application of Josam Swimming Pool Equipment or write for your copy of A Treatise on Swimming Pool Design.

JOSAM GREASE INTERCEPTORS

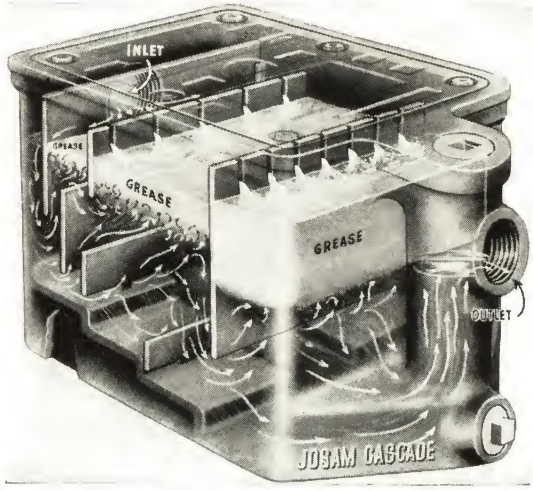
NEW SERIES "J" CASCADE DESIGN

With or Without Air Relief—Non-Water Cooled

NEW HYDRAULIC PROCESS

95% EFFICIENCY

SOLIDS EVACUATION



CENTRALIZED GREASE RETENTION

CASCADE DESIGN

FLUSH COVER

NON-SYPHONING WHEN REGULARLY VENTED OR WITH INTEGRAL AIR RELIEF

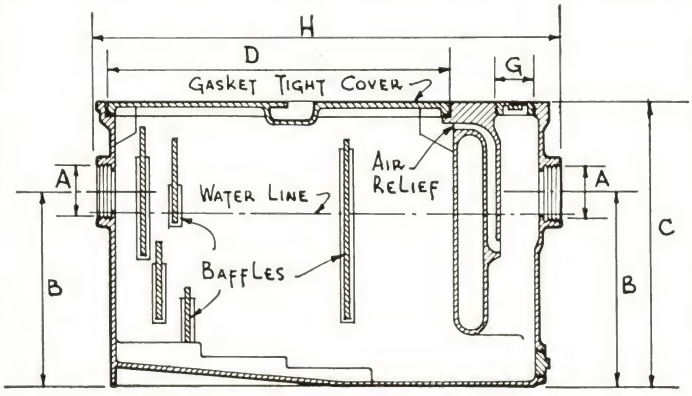
Josam new "J" Series provide a positive means for removing grease, fat and oil from all types of drainage systems

Distinctly New in Principle of Design and Function

After years of intensive research, tests and various applications of grease interceptors to present day uses, the JOSAM MANUFACTURING COMPANY are now offering the new "J" Series Grease Interceptor which assures high efficiency of grease interception and retention, due to the method of baffling and positioning of all interior units—together with the time element which is closely related to the functioning of the interceptor during its operating periods.

In the routing of the grease laden water, all of the necessary features of interception and retention of grease from the water have been thoroughly engineered, so that while evacuation of solids is taking place, the necessary features of interception and retention are fully accomplished.

The body is of rectangular shape with gasket tight cover. The bottom which is most important is of Cascade design, which by actual tests has proven the best possible contour to assist the separation of grease from water. By the Cascade design bottom, the grease globules are virtually raised to an elevated position within the interceptor and at once are protected from being attracted to the waste line.



Space has been designed in the Cascade Type Grease Interceptor to allow for case of surge during operating periods, which thereby provides ease of separation as the turbulent area is lessened in proportion to the quieted area above normal liquid line.

Full apron design. Full area for cleaning when cover is removed.

This unit can also be provided for use on dishwashing machines.

The flush cover provides a unit which can be set in floor without creating the hazard of any obstruction above floor line.

All Dimensions in Inches

	Size	Flow Gals. Per Hr.	Josam "J" Series A	B	C	D	Inside Wth.	Outside Wth.	G	H	Wt., Lbs.
Visible Double Wall Seal	J-00	175	1½-2	6¼	10	11	8	9½	1	16	40
	J-0	300	1½-2	8⅜	12	13	10	11¾	1	17⅞	52
	J-1	600	2	9½	14	15	10½	12⅜	1½	19⅜	85
	J-2	800	2	11	16¾	18	13	15	2	25⅝	195
	J-3	1,000	2-3	12	17⅜	21	15	17	2	28⅝	260
	J-4	1,500	3-4	13	17¾	27	19	21	2	35	360
	J-5	2,500	4-5	14	18¾	30	21	23	2½	38½	465
			Josam "A" Series								
Internal Seal	A-15½	3,500	4-5	24½	33½	37	27½	29½	2	46½	710
	A-25½	4,000	6	23	32¾	42¼	30¼	32¾	2½	57¼	825
	A-50½	9,000	7	30½	40	45⅝	39⅞	41⅞	3	55⅜	1650
	A-75½	15,000	7	36	48	69½	52	54	3	84½	3500
	A-150½	30,000	8	42½	54½	102½	71	73	10	110½	6500

Any of the above units can be arranged for the addition of angles on sides for use as masonry supports when Interceptor is to be located on floor.

Recommended Sizes

Type J-0 and J-00—For small kitchen sinks in residences and kitchenette apartments.

Type J-1—For kitchen sinks in residences, restaurants, apartments, diet sinks in hospitals.

Type J-2—For moderate size residence sinks, restaurants, hotels, electric dishwashers, diet sinks, small combination dish and pot sinks.

Type J-3—For large residence sinks, restaurants, hotels, electric dishwashers, small combination dish and pot sinks.

Type J-4—For restaurants, electric dishwashers and large pot sinks.

Type J-5—For large dishwashers, restaurants, batteries of two to four slop or pot sinks, combination of dishwashers, pot sinks and stock kettles, when outlet runs to central point.

Type A-15—For large dishwashers and central unit for packing houses, hotels, hospitals, etc.

Type A-25 and Type A-50—For entire kitchen in hotels, hospitals, and large restaurants where one large interceptor is to be used at a centralized point.

Type A-75 and Type A-150—For specialized industries where exceptionally large capacities are required.

Josam PRODUCTS

GENERAL APPLICATIONS

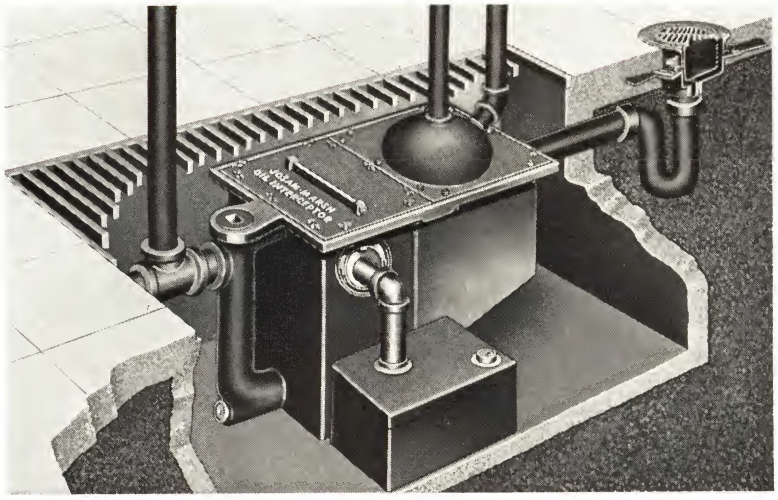
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Wash Racks
Driveways
Boiler Rooms
Ash Pits
Large Floor Areas
Ramps

in

Garages
Industrial Plants
Oil Refineries
Packing Plants
Warehouses
Machine Shops
Cleaning and Dyeing Plants
Filling and Bulk Stations
Fleet Truck Garages
Public Buildings

JOSAM OIL INTERCEPTORS

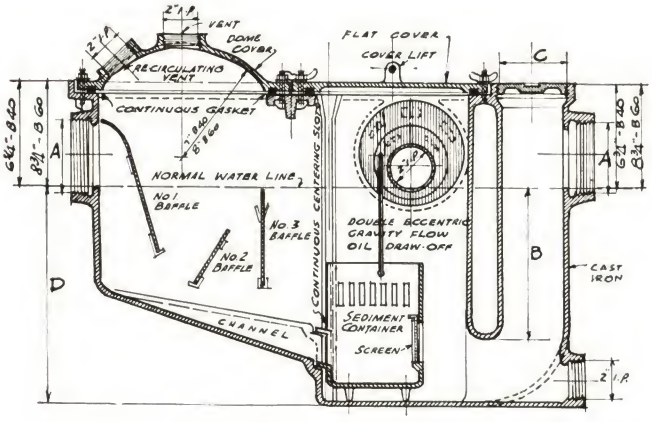


Above illustration shows Oil Interceptor located in pit in basement of large garage, taking the drainage from all drains throughout the building and intercepting oil and discharging it to container adjacent and passing clear water through to sewer.

Automatically Intercepts and Discharges Oil, Gasoline, Naphtha, Etc., from Drainage

Operation of Interceptor

In the interceptor, the incoming drainage is directed against a series of baffles which separate the oil, gasoline, naphtha, etc., from the drainage passing through. These intercepted liquids do not remain in the interceptor but are immediately discharged through the automatic, gravity flow oil draw-off, to a container or storage tank. The draw-off, by reason of its design, can be set for each individual installation. The setting or adjusting depends upon various conditions of the particular installation, such as the size of the interceptor and the amount of drainage passing through in a given period. The container or storage tank placed somewhere in the vicinity of the interceptor receives the accumulating oils and other liquids safely, for the reason that the discharge of the accumulating oils and other liquids has been automatic.



General Construction

The Josam Oil Interceptor is made of heavy cast iron in various sizes to meet the needs of any type of building. Its scientific design and construction effects separation of practically all of the oil, gasoline, naphtha, etc., from drainage passing through drain pipes.

Type	Dimensions in inches							Wght., lbs.
	A Inlet and outlet	B Seal	C Clean-out	D	F Width	F Length	G Height	
B-42	2	9½	4	14	18	32	21	185
B-43	3	9½	4	14	18	32	21	185
B-44	4	9½	4	14	18	32	21	185
B-64	4	14½	6	21	24	42	30	325
B-65	5	14½	6	21	24	42	30	325
B-66	6	14½	6	21	24	42	30	325

JOSAM GARAGE AND INDUSTRIAL TYPE DRAINS

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SERIES
900G
6200
6100



Series 900G

Either of These Drains Are Recommended for Wash Racks, Driveways, Boiler Rooms, Ash Pits, Ramps, and Large Floor Areas



Series 6200

HEAVY DUTY TYPE SERIES 900G

For floors of various thicknesses where there is a large volume of waste water containing heavy deposits of foreign matter which should be prevented from entering waste lines. Gas seal cone is recommended where water carries gasoline, oil and other volatile matter which tend to gasify in drain or sewer. Heavy iron body and grate, sediment retainer, gas seal cone and threaded brass cleanout. Also furnished with backwater valve.

HEAVY DUTY TYPE SERIES 6200

Where floors are subject to heavy drainage and where trucking over drain will be encountered. To prevent clogging of drain lines by oil, grease, and sediment. Provides protection against fire and explosion from accumulated volatile liquids, such as gasoline, kerosene, benzine, etc. Explosive vapors are quickly carried off by local vent and accumulated sediment and oils can be easily removed at proper intervals.

SERIES 6100

Drain is similar in design to Series 6200 but drain is with side outlet, and without trap or cleanout.

Josam PRODUCTS

GENERAL APPLICATIONS

- Plaster Sinks
- Dental and Surgical Sinks
- Operating Room Sinks
- Lavatories

in

- Hospitals
- Beauty Parlors
- Barber Shops
- Laboratories
- Dental Offices
- Residences
- Hotels

SERIES 0320

Ramp Drain in Areas Entries and Driveways

SERIES 8800

Bridge Highway and Viaduct Construction

JOSAM INTERCEPTORS

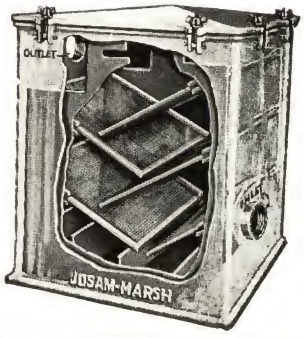
For Hospital Plaster Sinks

TYPE C-1

For the removal from waste water of all Plaster of Paris, either solid or in a state of suspension, cotton, lint, hair or any other foreign matter which waste water may contain.

The water enters through the inlet pipe, is baffled and carried over the vertical plates and then passes through the fine mesh screens where the process of filtration takes place.

The Interceptor is absolutely non-siphoning and easily accessible for cleaning, as the cage and screens can be readily taken out by simply removing gasket tight cover.



General Construction

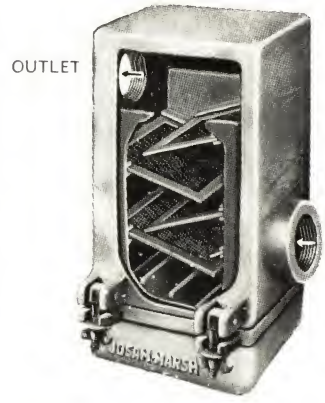
Heavy grey cast iron body with white porcelain enamel exterior, chromium plated clamps, cage is heavy galvanized material, brass screens, female threaded inlet and outlet. Seal 7½ in.

Type	Dimensions in inches				Weight, lbs.
	Inlet	Outlet	Top	Height	
C-1	2	2	14x14	16	240

For Dental and Surgical Sinks

TYPE C-2

For use in connection with Dental, Surgical and Operating Room Sinks, Barber Shops and Beauty Parlor Sinks, for the removal from waste water of all solids, plaster, metals, cotton, lint, hair, etc. Cage is easily removed for cleaning. Interceptor is absolutely non-siphoning.



General Construction

Polished aluminum body, aluminum cage, brass screens, female threaded inlet and outlet. Seal 3½ in.

Type	Dimensions in inches				Weight, lbs.
	Inlet	Outlet	Top	Height	
C-2	1½	1½	5x5	10½	8

JOSAM SEDIMENT AND HAIR INTERCEPTORS

For use in connection with lavatories in barber shops, beauty parlors, residences, hotels, hospitals, and wherever waste waters contain hair and foreign matter which should be prevented from entering waste lines. Removable plug on bottom permits ready access to brass filter screen. Absolutely non-siphoning.

With Visible Double Wall Seal

TYPE D-4



With Visible Double Wall Seal and Swing Outlet

TYPE D-5

Types D-4 and D-5 permitted in all localities.

Type D-3 with internal wall seal permitted in certain localities.



General Construction

Type D-4 and D-3—Cast brass nickel plated body, brass removable screen and cleanout plug, 2 in. seal, female threaded outlet, inlet tapped for 1¼ in. O.D. brass tubing. Inlet also furnished for 1½ in. tubing, when so specified.

Type D-5—Identical except 7 in. seal and 1½ in. top swing joint outlet connection with ground joint fitting, permitting direct connection to waste line without bends or fittings.

Type	Dimensions in inches				Weight, lbs.
	Inlet	Outlet	Top dia.	Height	
D-4	1¼	1½	3¾	6½	6
D-4A	1½	1½	3¾	6½	6
D-5	1¼	1½	3¾	10	7½
D-5A	1½	1½	3¾	10	7½
D-3	1¼	1½	3¾	6½	6
D-3A	1½	1½	3¾	6½	6

JOSAM RAMP DRAIN



Series 0320

Series 0320

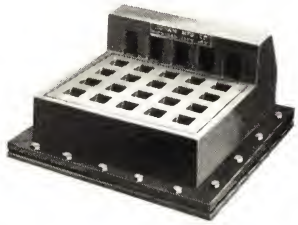
Recommended for quick carry-off of large volume of surface water. Grate is sufficiently strong to provide for heavy trucking over drain. Drain is furnished in units 2 ft. 6 in. long and 12 in. wide in any required number of units. Furnished in 4 in., 5 in. or 6 in. outlet. Outlet unit can be provided with or without sediment bucket.

All cast iron or cast iron with brass frame and grate.

JOSAM VIADUCT DRAIN

Series 8800

Recommended for highway, bridge or viaduct construction where curbing is used and where drain must provide for ample waterway and also to withstand heavy trucking. All cast iron with clamping flange, weep holes and clamping device.



Removable grate and large are interior of drain.

Furnished in 4, 5 and 6 in. outlet.

ADJUSTABLE WALL CLOSET SUPPORTS AND DRAINAGE FITTINGS

For Threaded or Lead Connections

- **Rigid Construction Assures Permanent Installation**
- **Eliminates Buried Piping, Pipe Tunnels**



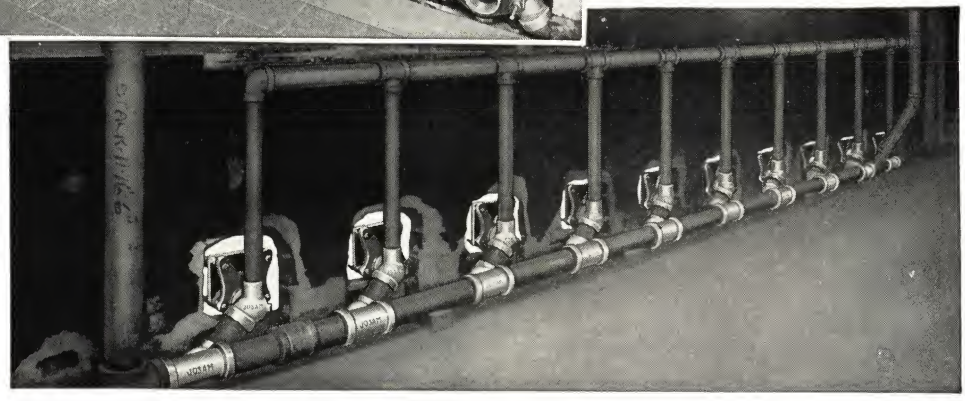
EXCLUSIVE ADVANTAGES

- Adjustable yoke directly supports fixture, independent of wall construction. Pottery cannot be stressed or broken.
- Eccentric sleeves accurately center fixture outlet with outlet nipple by just "rolling" fittings.
- Adjustable brass nipple avoids excessive pressure upon gasket and fixture outlet.
- Adjustable leg provides means of removing slack in fixture support and piping.
- Patented 45 degree double HY fittings, an exclusive Josam feature, afford *unlimited latitude* when erecting single or double batteries and assure quick, efficient drainage.



- **Practical and Flexible**

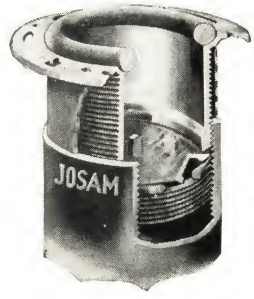
Battery of Toilets showing fixtures in position.



Rear View of Above Battery, Indicating Simplicity of Piping Arrangement.

JOSAM ADJUSTABLE CLOSET OUTLET CONNECTIONS

Water-tight—Gas-tight—Adjustable—Permanent Sanitary—Eliminate Plastic Joints



Josam Adjustable Closet Outlet Connections provide all necessary facilities for properly installing water closets and insuring a permanent, water-tight and gas-tight seal by means of approved asbestos gaskets, eliminating the use of plastic materials.

Josam PRODUCTS

JOSAM MANUFACTURING COMPANY

ESTABLISHED 1914

Administrative Headquarters, Main Sales Office, Architectural and Engineering Service Division, Empire Building, Cleveland, Ohio, U. S. A.

Foundry and Factory, Michigan City, Indiana; Warehouses at Cleveland, New York City and San Francisco

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Branch Warehouse, Union Terminal, Los Angeles, Calif.

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Empire Brass Mfg. Co., Ltd.

Headquarters, London, Ontario
Branches Throughout the Dominion

THERE ARE NO SUBSTITUTES FOR JOSAM PRODUCTS

THE R. C. MAHON COMPANY

Manufacturers of Cast Iron Roof Sumps

8650 Mt. Elliott Ave., DETROIT, MICH.

REPRESENTATIVES IN ALL PRINCIPAL CITIES

Product

MAHON CAST IRON ROOF SUMPS.

For Mahon Steel Roof Decks, Kalamein and Tin Clad Doors, and Rolling Steel Doors, see File Index.

Mahon Cast Iron Roof Sumps

The Mahon Cast Iron Roof Sump has been designed for absolute weathertightness, permanence, and greatest ease of installation. It is the result of many years of roofing experience, and is thoroughly practical to meet the need for a permanent, economical roof drain.

Manufactured in durable cast iron, the Mahon Sump is free from springs, bolts or loose rings and requires no elastic cement or solder for installation. The dome strainer locks in place by a simple turn and may be easily removed without disturbing either the sump or surrounding roofing. The sump bowl is fitted permanently into the roof deck and a copper apron, furnished with or without gravel stop, is calked into a raglet in the sump casting provided for the purpose. When used on gravel top roofs this gravel stop and the extremely narrow openings in the side of the dome strainer, provide a double protection for the drain.

Connection to conductor pipe is made by means of a threaded joint which is a standard pipe thread and makes a perfect watertight connection.



Mahon Cast Iron Roof Sump

Mahon Sumps never cause water to back up or lie on the roof —the strainer openings being equal to three times the area of the conductor pipe for which the sump is tapped.

Mahon Cast Iron Sumps may be furnished tapped to fit 3, 4, 5 or 6-in. standard wrought iron pipe thread. Quantity production on this product permits an unusually low price.

Outstanding Features

(1) Sump is available tapped to fit either 3, 4, 5 or 6-in. standard wrought iron pipe. If cast iron conductors are used, a short piece of wrought iron pipe is screwed into the sump and calked into the hub of the cast iron pipe.

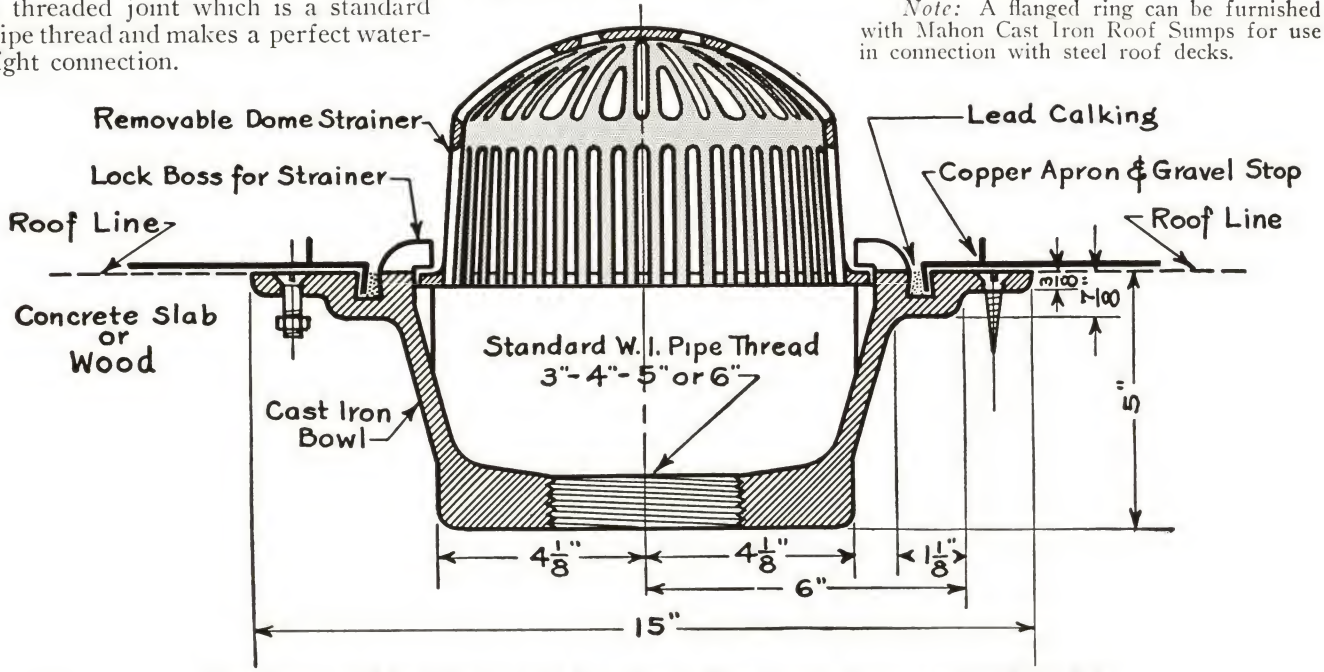
(2) A 16-oz. copper apron, with or without gravel stop, is furnished to be calked into a circular raglet in the sump bowl with lead, thereby making a perfect watertight connection with roofing material.

(3) Dome strainer may be removed without disturbing sump bowl or surrounding roofing.

A simple turn engages four cast iron lugs which lock the dome strainer securely in place.

(4) Openings in dome strainer are equal to three times the area of the conductor pipe, insuring full capacity of the drain at all times.

Note: A flanged ring can be furnished with Mahon Cast Iron Roof Sumps for use in connection with steel roof decks.



Cross Section of Mahon Cast Iron Roof Sump Showing Dome Locking Feature and Installation Data

J. A. ZURN MFG. CO.

Plumbing Drainage for All Building Requirements

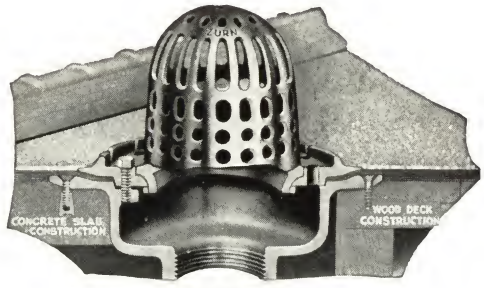
ERIE, PA.

SALES OFFICES IN ALL PRINCIPAL CITIES

ROOF DRAINS



Fig. Z-100



Installation Detail

Dome at roof level eliminates dirt accumulation and clogging. Drain Dome is held firm and secure with a bayonet type locking device which permits easy removal and replacement. Excess inlets provide for rapid drainage when water flow exceeds capacity of roof level inlet.

Function—Normal water flow is through roof level inlets in gravel guard, representing primary drainage. When water flow exceeds capacity of these inlets, it rises to auxiliary drainage in dome which is designed for ample inlet capacity over outlet.

Clamping Device—Four heavy brass bolts secure directly to drain body. Clamping surfaces broad and plane, eliminating bending and cracking of roof felts. Integral gravel guard and primary drainage form part of clamping collar.

Dome—Dome held firm with bayonet type locking device—easily removable for cleaning. Ample inlet area eliminating clogging.

Roof Fastening—Simple and secure by means of countersunk holes in drain body to provide anchorage to roof construction. All screws or bolts beneath flashing.

Tar Exclusion—By cutting felts to butt edge of drain and securing top plies only, under clamping collar, movement of tar into drain is virtually eliminated.

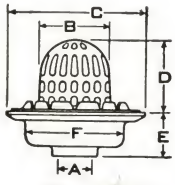


Fig. Z-100

Z-100 Roof Drain

Zurn Z-100 Roof Drain is recommended for flat roofs and gutters of wood, cement, steel, pre-cast slab and other composition.

Supplied in Dura-coated cast iron, galvanized or bronze bodies, domes and clamping collars, heavy brass clamping bolts, threaded or caulk outlets.

DIMENSION CHART							LIST PRICES		
A Pipe size	B in.	C in.	D in.	E in.	F in.	Wt. lbs.	Coated (DC)	Galv. (G)	All bronze (BR)
2-3-4	8	16	8	5¼	11½	40	$16.00	$21.50	$40.00
5	8	16	8	5¼	11½	42	19.50	25.00	49.00
6	8	16	8	5¼	11½	48	21.50	27.00	54.00
8	8	16	8	5¼	11½	54	30.00	39.50	71.50

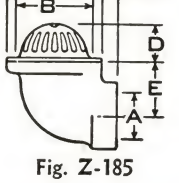


Fig. Z-185

Z-185 Cornice Drain

Zurn Cornice Drain, Z-185, is recommended for cornices, balconies, porches, window sills and other roof locations where conditions require positive seepage control. This type drain is furnished in Dura-coated iron galvanized or bronze bodies, dome strainers; clamping collors of polished bronze; outlets threaded.

DIMENSION CHART							LIST PRICES		
A Pipe size	B in.	C in.	D in.	E in.	F in.	Wt. lbs.	Coated (DC)	Galv. (G)	All bronze (BR)
2	3⅜	4½	1½	2½	½	5	$ 6.00	$ 7.00	$ 8.00
3	4¾	6	2	3	½	7½	7.50	9.00	11.00
4	4¾	6	2	3	½	9	9.00	11.00	13.00

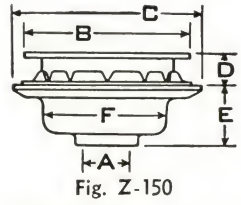


Fig. Z-150

Z-150 Roof and Deck Drain

This drain can be used with any type of flat roof or deck wherein foot traffic would make use of dome type strainer impractical. Supplied in Dura-coated cast iron, galvanized or bronze bodies, frames and clamping collars, with heavy brass clamping bolts, threaded or caulk outlets.

DIMENSION CHART							LIST PRICES				
										W/bronze frame and strainer	
A-pipe size	B in.	C in.	D in.	E in.	F in.	Wt. lbs.	Coated (DC)	Galv. (G)	All bronze (BR)	Coated (CB)	Galv. (GB)
2-3-4	13¼	16	2	5¼	11½	49	$20.00	$26.00	$43.00	$31.50	$37.50
5	13¼	16	2	5¼	11½	51	24.50	31.10	52.50	39.00	45.60
6	13¼	16	2	5¼	11½	55	27.00	35.00	61.00	45.50	53.50
8	13¼	16	2	5¼	11½	60	36.00	45.50	73.50	55.00	64.50

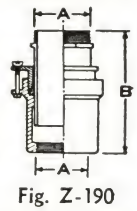


Fig. Z-190

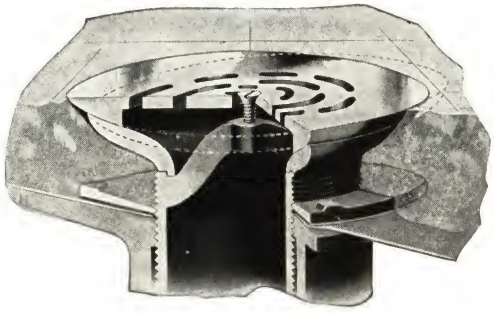
Z-190 Vertical Expansion Joint

Zurn Vertical Expansion Joint provides for expansion and contraction wherever necessary in roof drain construction. It is supplied with Dura-coated cast iron bodies and wedged collars, heavy cast bronze sleeves with finished surfaces, graphited asbestos packing rings, and heavy steel bolts, with brass wing nuts. The outlet is shown threaded but can be furnished either spigot or hub when specified.

DIMENSION CHART				LIST PRICES		
	B—Inches					
A Pipe size	Min.	Max.	Wt. lbs.	Coated (DC)	Galv. (G)	All bronze (BR)
2	7½	12	8	$ 5.50	$ 6.50	$ 9.00
3	7½	12	11	7.00	8.50	12.00
4	7½	12	13	8.00	10.00	14.00
5	7½	12	17	11.00	13.50	18.00
6	7½	12	18	13.00	16.00	22.00
8	7½	12	30	21.00	26.00	36.00

FLOOR OR SHOWER DRAINS

Heavy cast bronze strainer adjustable to plane of floor by loosening the securing screw which operates in slotted opening in the strainer. This desirable design definitely eliminates danger of cut feet and infection caused by projecting drain edges.



Installation Detail



Fig. Z-200

The most striking of several important designed features of Zurn Floor or Shower Drains is the ability of the strainer to be adjusted to the plane of the floor. This is a typical example of the continual thought Zurn is giving to improving plumbing systems.

Wherever Zurn Floor or Shower Drains are installed this designed feature definitely eliminates the danger of accidents and breakage. Strainer is attached by a single screw at the center and is inserted through a slotted opening in the strainer, permitting strainer to be tilted and locked out of perpendicular if necessary to accommodate floor plane.

Seepage Control—Seepage around edge of strainer is prevented by applying sealing compound under strainer edge which is designed to compensate for cement floor shrinkage. Tightening of strainer screw compresses compound. A watertight installation is always assured. Adjustable sleeve for variable floor thicknesses is another practical Zurn feature. Seepage pan design permits metal flashing to fit without shaping. Clamping collar combined with copper friction ring and adjustable screw sleeve, with raised lugs, provide means to forcibly drive collar to assure a joint that absolutely is watertight. Seepage flows through horizontal slots in clamping collar and through vertical seepage channels in adjustable sleeve. A tubular fiber shield prevents clogging of channels when cement is poured.

Testing Provisions—Body threads are standard pipe size, enabling standard iron pipe plug or nipple with cap to be inserted for testing.

Catalog—Catalog describes Zurn Drains—Floor or Shower Drains—in greater detail and includes cross sectional blueprint drawings showing every advantageous feature. It will be sent upon request.

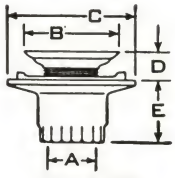


Fig. Z-200

Z-200 Drain

This drain is recommended for shower rooms and stalls in toilet rooms and floor areas of concrete, tile, terrazzo, or other composition, where seepage control is required. This unit is supplied with heavy bronze plated strainer, extra heavy Dura-coated cast iron, galvanized or bronze bodies, angularly and vertically adjustable strainer with clamping collar and threaded outlets. (Z-210 caulk outlet.)

DIMENSION CHART						LIST PRICES			
A-pipe size	B-str. diam.	C inches	D inches	E inches	Wt. lbs.	Coated (DC)	Galv. (G)	All bronze (BR)	Chrome str.
1½-2	4	7	1-2	3½	9½	$7.50	$9.00	$13.50	+$.60
	*5	7	1-2	3½	10	8.50	10.00	14.50	.80
3	5	9	1-2	4	15	10.00	12.00	17.50	.80
	*6	9	1-2	4	15½	11.50	13.50	19.00	1.00
	7	9	1-2	4	16	13.00	15.00	20.50	1.50
4	5	9	1-2	4	16½	11.00	13.50	19.00	.80
	6	9	1-2	4	17	12.50	15.00	20.50	1.00
	*7	9	1-2	4	17½	14.00	16.50	22.00	1.50
Deduct for clamping collar						1.00	1.50	2.50	.....

Z-250 Combined Drain and Trap

This drain is suitable for any type of floor area of concrete, tile, terrazzo, or other composition and combines integral trap. Heavy bronze strainers adjustable to floor level (angular and vertical), heavy Dura-coated cast iron, galvanized or bronze bodies, with clamping collar, outlets for threaded pipe or caulk connection.

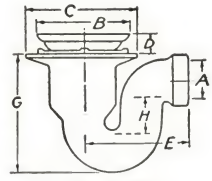


Fig. Z-250

DIMENSION CHART									LIST PRICES		
A-pipe size	B-str. diam.	C in.	D in.	E in.	F in.	G in.	H in.	Wt. lbs.	Coated (DC)	Galv. (G)	All bronze (BR)
1½-2	4	7	1-2	6	9	6¾	2	15	$13.00	$16.50	$24.50
	*5	7	1-2	6	9	6¾	2	15½	14.00	17.50	25.50
3	5	9	1-2	8	11	9	2	26	18.00	21.50	34.50
	*6	9	1-2	8	11	9	2	26½	19.50	23.00	36.00
	7	9	1-2	8	11	9	2	27	21.00	24.50	37.50
4	5	9	1-2	8	11	9	2	28	22.50	27.60	41.00
	6	9	1-2	8	11	9	2	28½	24.00	29.10	42.50
	*7	9	1-2	8	11	9	2	29	25.50	30.60	44.00
Deduct for clamping collar									1.00	1.50	2.50

(*) Denotes recommended stainer size having proper drainage capacity for size of outlet.

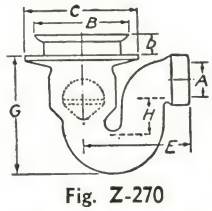


Fig. Z-270

Z-270 Floor Drain with Backwater Valve

Recommended for any installation where backwater pressure may be encountered. Furnished with heavy Dura-coated cast iron, galvanized, or bronze bodies. Bronze strainer adjustable to floor plane, glass or copper float, positive seating, outlets for iron or soil pipe connection.

DIMENSION CHART									LIST PRICES		
A-pipe size	B-str. diam.	C in.	D in.	E in.	F in.	G in.	H in.	Wt. lbs.	Coated (DC)	Galv. (G)	All bronze (BR)
1½-2	5	7	1-4	6	9	6¾	2	16	$17.00	$20.00	$26.00
3	5	9	1-4	8	11	9	2	26	21.00	24.20	35.00
	7	9	1-4	8	11	9	2	27	24.00	27.20	38.00
4	7	9	1-4	8	11	9	2	29	29.50	34.50	45.50
Deduct for back water control 2-3″									$3.00	4″ $4.00	

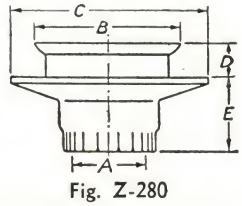


Fig. Z-280

Z-280 Floor or Area Drain

Recommended for any floor construction, grate adjustable to floor plane. Furnished in heavy Dura-coated cast iron, galvanized or bronze, outlet threaded or inside caulk.

DIMENSION CHART						LIST PRICES		
A-pipe size	B-str. diam.	C inches	D inches	E inches	Wt. lbs.	Coated (DC)	Galv. (G)	All bronze (BR)
1½-2	5	7	1-4	2½	7	$6.50	$7.35	$10.20
3	5	9	1-4	2¾	9	7.75	9.00	12.75
	7	9	1-4	2¾	10	10.75	12.00	15.30
4	7	9	1-4	2¾	12	11.50	13.20	16.60
Strainer rest 3″ high add						.50	.60	.80
Strainer rest 4″ high add						1.00	1.20	1.60

SWIMMING POOL DRAINS AND DEVICES

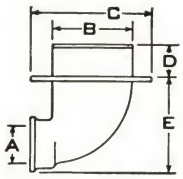


Fig. Z-805

Z-805 Main Outlet Swimming Pool Drain

Side outlet construction generally simplifies installation. Zurn Discharge Drain, Z-805, has an exceptionally large drainage area and should be installed where quick drainage of pool is desirable. Body is Dura-coated cast iron with polished bronze strainers and rims. Hub or threaded outlet as required.

DIMENSION CHART						LIST PRICES				
A Pipe size, in.	B in.	C in.	D in.	E in.	Wt., lbs.	Coated (DC)	Galv. (G)	All Bronze (BR)	Bronze Rim and Strainer Coated (CB)	Bronze Rim and Strainer Galv. (GB)
4–5–6	12x12	17x17	4⅜	13⅝	85	$34.00	$45.50	$94.00	$43.00	$52.50
Clamping Collar—Add						2.00	2.50	3.50	.....	.....
Chrome Plated Strainer—Add						.....	4.00	.....	.....	.....
White Metal Strainer—Add						.....	9.00	.....	.....	.....

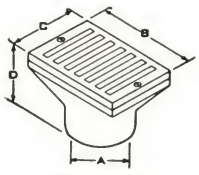


Fig. Z-820

Z-820—Z-830 Gutter Drains

Designed for scum and other narrow gutters. Bronze body—polished strainers. Outlets threaded. Z-830 Angle Outlet

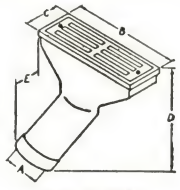


Fig. Z-830

DIMENSION CHART					LIST PRICES		
A Pipe size, in.	B in.	C in.	D in.	Wt., lbs.	Pol. or N.P. strainer	Chrome strainer	W. Metal strainer
1½–2	4	2¾	2½	1¾	$4.50	$5.10	$6.00
1½–2	9	1½	2¾	2½	7.00	8.00	9.00
1½–2½	10	2⅜	2¾	3½	8.50	9.50	11.25
2 –3	5½	2¾	2½	3¼	7.00	8.00	9.75
2 –3	12	4	2¾	15½	15.00	16.50	18.50
Z-830 1½–2	9	2½	7½	7	10.50	11.10	11.50

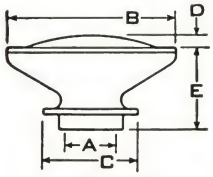


Fig. Z-850

Z-850 Flushing Inlet with Anchorage Flange

The Zurn Inlet, Z-850, is designed for dual service. It discharges a diverging spray for flushing the surface of the pool in addition to supplying clean water for circulation. It is designed for use where anchorage is desirable and where flashing is not required. Regularly supplied with heavy cast bronze bodies, polished convex slotted heads, threaded pipe connections. (Perforated or slotted flat face plates furnished if desired.

DIMENSION CHART						LIST PRICES		
A Pipe size, in.	B in.	C in.	D in.	E in.	Wt., lbs.	Pol. or N.P. Head	Chrome Head	W. Metal Head
1½–2–2½	9	5	1	4	5½	$9.50	$10.10	$11.00

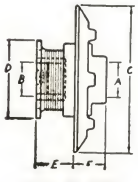


Fig. Z-865

Z-865 Swimming Pool Vacuum Cleaning Connection

The unit Z-865 is an exceptionally practical swimming pool vacuum cleaner connection. Ideally suited for pool cleaning systems. Bodies are heavy cast bronze Dura-coated. Faces with 2-in. iron pipe cleaning connection are polished bronze. This connection is designed with adjustable sleeves with clamping collars and threaded for pipe connections.

DIMENSION CHART								LIST PRICES				
A Pipe size in.	B in.	C in.	D in.	E in.	F in.	Wt. lbs.	Coated (DC)	Galv. (G)	All Bronze (BR)	Chrome Face	W. Metal Face
1½–2	2	9½	5	1⅞–3	2⅜	14	$10.50	$11.50	$14.50	+$1.00	+$2.50
3	2	9½	5	1⅞–3	2⅜	15	11.50	12.50	16.00	1.00	2.50
4	2	9½	5	1⅞–3	2⅜	16	12.50	14.00	17.50	1.00	2.50
Less Clamping Collar—Deduct							1.00	1.50	2.50	....	....

Z-855 Recirculating Fitting

Dura-coated body, adjustable bronze face. New flow regulating device (Detail "A") assures correct circulation. Complete line of standard pool inlets and outlets available.


Detail A

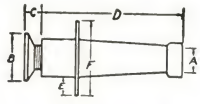
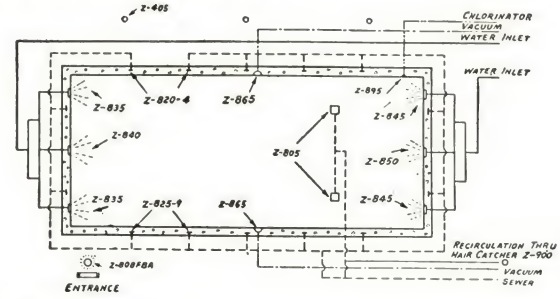


Fig. Z-855



Typical Swimming Pool Layout of Supply and Drainage

Z-810 Angle Type Reversible Discharge Drain

Zurn Angle Discharge Drain is adaptable to both side and bottom connection and is recommended for bottom circulating outlets and main discharge. Bodies are Dura-coated cast iron, with polished bronze frames and strainers. Furnished with positive clamping device and with either threaded or hub outlets.

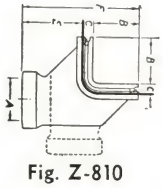


Fig. Z-810

DIMENSION CHART							LIST PRICES				
A Pipe size, in.	B in.	C in.	E in.	F Face in.	G Width, in.	Coated	Galv.	All Bronze	Bronze Rim and Strainer Coated	Bronze Rim and Strainer Galv.
2–3–4	5	1⅛	2⅝	8¾	7	$18.75	$21.00	$48.50	$26.75	$29.00
4–5–6	7	1⅛	8⅝	16¾	10	28.00	36.00	71.50	40.00	46.00
Chrome Plated Rim and Strainer—Add ..... small $4.00 large $ 6.00										
White Metal Rim and Strainer—Add ..... small $9.00 large $16.00										

Z-808-FBA Antiseptic Foot Bath Drain

Designed to simplify foot bath provision for pools. Such bathing is made compulsory by installing directly at entrance. Bronze head has removable watertight floor plate to retain antiseptic, and can be easily removed by spanner wrench for drainage and cleaning. Supplementary strainer beneath solid top. Outlet for threaded or caulk connection.

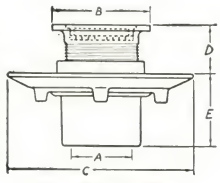


Fig. Z-808 FBA

DIMENSION CHART						LIST PRICES				
A Pipe size, in.	B in.	C in.	D in.	E in.	Wt. lbs.	Dura-Coated	Galv.	All Bronze	C.P. Top	Add for Locking Device
2	5	9½	1¼–2¼	3¾	18	$19.50	$22.00	$28.00	$1.00	$5.00
3	5	9½	1¼–2¼	3¾	18	19.50	22.00	28.00	1.00	5.00
4	5	9½	1¼–2¼	3¾	18	19.50	22.00	28.00	1.00	5.00
Clamping Collar deduct						1.00	1.50	2.50	....	....

Z-900 Hair Trap

An efficient trap insuring retention of all hair, lint, string and foreign substances from entering recirculation pumps, etc. Bronze mesh removable screen bucket with cleanout and blow-out connection. Furnished in heavy Dura-coated cast iron with tight gasket cover. Connections for threaded or flanged pipe.

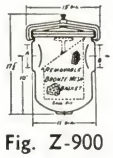


Fig. Z-900

A–B Pipe size, in.	Wgt. lbs., approx.	Threaded or hub		Flanged	
		Black	Galv.	Black	Galv.
2	90	$73.00	$82.50	$102.20	$115.50
3	89	73.00	82.50	102.20	115.50
4	88	75.50	84.70	105.70	118.55
5	85	76.50	85.70	107.10	120.0C
6	86	77.50	87.00	108.50	121.80

Fig. Z-855

DIMENSION CHART							LIST PRICES				
A Pipe size,in.	B Dia. in.	C in.	D in.	E in.	F in.	Wt. lbs.	Coated (DC)	Galv. (G)	All Bronze (BR)	Chrome Face	W. Metal Face
1½–2	4	¾–2	12½	1⅝	6⅝	13	$ 8.50	$10.00	$14.30	+$ .60	+$1.80
3	6	¾–2	12½	1⅝	6⅝	16	13.50	15.00	22.00	1.00	3.25
Clamping Collar—Add							1.00	1.50	2.50	....	....

CLOSET AND LAVATORY CHAIR CARRIERS

The constantly increasing use of wall hung fixtures has created a demand for specialization in this field, taking into account the necessary requirements to compensate for varying building construction. The features incorporated in Zurn Carriers provide for universal adjustment during the process of installation and for rigidity and security after installation is made.

Outstanding features include:
Cantilever Construction
Adjustable Bearing Screws
2-in. Lateral Adjustment
Ample Vertical Adjustment
Provision for Roughing Dimensions

Catalog Z. C. includes cross sectional prints showing mechanical and design features in detail. A copy will be sent upon request.

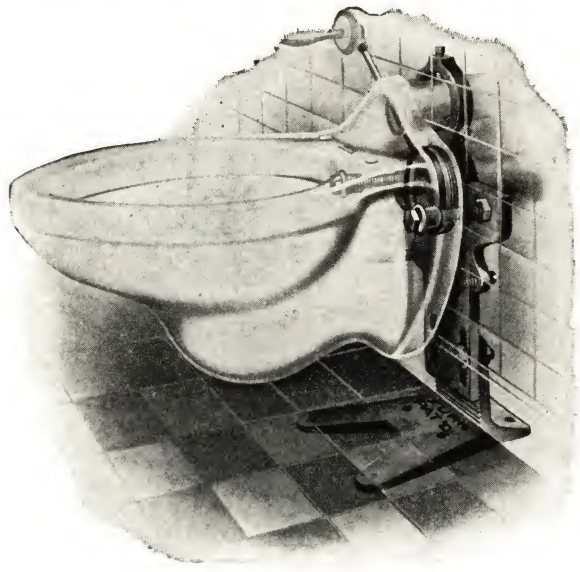


Fig. Z-1201 Closet Carrier

The Zurn Z-1201 Closet Carrier, illustrated above, incorporates all the features necessary for simple installation, coupled with ample weight for rigidity of construction to assure rigid installation. Note heavy Ratchet Type Base construction.

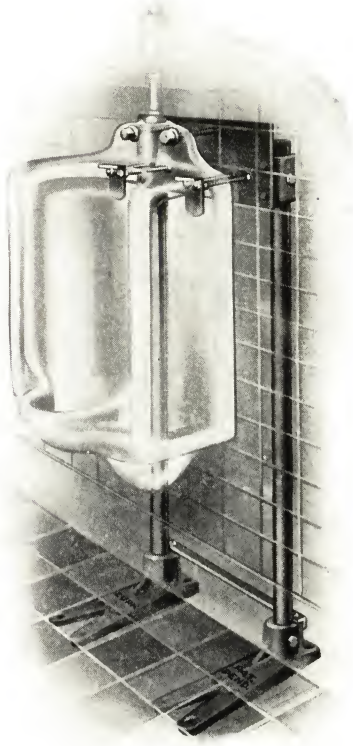


Fig. Z-1221 Carrier

The Zurn Carrier, Z-1221, is an adaptation for modern wall hung urinal bowl. In ordering carriers specify type by referring to bowl, giving manufacturer's name and bowl figure number. This type carrier is supplied with extra strong bodies and feet. "Dura-coated" finish. 1½-in. extra heavy steel legs



Fig. Z-1230 Carrier

The Zurn Carrier, Z-1230, is designed for lavatories in every kind of public or private place where concealed carrier arms are desirable. Locking devices for rigidly securing fixtures are available for use in mental hospitals and insane asylums. In ordering, specify lavatory by manufacturer's name, number and size

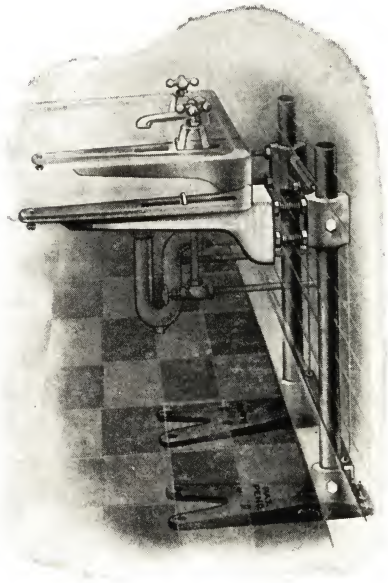


Fig. Z-1235 Carrier

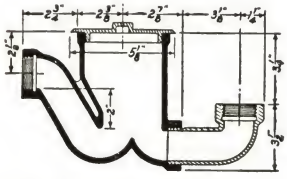
The Zurn Carrier, Z-1235, is recommended for heavy lavatories, sinks, sterilizers, etc., public or private, with exposed carrier arms available either painted or enameled. Specify fixture by manufacturer's name, figure number and size when ordering carriers. This type carrier is furnished with white enamel arms, Dura-coated brackets, legs and feet

All Zurn Carriers have leveling or adjusting screws, and use of cantilever construction assures full support of fixtures entirely on the carrier and not on the wall.

BATH AND LAVATORY TRAPS

Zurn Bath and Lavatory Traps are of unique design and incorporate unusual self-cleaning features. Besides completely changing water seal with each discharge from tub, the design causes water to swell strongly and wash inside walls. Large cleanout gives wide excess space and syphonage of water seal is definitely resisted by design features. The seal itself is a Zurn design that has been widely approved and used. It is a positive guard against backing up of sewer gases and odors. It would be difficult to find more ideally designed traps than Zurn's.

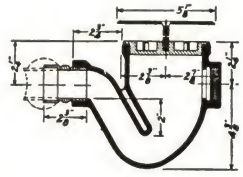
Blueprint cross-sectional drawings in Catalog No. 29C show the excellent design and construction features of the entire line of Zurn Traps. A copy will be sent upon request.



Z-1101 Residence and Apartment Bath Trap

With C.P. Cleanout. Design assures complete change of water seal with each discharge of tub—can be installed between 6-in. joints, 1½-in. connections

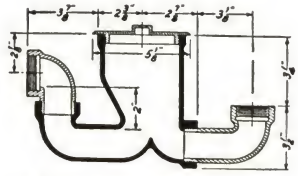
List prices—
Coated (DC)..$4.40 Galv. (G)..$6.00
All Bronze (BR)..$10.00



Z-1108 Dwelling House Bath Trap

Incorporating self-cleaning features—complete change of seal with each discharge of tub—cleanout fitted with C.P. Access Cover for proper leveling at finished floor—easily installed between 6-in. joints, 1½-in. connections

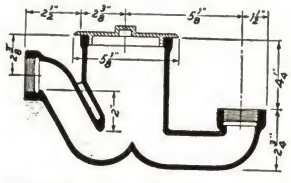
List prices—
Coated (DC)..$6.10 Galv. (G)..$7.10
All Bronze (BR)..$10.10



Z-1111 Adjustable Bath Trap

Self-cleaning with cleanout opening large enough for easy access—chromium plated cover, adjustable outlet, installation within 6-in. joints, 1½-in. connections

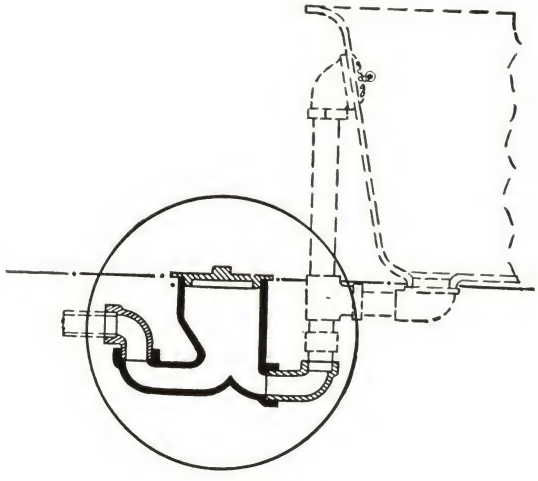
List prices—
Coated (DC)..$5.00 Galv. (G)..$6.90
All Bronze (BR)..$12.00



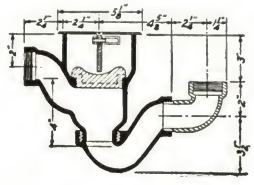
Z-1120 Tub and Shower Trap

Self-cleaning and rapid discharge—C.P. Cleanout large enough for easy cleaning, installed within 6-in. joints, 2-in. connections. Particularly adaptable for therapeutic baths

List prices—
Coated (DC)..$5.50 Galv. (G)..$7.00
All Bronze (BR)..$13.00



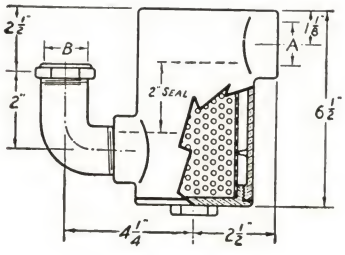
Detail of Installation



Z-1140 Hospital Bath Trap

Non-syphoning and self-cleaning, adjustable 1½-in. connections for any lateral direction, cleanout protected by seal, floor level adjustment, C.P. Cover for proper finishing.

List prices—
Coated (DC)..$6.80 Galv. (G)..$10.90
All Bronze (BR)..$21.40



Z-1175 Hair Interceptor

Cast bronze of required finish, removable bronze intercepting screen for cleaning, correct replacement assured by unique design, ideal for use in barber shops, beauty parlors, etc.

List prices—				
Polished or Nickel plated bronze....$16.00	Wt. 6 lbs.	A—Outlet	B—Inlet
Chromium plated bronze..... 20.00	Wt. 6 lbs.	1¼-1½ I.P.	1¼-1½ Slip

THE "GREASEPTOR"

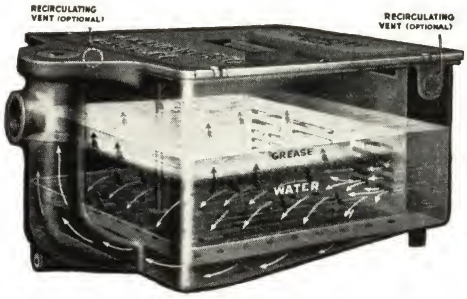


Fig. Z-1170-71

Grease interception is a problem of specialized consideration and, due to the lack of this type of thinking, there have been placed on the market, devices which purport to accomplish grease interception but which fall far short of so doing. There are three outstanding points to consider in the problem of grease interception:

(1) ***Purpose***—To prevent grease from entering and clogging drainage and sewer lines.

(2) ***Method***—To separate, congeal, and intercept the grease as nearly as possible to the point of discharge from fixture.

(3) ***Essential Requisites***—Intercepting of full grease content in waste water; ease of grease removal; ease of thorough cleaning.

There is no mystery with a problem so simple, yet it is amazing to find such wholesale misunderstanding of the simple problem involved, primarily due to the lack of knowledge both with respect to user and seller alike, with the inevitable result of a wide misuse of grease interceptors.

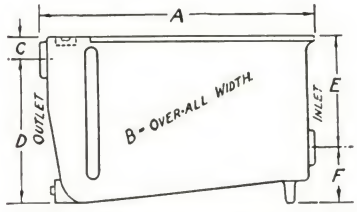
Zurn engineers have taken the above simple problem and reduced it to a design which accomplishes every purpose.

The illustration shown clearly indicates the manner in which grease interception is accomplished in the "Greaseptor," detailed principles of which are shown in the drawings below.

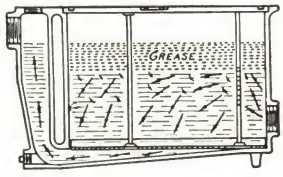
The deluxe model "Greaseptor" provides for removal and cleaning by simply removing top cover. Unique design of grease basket can be readily cleaned and the cover cannot be put back into place without all interior basket parts similarly being replaced.

The standard model "Greaseptor" is identical in construction and design, excepting that the grease must be removed by skimming from the top of the trap after removing cover.

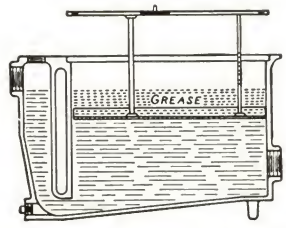
A grease interception efficiency of 95% plus can be secured through correct installation. Recirculating vent connections (optional) provide for removal of foul odors during normal period of operation, although these are not essential to efficient operation. Double wall trap meets with all Local, State and National code requirements.



Full Rectangular Shape—Provides maximum water content, eliminating angles and slowing current movement to further extend grease separation and congealing. Uniform design makes possible the installation at floor level at minimum expense.



Operation—Inlet below water level immediately retards flow which is further accentuated by unique diffusing baffle immediately adjacent to inlet, causing breaking up and slowing down of flow before entering main intercepting chamber, and practically eliminating all turbulation, so that as grease congeals and rises the main flow of water continues through perforated bottom baffle which further retards flow and thus the clear water flows on to outlet.



Ease of Grease Removal—Cover and grease basket are made integral. Cover cannot be replaced without grease basket (deluxe model only). Full airtight gasketed cover is secured by four easily removable bolts, or if preferred, can be unsecured to body as gasket is airtight and, if connected with recirculating vents, there is no danger of foul air entering the building.

SPECIFICATIONS AND PRICE SCHEDULE

Size No.	Recommended for	Flow cap., gal. per hr.	List prices Z-1171 Deluxe model	List prices Z-1170 Standard model	Inlet and outlet conn. i.p. or hub in.	A Length in.	B Width in.	C in.	D in.	E in.	F in.
4-C	Small sinks	420	$35.00	$25.00	1½–2	18¼	11½	2	9⅛	7½	3⅝
5-C	Medium sinks, small dishwashers	540	60.00	46.00	1½–2	20¼	13½	2	9⅝	8	3⅝
7-C	Diet sinks, dishwashers	730	80.00	65.00	1½–2	22¼	16½	2	9⅝	8	3⅝
9-C	Large sinks, large dishwashers	950	120.00	97.00	2–3	26½	17	2½	12⅛	10½	4⅛
15-C	Two or more sinks, institutional	1500	156.00 (standard model only)	156.00	3–4	32½	20	3½	14⅛	12	5⅛
24-C	Main drainage line installation	2400	275.00 (standard model only)	275.00	3–4	37	24	3½	14⅜	12¼	5⅛

HOSPITAL, PLASTER AND DENTAL INTERCEPTORS

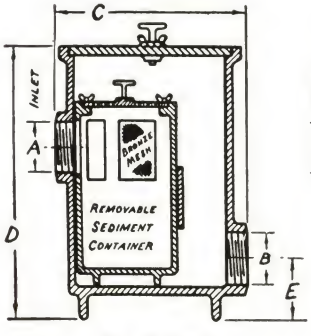


Fig. Z-1180

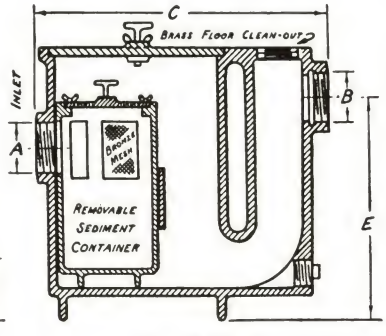


Fig. Z-1185

Invaluable for the interception of solids such as plaster of paris, cotton, lint, hair, etc. Adaptable also for unusual interception problems such as jewelry and optical grinding.

Waste water is all directed into removable sediment container from which none of the solids referred to can pass through, and the container is easily removable for cleaning and is so designed that its reinsertion into the trap is always in the correct position. The integral trap embraced in Fig. Z-1185 makes for simpler installation.

Interceptors regularly supplied in painted white enamel with brass fittings. Also available with porcelain enameled interior or exterior, with chrome plated fittings.

Z-1185 Hospital Plaster Interceptor

Porcelain enameled exterior with accessible cleanout for removing bronze mesh retainer—plaster and any other solids completely retained without restricting liquid flow—integral trap with cleanout assures correct installation—1½ or 2-in. connections.

List price $148.00. Weight 190 lbs.

Z-1180 Dental Interceptor

Polished aluminum body with accessible cleanout cover for removing bronze mesh retainer for cleaning. All solids positively retained without restricting liquid flow—1½ or 2-in. connections.

List price $42.00. Weight 8 lbs.

THE DAYTON PUMP & MFG. CO.

ESTABLISHED 1908

Water Systems—Water Softeners—Cellar Drainers—Septic Tanks

DAYTON, OHIO

NEW YORK OFFICE: 441 Lexington Avenue CHICAGO OFFICE: 616 So. Michigan Avenue

SALES REPRESENTATIVES IN PRINCIPAL CITIES

WATER PUMPS AND SYSTEMS

The Dayton Pump & Mfg. Co., for 30 years, has been a leading manufacturer of automatic electric motor driven and gasoline engine driven water pumps and systems for residences, farms, schools, institutions, etc.

For 15 years we have manufactured Water Softeners and Water Conditioning Equipment and, for more than a decade, Electric Cellar Drainers and Septic Tanks have been important items in the "Dayton" Line.

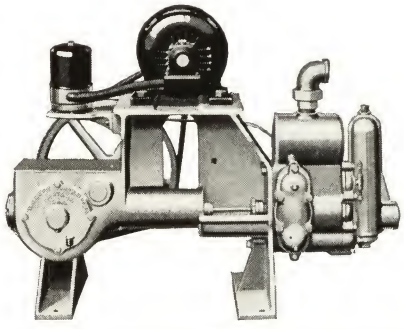
A "Dayton" product, of particular interest to all who live where the water is bad, is the water-conditioning water softener illustrated and described on the following page. This softener removes from water not only hardness, but bad taste, odor and iron . . . all at the same time. No other single appliance does this complete job of water conditioning.

Heavy Duty Series 600 Shallow Well Pumps

Capacities—600, 900, 1200 gal. per hour.

For heavy duty service in schools, farms, dairies, greenhouses, country clubs, small factories, institutions, etc.

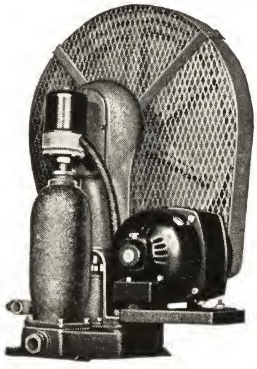
Entire water-end separate from main frame and quickly detachable. Automatic oiling. Hyatt roller bearings on jack shaft. Machine cut gears. Back geared 3 to 1.



Model	Capacity, gals. per hr.	Motor hp.	Pipe sizes, in.		Shipping weight, lbs.
			Suction	Discharge	
601-V	600	½	1¼	1¼	310
900-V	900	¾	1½	1¼	320
1202-V	1200	1½	1½	1¼	360

Approximate space required: width 39 in., depth 17 in., height 30 in. Standard pressure 25-45 lbs. Also available with other size motors for higher pressures up to 100 lbs. Specifications upon request.

Deep Well Pumps and Systems



Capacities—120 or 225 gal. per hour.

Depths—23 to 75 ft.

Pressure Tank—Any size required. 42-gal. tank most popular.

Motor—¼ hp. for 120 gal. per hour; ⅓ hp. for 225 gal. per hour.

Well Cylinder—1⅜-in. open top type for use with ¼ hp. motor to give 120 gal. per hour; 1⅜-in. open top type for use with ⅓ hp. motor to give 225 gal. per hour.

Approximate space required, pump without tank—width 23 in., depth 13 in., height 27 in. Shipping weight 130 lbs. With 42-gal. tank—width 23 in., depth 36 in., height 52 in. Shipping weight 250 lbs.

Shallow Well Pumps and Systems

250*, 350 or 500 gal. per hour. Galvanized tank of any size required.





250* gal. per hour pump single-cylinder double-acting; 350 and 500 pumps double-cylinder double-acting.

250* and 350 pumps have ¼ hp. motor; 500 pump ⅓ hp. motor.

Pumps brass fitted throughout; drop-forged steel crankshaft; double-pole automatic switch; nationally-known make motor.

Model			Tank size, gals.	Dimensions, in.			Shipping weight, lbs.
250* G.P.H.	350 G.P.H.	500 G.P.H.		Width	Depth	Height	
310*	350	500	No tank	24	13	19	95
31-G*	35-G		17	31	14	32	145
		58-G	33	36	16	36	180
311-G*	351-G	501-G	42	24	32	52	185
312-G*	352-G	502-G	80	24	36	64	265
313-G*	353-G	503-G	120	28	40	64	315
314-G*	354-G	504-G	220	34	46	76	500

*All 250-gal. per hour pumps have automatic capacity control which automatically steps up capacity to 310 gals. per hour, if needed.

Standard pressure setting 25-45 lbs., a-c. 110 or 220-volt motor standard, but any special motor required can be supplied.

250-gal. per hour pump has 1-in. suction, ¾-in. discharge. 350 and 500 pumps have 1¼-in. suction, ¾-in. discharge.

Deep Well Pumps and Systems—6-in. Stroke, 8-in. Stroke

Capacities—115 to 1147 gal. per hour.

Depths—23 to 400 ft.

Pressure Tank—Any size required.

Model 6000—6-in. stroke. Motor ⅓, ½, ¾ hp. Capacities—115 to 462 gal. per hour, depending upon size motor and size well cylinder used.

Maximum depth 275 ft. against maximum pressure 45 lbs.

Model 8000—8-in. stroke. Motor 1, 1½, 2 hp. Capacities 268 to 1147 gal. per hour depending upon size motor and size well cylinder used. Maximum depth to 400 ft. against maximum pressure 45 lbs.



Note: Send sketch of proposed installation with following information to get our recommendation: Diameter of well; total depth of well; depth to water; number persons to be served; number of outlets; number of bathrooms; whether water will be used for sprinkling.

Send for Complete 40-page Catalog

WATER CONDITIONERS AND SOFTENERS



Series VC Water Softeners

Remove Hardness, Bad Taste, Odor and Iron

Series VS Water Softeners

Remove Hardness

Single Lever Control—Four short turns regenerate softener. Brine tank holds 100 lbs. or more salt (see table).

Capacities—15,000 to 80,000 grain gallons between regenerations.

Flow Rates—8 to 30 gal. per minute.

Pipe Connection—¾ in.



Single Lever Control. Simplifies Regeneration

The only softeners that remove hardness, bad taste, odor and iron with one piece of equipment.

Series VC models are a revolutionary development in water conditioning, for they remove not only hardness, but also bad taste, odor and iron*—all at the same time. No chemicals. Water is good to drink. Common salt used to regenerate. Brine tank holds not less than 100 lbs. salt—enough to last several months.

**Iron removing capacity up to 3 parts per million.*

Series VS models remove only hardness. In appearance and general construction they are identical to Series VC Softeners, but the mineral they contain is for removing hardness only.

All models of both Series VC and VS, except 40GD, 60GT and 80GT, are available in either vitreous-porcelain or "hot dip" galvanized. Models 40GD, 60GT and 80 GT available only as galvanized. Finish on all models is light blue with ivory stipple.

SERIES VC AND VS MODELS

Size No.	Grains gals. cap. bet. regens.	Flow rate gals. per minute	Lbs. salt per tank refillings	Number of regens. per salt tank fillings	Over-all dimensions, in.	Shipping weight, lbs.
15-GD	15,000	8	100	12	15x30x55	300
20-GD	20,000	8	100	9	15x30x55	325
30-GD	30,000	12	100	6	15x32x60	400
40-GD	40,000	15	200	8	19x38x60	550
60-GT	60,000	24	200	6	19x48x60	750
80-GT	80,000	30	200	4	19x56x60	950
15-PD	15,000	8	100	12	15x30x55	300
20-PD	20,000	8	100	9	15x30x55	325
30-PD	30,000	12	100	6	15x32x60	400

Models 15 to 30 inclusive, available in either galvanized or porcelain enamel. Models 40, 60 and 80 are made only in galvanized. G—following number indicates galvanized; P—porcelain; D—double tank; T—twin mineral tanks.

In Specifying—If for removing hardness, bad taste, odor and iron—precede model number by prefix "VC"; if for removing hardness only—precede model number by prefix "VS."

Single Tank Water Softeners

Remove Hardness

Capacities—10,000 to 30,000 grain gallons between regenerations.

Flow Rates—8 gal. per minute.

Pipe Connection—½ in.

Where low price is all important, where the user does not mind turning more than one valve to regenerate and *hardness only* needs be removed from the water, Dayton Single Tank Softeners meet a wide demand.

These single tank softeners differ from the brine storage type in that they are reconditioned by putting salt into tank each time regenerated and regeneration is accomplished by turning more than one valve.

Made only in galvanized—galvanized inside and out. Finished in light blue with ivory stipple.



Size No.	Grain gals. cap. bet. regen.	Lbs. salt per regen.	Over-all dimensions, in.			Shipping Weight, lbs.
			Depth	Width	Height	
S-10-GS	10,000	6	8	16	55	130
S-20-GS	20,000	12	10	18	59	190
S-30-GS	30,000	18	12	20	63	250

To Determine How Many Gallons of Softened Water Delivered Between Regenerations—Divide hardness of water into "Grain Gallons Capacity Between Regenerations." Example—on 20 grain water, Model 15-GD gives 750 gal. of softened water between regenerations, arrived at by dividing 15,000 by 20.

How to Select Proper Size and How to Specify a Dayton Water Softener

To Select Proper Size—Figure 30 gals. of softened water per day per person and multiply 30 by number of persons to be served. Then multiply result by gallon grain hardness of water. The result is grain hardness to be removed daily. Multiply that result by either 7 or 14 to obtain total grain hardness to be removed in either a 1 or 2 weeks' period. Select softener having capacity nearest your calculated figure.

Example of How to Specify—Model —— "Dayton" Water Softener, with —— (Tank(s), to give capacity of—grain gallons, or —— actual gallons of softened water between regenerations, based on —— grains hardness of water to be softened.

Send Sample of Water for Free Analysis—Write for free container in which to send us sample of the water for free analysis. After analyzing, we will send you recommendation on equipment best suited. This service is free.

Dayton Automatic Electric Cellar Drainers (Sump Pumps)

Automatically pump out basement seepage water fast as it runs in. Operate only when water runs in. Operating cost extremely low. Available in three models, all 2500 gal. per hour maximum capacity, all rustproof construction throughout. ¼ hp. motor, 1¼-in. pipe connection. Iron sump cover No. W-4647 available for all models at additional cost.



Model No.	Gals. per hour at total discharge head of			Over-all height of pump, in.	Max. sump depth, ft.	Shipping weight, lbs.
	5 ft.	10 ft.	15 ft.			
W-4435	2500	2000	1500	36½	2	85
W-4485	2500	2000	1500	48	3	90
W-4625	2500	2000	1500	42	3	100

Send for Complete 40-page Catalog

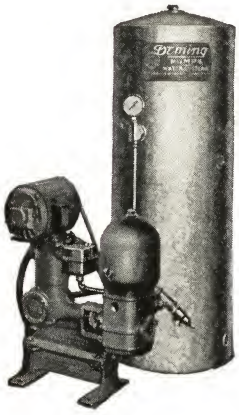
THE DEMING COMPANY

Manufacturers of Hand and Power Pumps for All Uses

SALEM, OHIO

GENERAL AGENCIES IN ALL PRINCIPAL CITIES

Deming "Marvel" Shallow Well Water System



For Vertical Suction Lift of 25 Feet or Less

Fig. 2090

Equipped with Timken roller bearings. Practically noiseless in operation. Oil in crankcase thoroughly lubricates all moving parts. Stainless steel piston rod. Repulsion-induction motor. Systems are furnished complete with electric motor drive or gasoline engine, 42-gallon galvanized steel tanks and all necessary fittings.

Pump capacity, gallons per hour	Pipe suction, inches	Sizes discharge, inches	Motor hp.
275	1	¾	⅙
375	1	¾	¼

Catalog "D" contains complete information.

Deming "Oil-Rite" Shallow Well Water Systems



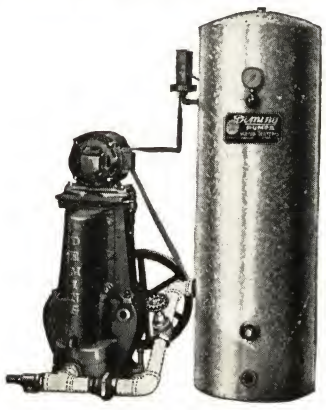
For Vertical Suction Lift of 25 Feet or Less

Fig. 1809

For use where larger capacities than those listed above are required. Furnished complete with electric motor drive or gasoline engines, galvanized black steel tank.

Pump capacity, gal. per hr.	Pipe suction, in.	Sizes discharge, in.	Motor hp.	Tank capacity, gal. and type
550	1¼	1¼	½	120 Vert. Galv. 220 Vert. Blk.
930	1½	1½	1	120 Vert. Galv. 315 Vert. Blk.
2000	2	2	2	720 Hor. Blk. 1020 Hor. Blk.
3000	2½	2½	3	1020 Hor. Blk. 1500 Hor. Blk.

Deming "Oil-Rite" Deep Well Water Systems



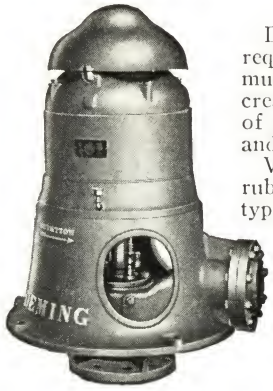
For Use in Wells Where the Water Level Is at a Greater Depth Than 25 Feet

Fig. 1062

Consists of pump and galvanized steel tank and fittings, except piping and sucker rod.

Stroke, in.	Pump capacity, gal. per hr.	Motor hp.
6	190- 425	⅓- 1
10	405-1140	1- 5
14	755-2250	3- 7½
18	1150-3635	5-10

Deming Deep Well Turbine Pumps



Water Lubricated
Fig. 4700

Deming Turbine Pumps meet the requirements of laundries, factories, municipal water works, golf courses, creameries—wherever a plentiful supply of water is needed—also used for mines and mine sinking pumps.

Water lubrication, Goodrich cutless rubber bearings, adjustable semi-open type impellers and many other exclusive features make the Deming Turbine an outstanding pump in this field.

Deming Turbines are dependable and will give year after year of satisfactory service at minimum upkeep expense.

Turbine Bulletin contains complete information.

Deming Cellar Drainers



While ordinarily designed for use as cellar drainers, these pumps may also be used for draining boiler rooms, tunnels, elevator pits, and many emergency uses. Motors will not cause radio interference.

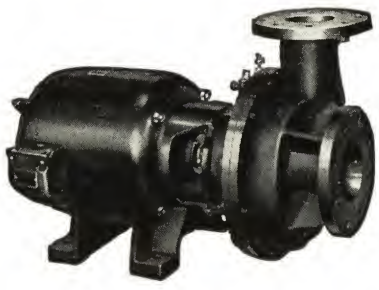
Due to their high efficiencies, Deming Cellar Drainers will deliver the maximum amount of water against high heads with minimum of horsepower.

Fig. 4601—Includes pump with 1750 r.p.m., ¼ hp., split-phase, 60-cycle, 110-volt, alternating current, ball-bearing motor, with built-in thermal overload protection.

Fig. 4602—Includes pump with 1750 r.p.m., ¼ hp., single-phase, repulsion-induction, 60-cycle, 110-220-volt, alternating current, ball-bearing motor. Thermal overload protection located within the switch.

Fig. No. and size	Sump depth, ft.	Pipe connections, in.	Height, ft.—in.	Head in Feet—Gallons per hour					
				5 ft.	10 ft.	15 ft.	20 ft.	22 ft.	24 ft.
4601-2	2	1¼	3 - 5	1900	1600	1300	750	....	....
4602-2	2	1¼	3 - 5	2700	2400	2000	1450	1100	300
4602-3	3	1¼	4 - 5	2700	2400	2000	1450	1100	300
4602-4	4	1¼	5 - 5	2700	2400	2000	1450	1100	300
4602-6	6	1¼	7 - 5	2700	2400	2000	1450	1100	300
4602-8	8	1¼	9 - 5	2700	2400	2000	1450	1100	300

Deming Centrifugal Pumps



Included in the Deming line of centrifugals are many different types: side suction; close-coupled; two-stage; self-priming; double suction; sewage; slurry and sump pumps. Sizes range from ½ to 12 in. with capacities up to 5000 gal. per minute.

See separate bulletins for complete information.

ECONOMY PUMPS, INC.

HAMILTON, OHIO

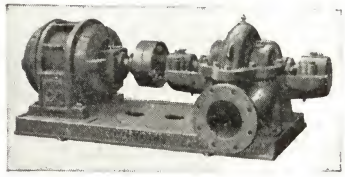
CHICAGO OFFICE, 2522 W. Congress St.

NEW YORK OFFICE, 1 E. 42nd St.

REPRESENTATIVES

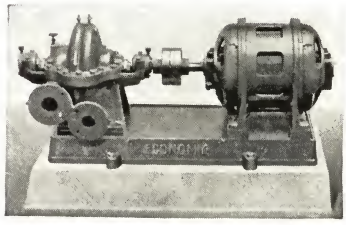
BALTIMORE, MD., W. I. Collier & Co., 522 Park Ave.
BIRMINGHAM, ALA., McVoy-Hausman Co., 2019 Sixth Ave., No.
BOSTON, MASS., Emerson Swan Goodyer Co., 107 Arlington St.
Monahan Pump & Equipment Co., 10 High St.
BUFFALO, N. Y., Park Duncan, 319 Main St.
CHICAGO, ILL., A. W. Kerr & Co., 407 So. Dearborn St.
CINCINNATI, OHIO, Refer to Factory at Hamilton, Ohio
DALLAS, TEX., Allan Engineering Co., 2712 Live Oak St.
DENVER, COLO., Crane-O'Fallon Co., 1631 Fifteenth St.
DETROIT, MICH., F. H. Patterson, 9201 Boleyn Ave.
Kerr Machinery Corp., E. Fort and Beaubien Sts.
HOUSTON, TEX., Southern Engine & Pump Co., 900 St. Charles St.
INDIANAPOLIS, IND., M. D. Mullane, 339 Burgess Ave.
JACKSONVILLE, FLA., J. C. Pastor, 1091 Talbot Ave.
KANSAS CITY, MO., D. H. Painter, 7331 Brooklyn Ave.
MEMPHIS, TENN., Power Equipment Co., 1348 Madison Ave.
MILWAUKEE, WIS., C. A. Ekstrom Co., 2540 W. Wells St.
MINNEAPOLIS, MINN., Kent-Ervin Co., Builders Exchange Bldg.
NASHVILLE, TENN., W. C. Armistead, 107 Main St.
NEW ORLEANS, LA., Mayer Godchaux, 510½ Audubon Bldg.
NEW YORK, N. Y., Quimby-Ryan Engineering Sales Co., 1 East 42nd St.
OKLAHOMA CITY, OKLA., Loeffler-Greene Supply Co., 1604 N. W. 5th St.
PHILADELPHIA, PA., Haynes Selling Co., Ridge and Spring Garden St.
PITTSBURGH, PA., Keystone Sales Co., P. O. Box 4201, Bellevue Sta.
F. B. Olander, 1310 Keenon Bldg.
SAN FRANCISCO, CALIF., Phil M. Hunt, 116 New Montgomery St.
SYRACUSE, N. Y., Syracuse General Sales Co., 513 E. Raynor
WISCONSIN RAPIDS, WIS., Badger Sales Co., Mead-Witter Bldg.
DOMINION OF CANADA, Crane Ltd., 1170 Beaver Hall Square, Montreal

Double Suction Pumps



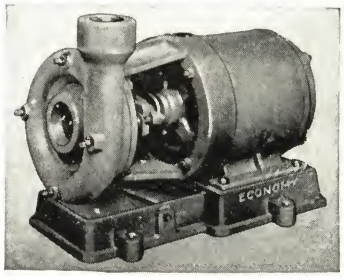
Horizontally split case single stage pumps for general house supply service at heads of 200 ft. or less, also for hot water, air washer, swimming pool circulation, etc. Capacities from 25 to 5000 g.p.m. at moderate speeds.

Multi-Stage Pumps



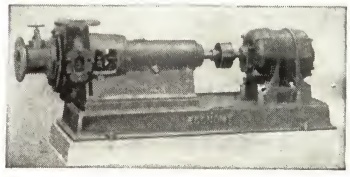
Horizontally split case multi-stage pumps for general house supply service at heads of 200 to 700 ft., also for boiler feeding, elevator service, etc. Capacities 100 to 1000 g.p.m. at moderate speeds and with minimum power.

Close Coupled Pumps



For small house supply, air conditioning, ice water circulation, etc. Capacities 10 to 300 g.p.m. These pumps have built-in ball bearing motors with impeller mounted on an extension of the motor shaft. At 1750 r.p.m. they are good for heads to 100 ft., at 3450 r.p.m. to 250 ft.

Non-clogging Sewage Pumps

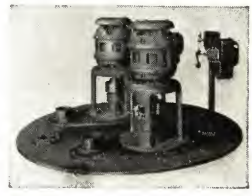


Capacities up to 20,000 g.p.m. Heads up to 150 ft. These pumps are made in both horizontal and vertical types. They are used for pumping raw sewage, industrial waste, paper pulp, etc., in sewage lift stations and in place of conveyors in industrial plants. We are in a position to furnish complete sewage and process pumping equipment.

Sump Pumps and Sewage Ejectors

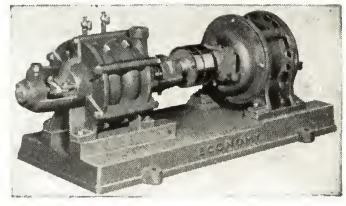
Made in general service and non-clogging types. Non-clog pumps pass rags and other solids which may be present in raw sewage. All of these pumps are heavy duty design, with ball bearings and registered motors, with full automatic control. Several types of dry chamber installations available for the larger jobs.





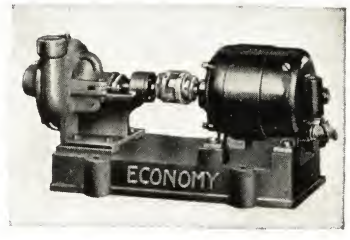
Small Multi-Stage Pumps

These pumps are used for the same purpose as our larger horizontally split case units, but because of the smaller capacity (10 to 100 g.p.m.) they are of different mechanical construction. These are special little units for heads up to 450 ft.



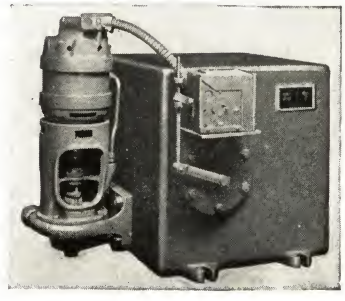
Single Stage Single Suction Pumps

These pumps are used for moderate priced work where the head does not exceed 120 ft. They are frequently used for intermittent house supply service, swimming pool circulation, summer air conditioning, etc. Capacities from 10 to 3000 g.p.m.



Condensation Pumps

Used with gravity and vapor heating systems for returning condensate to boiler and for collecting returns from low radiation. The illustration shows only one of seven types available in the Hoffman-Economy line. Made for boiler pressures from 10 to 200 lbs. and capacities from 1000 to 300,000 sq. ft.



ECONOMY'S NEW PUMP DATA AND PRICE BOOK

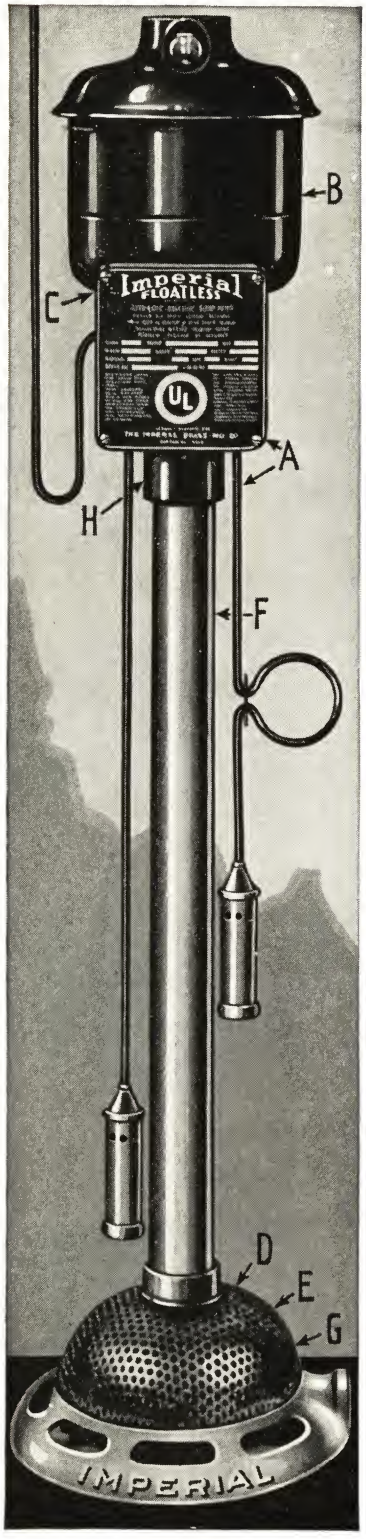
A new handbook indispensable to anyone interested in pump engineering. Covers pumping applications for practically any requirement. Book is divided into two parts, the first being devoted to the various classes of pumps manufactured, showing costs, characteristics, etc. The second part is a valuable engineering data section, with a "Use Index" in the back.

You can secure your copy by writing on your business letterhead.

THE IMPERIAL BRASS MANUFACTURING CO.

Imperial "Floatless" Automatic Electric Sump Pumps for Removing Seepage, Overflow, Drainage and Flood Water and for Backwater Prevention

1200 West Harrison St., CHICAGO, ILL.



Six Models For All Sump Depths

IMPERIAL *"FLOATLESS"* AUTOMATIC ELECTRIC SUMP PUMPS

(Approved by Underwriters' Laboratories)

Imperial FLOATLESS

SPECIFY SUMP PUMPS FOR THESE PURPOSES

1. Removing Drainage, Seepage, Overflow and Flood Water from Basements or Other Points Below Sewer Level. Sump pumps are used in residence, apartment, office building, factory and garage basements and similar places where it is necessary to raise floor drainage, seepage, overflow or flood water from sumps, settling basins, flywheel, elevator and scale pits, etc., located below sewer level.

2. Providing Drainage in Basements, Well Houses, etc., Where Municipal Sewers Are Not Available. Sump pumps are used to remove waste from floor drains, laundry tubs, boiler pits, etc., from basements in buildings located outside city sewer limits.

3. Preventing Backwater in Basements and Other Places Close to Sewer Level. A sump pump installed with backwater prevention hookup, will provide positive protection wherever sewer level or sewer capacity makes backwater a possibility. Eliminates danger of having heating unit and other equipment, furnishings, etc., flooded. See Figs. 1 and 2.

The Maker of Imperial "Floatless" Sump Pumps—The Imperial Brass Mfg. Co. has specialized for years in sanitary equipment, and its contributions in this field are outstanding. Its engineers are responsible for the most successful electrical sump pumps now on the market. The IMPERIAL FLOATLESS AUTOMATIC ELECTRIC SUMP PUMP incorporates in its design the successful and proved features of other pumps and eliminates the main objectionable feature, namely, the float. It has been approved by the Underwriters' Laboratories, whose insignia is on the name plate of each pump.

See Separate Catalogs for other well known IMPERIAL plumbing products —Watrous Flush Valves, Watrous Liquid Soap Dispensers and Imperial Automatic Primers for Floor Drains.

SPECIAL ADVANTAGES OF IMPERIAL *"FLOATLESS"* SUMP PUMPS

(Letters Designating the Following Points Refer to Illustration at Left)

A. Floatless Electrical Control; Low Pump Down—The essential function of an automatic sump pump is to begin pumping automatically when the water which accumulates in the sump pit reaches a given level. Therefore, a sump pump is no more reliable than the mechanism which controls its automatic operation.

The Imperial "Floatless" Automatic Electric Sump Pump uses a new, thoroughly proved principle of electrical control, which completely eliminates the need for a float and which offers positive reliability never before attainable.

The motor on the Imperial pump is controlled not by a float, but by two stationary electrodes which hang into the pit and can be adjusted to start and stop the pump within any limits desired. Motor starts when water reaches upper electrode and stops when water drops below lower electrode. Mud, debris or corrosion do not affect starting or stopping because there is no float to stick, clog or become damaged.

This electrical control also offers another advantage in that a LOWER PUMP DOWN is possible. The lower electrode hangs very close to the floor of the pit and

How Imperial *"Floatless"* Sump Pumps Insure Basement Against Backwater

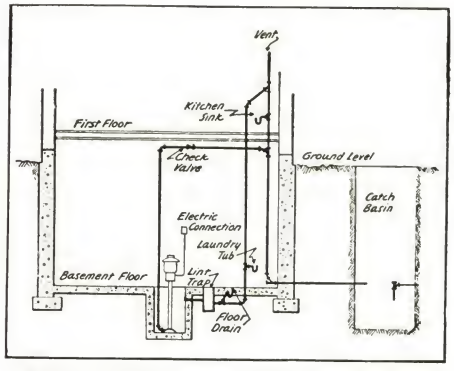


Fig. 1—This sump pump hookup provides positive protection against backwater even in the most severe cases. Note that basement is cut off entirely from direct connection with city sewer, and floor drain and laundry tubs both empty into sump.

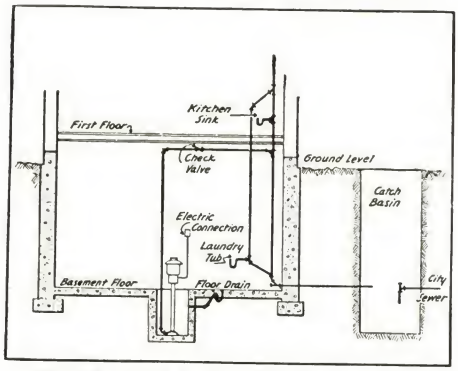
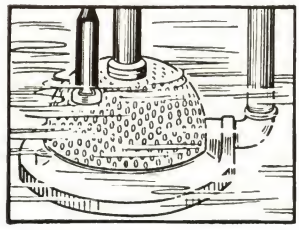


Fig. 2—This hookup is for less severe cases and will give protection against backwater to the height of the laundry tubs. Note that here the tubs drain directly into the catch basin as in an ordinary hookup, while the floor drains to the sump.

Imperial FLOATLESS

water can be pumped down to within 2¾ in. of the bottom. Due to the space occupied by a float, 12 in. from the bottom is about the lowest depth float-operated pumps can reach.

Furthermore, with the Imperial design, water can be pumped even lower than the bottom electrode by pressing plunger H.



B. Special Motor Design—Imperial Model A pumps are equipped with General Electric, ⅙ H.P. custom built motors. Standard unit 60 cycles. (25 and 50 cycles furnished at slightly extra cost.) Models B, C, D, E and F are equipped with General Electric, ¼ H.P. custom built motors, a wide variety of current characteristics being available without extra charge. All motors equipped with oil-sealed ball-thrust bearing for vertical operation; free from brush wear and radio reception interference.

C. Positive Acting Circuit Breaker—The Imperial Sump Pump has a circuit breaker incorporated within its electrical control mechanism. Breaker opens in 17 seconds on a dead stall. This prevents injury from motor overload or excessive heat generated. Only necessary to push button to reset breaker.

D. Special Long-Life Bearings—Model A pumps have special water-lubricated bronze bearings which are designed to assure long life and easy operation. Models B, C, D, E and F have an adjustable impeller bearing of the tapered pin type. Centrifugal force by the impeller has very little effect on this bearing and it contributes greatly to balanced action and long life. Also incorporated in Models B, C, D, E and F are oilite shaft bearings. The suspension of revolving parts is such that lower bearing is relieved of practically all downward thrust.

E. Forged Impeller—Extremely Durable—The life of a sump pump depends on IMPELLER BALANCE more than any other detail in its construction. The forging gives a homogeneous, hard impeller so durable that no part of it becomes worn enough to cause uneven running. IMPERIAL makes the only sump pump on the market using a forged impeller.

F. Bronze Construction—Can Never Rust—Another very effective factor assuring long service is the choice of materials. COPPER and BRONZE, which cannot rust, are used exclusively on IMPERIAL PUMPS.



G. Larger Strainer Area—Easy to Clean—Imperial Sump Pumps have the largest strainer area in proportion to capacity—80 sq. in. on Models B, C, D, E and F, and 60 sq. in. on Model A.

By loosening the snap ring that holds it in place, the strainer may be lifted to the top of the shaft for convenience when cleaning. IMPERIAL is the only sump pump that has this feature.

H. Started by Hand, if Desired—Whenever required, the motor can be started by pressing the plunger H. The motor runs as long as the plunger is held. An exclusive feature.

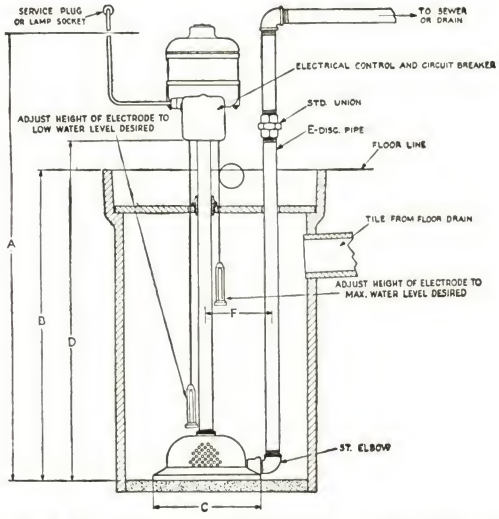
Sizes, Capacities, Weights and List Prices—Imperial "Floatless" Sump Pumps

Model	Pipe Connection, In.	Maximum Sump Depth, Ft.	*Approximate Capacity Gallons per Hour Against Total Discharge Head of					Weight, Boxed Pounds	Size of Motor, H. P.	List Price
			1 Ft.	5 Ft.	10 Ft.	15 Ft.	20 Ft.			
A	1	2	1600	1500	1300	900	200	57	⅙	$ 39.50
B	1¼	2	3600	3200	2600	1900	1000	70	¼	65.00
C	1¼	3	3600	3200	2600	1900	1000	80	¼	85.00
D	1¼	4	3600	3200	2600	1900	1000	100	¼	100.00
E	1¼	6	3600	3200	2600	1900	1000	120	¼	125.00
F	1¼	8	3600	3200	2600	1900	1000	140	¼	150.00

*To determine total discharge head, measure vertical distance, or elevation in feet from bottom of sump to highest point in discharge line, and add one foot for each 20 feet of horizontal pipe and one-third foot for each elbow.

INSTALLATION

Reference to the sectional view shows the simplicity of installation. The floor sump can be made by sinking a piece of 18 or 24-in. (larger size better) sewer crock into the floor. Bottom of control switch should be installed at least 3½ in. above floor. The discharge (E) is piped to the nearest sewer or surface outlet by the shortest and straightest line (except when



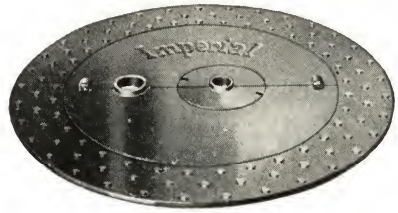
pump is used for prevention of backwater; see Figs. 1 and 2). Be sure that the elecric current is the same as specified on motor and that the electric current is permanently connected in the plug used. Attach connecting wire to plug, and pump is ready for operation. Explicit instructions with each pump.

It is recommended that the sump be covered to prevent dirt, coal dust, etc. from the floor from washing into it.

Table of Measurements

Model	A Height of Pump		B Depth of Sump		C Diam. of Base	D Base to Motor		E Disc Pipe	F Centers for Cut-Out in Cover
	Ft.	In.	Ft.	In.	Inches	Ft.	In.	Inches	Inches
A	3	3	2	0	9¼	2	3½	1	6⅝
B	3	3	2	0	9⅝	2	7	1¼	6⅝
C	4	3	3	0	9⅝	3	9	1¼	6⅝
D	5	3	4	0	9⅝	4	7	1¼	6⅝
E	7	3	6	0	9⅝	6	7	1¼	6⅝
F	9	3	8	0	9⅝	8	7	1¼	6⅝

IMPERIAL SUMP COVERS



These sump covers are quickly assembled, and give complete protection to the sump. The holes admitting the shaft tube, electrode cords and discharge pipe allow ample clearance. Covers furnished to fit standard sewer crock sumps from 15 in. to 24 in. Dimensions and list prices shown below.

No.	Size Crock, Inches	Outside Diameter, Inches	Shipping Weight, Pounds	List Price
1	15 to 18	19¾	28	$ 8.50
2	21 to 22	24	47	12.00
3	24	27½	58	15.00

Special mountings for suspending pump on cover can be supplied when unusual conditions make this necessary.

Availability—Literature—Imperial Sump Pumps are sold and stocked by leading plumbing and heating jobbers. For complete data on Imperial "Floatless" Automatic Electric Sump Pumps, write for Catalog 438.

MEMORANDA

MICRO-WESTCO, INC.

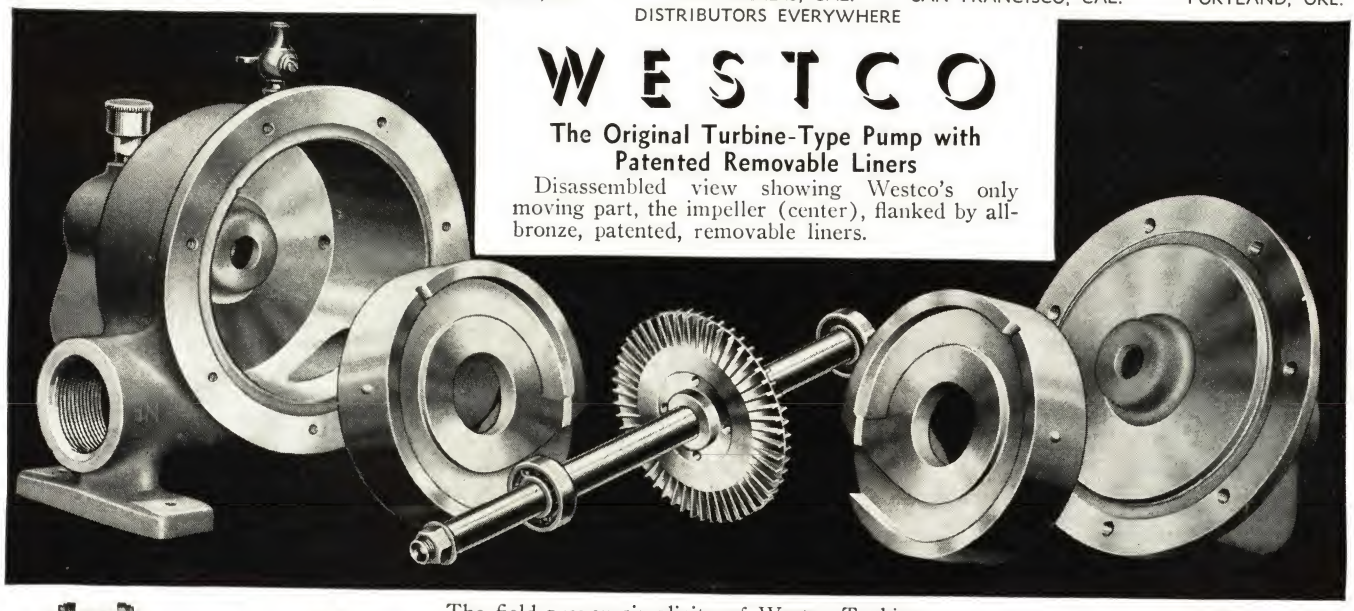
Compact, Dependable Pumps for Water Systems and General Service

2103 State Street, BETTENDORF, IOWA

BRANCHES

NEW YORK, N. Y. PHILADELPHIA, PA. CHICAGO, ILL. LOS ANGELES, CAL. SAN FRANCISCO, CAL. PORTLAND, ORE.

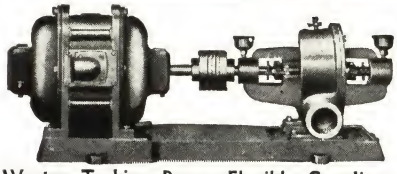
DISTRIBUTORS EVERYWHERE



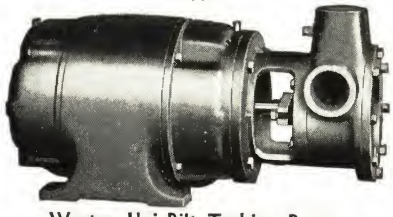
WESTCO

The Original Turbine-Type Pump with Patented Removable Liners

Disassembled view showing Westco's only moving part, the impeller (center), flanked by all-bronze, patented, removable liners.



Westco Turbine Pump, Flexible Coupling Type



Westco Uni-Bilt Turbine Pump

Especially designed for Air Conditioning and Refrigerating Applications. Ideal for circulating hot water.

Has all Westco features including Removable Liners. Self-priming models available. Sizes from 5 to 100 g.p.m. against heads up to 150 ft. depending upon capacity desired.

Well Water for Cooling

Well water provides the lowest cost type of cooling and dehumidifying. Expensive equipment is not required where a well can be obtained in which water will stand within 25 ft. of the surface, and in which the temperature of the water does not exceed 55° F.

One type of installation of this kind includes; a filter to clean the air; a closed coil placed in an air duct through which the cold water is pumped; a blower to promote the circulation of air through the coil; thermostat which automatically controls the room temperature.

Temperature can be lowered as much as 15° F, with this kind of an installation.

Specific recommendations gladly furnished upon request.

The field-proven simplicity of Westco Turbine-Type Pumps makes them excellently suited for use wherever easy installation, low cost maintenance, and economical operation are essential. A multivaned bronze impeller (shown in the center of the above picture) is Westco's only moving part, and it operates without metal-to-metal contact. All gears, belts, springs and pistons eliminated insuring maximum dependability.

Westco Pumps are also fitted with patented, bronze renewable liners, which not only minimize replacement expense, but permit the capacity of each pump to be increased or decreased to meet exceptional service variations. These liners also greatly reduce the cost of "stand-by" protection and field replacement, for new sets can be quickly and easily bolted into position when necessary.

Manufactured by the originators of turbine-type pumps, the Westco line includes (1) single stage, double-suction turbine pumps, (2) condensation return units, (3) water systems, (4) deep and shallow well outfits, and (5) circulating pumps. All are compactly and ruggedly built, with models having capacities for delivering from 5 to 400 g.p.m. against heads up to 1000 ft. Certified blue Prints, Specifications, Performance Tables gladly sent upon request. For prices, please give: (1) Specific Gravity and kind of liquid, (2) Gallons per minute, (3) Head in ft. or Pressure in lbs., (4) Source of liquid supply, (5) Power available.

Westco Condensation Pumps and Receivers

Used with radiation systems, heaters, steam coils, etc., for returning hot condensate to high or low pressure steam plants. Saves large volumes of water and considerable fuel. Induces proper circulation. Operates efficiently against 50% variations (either way) in head.

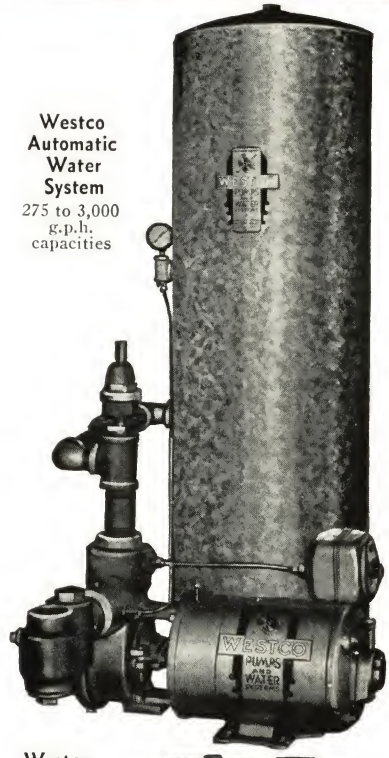
Sizes for service on layouts with 2,000 to 50,000 sq. ft. radiation surface, requiring from 4 to 400 g.p.m. against heads up to 1,000 ft. Certified blue prints, Architect's Specifications, Performance and Selection Tables, on request.

Westco Automatic Water Systems

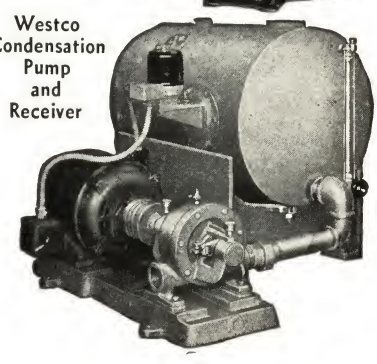
For suburban and farm homes, institutions, golf courses, greenhouses, schools, dairies, booster service, etc. 100% automatic and self-priming. Has bronze-fitted, double-suction pump. Quiet operation. Lubricate annually. Capacity can be increased or decreased without disturbing installation. Removable liners protect casings from possible wear due to foreign matter.

28-ft. suction lift. No water-hammer or pounding in pipes. Automatic air volume control prevents water-logging of tank. Sizes from 250 to 3,000 g.p.h. Gasoline engine drive if desired. Special Catalog on request.

Westco Automatic Water System
275 to 3,000 g.p.h. capacities



Westco Condensation Pump and Receiver



THE F. E. MYERS & BRO. COMPANY

ASHLAND, OHIO

Products

WELL, HOUSE and CISTERN PUMPS; SELF-OILING SHALLOW and DEEP WELL POWER PUMPS; HAND and POWER WATER SYSTEMS; SUMP PUMPS; PUMPING JACKS; TANK PUMPS; CYLINDERS; HAND and POWER SPRAY PUMPS; NOZZLES and ACCESSORIES.



TRADE-MARK

Also Hay and Grain Unloading Tools, Barn and Garage Door Hangers, Store Ladders, etc.

Catalog and complete information on request furnished for any of above.



Fig. 3012

The Myers Self-Oiling Home Water System—Fig. 3012

With Complete Automatic Control and Overload Protection

Designed for operation from any kind of city current or from farm lighting and power systems for use in cisterns or shallow wells up to 25 ft. in depth. Floor space, Nos. 1906AT and 1909AT is 25 x 33 x 35 in. high; for Nos. 901AT and 902AT is 28x32x51 in. high.

Operation is controlled by an electric switch with overload protection which automatically starts the pump when the pressure in the tank falls to 20 lbs. and stops the pump when the pressure reaches 40 lbs. The pressure is always maintained between these two points. The air supply in the tank is automatically controlled by special air valve. All working parts are automatically lubricated by oil splash from the crank case.

Tank is galvanized iron, electric welded; size, for Nos. 1906AT and 1909AT is 20 x 32 in. and for Nos. 901A and 902AT is 16 x 48 in., 42-gal. capacity. Furnished without tanks when desired.

Motors are of the repulsion and induction type, with extra high starting torque.

Pump No.	Capacity, gal. per hour	Motor		Suction, in.	Discharge, in.	Tank, galvanized	Weight, lbs.
		Hp.	Current				
1906AT	250	1/6	A-c.	3/4	3/4	42	239
1909AT	340	1/4	A-c.	1	3/4	42	245
901AT	500	1/2	A-c.	1 1/4	1	42	307
902AT	750	3/4	A-c.	1 1/4	1	42	317

The above water systems are complete with motor, tank, vacuum chamber, relief valve, air valve, pressure control switch, automatic air and water volume control valve, endless V-belt and connecting fittings. Stainless steel piston rod.

The Myers Deep Well Water System—Fig. 2700—V-Belt Drive—6-inch Stroke

With Complete Automatic Control and Overload Protection

This system is composed of the Myers Self-Oiling Working Head with motor mounted on gear case, connected to a 42-gal. galvanized tank. The air is supplied by the air cylinder and is controlled by the automatic air control feature which eliminates air bound or water logged tanks. The water is pumped direct into the tank and the air is supplied by the air cylinder through the water line between pump and tank.

This Myers System is also an ideal unit for summer air cooling of homes, stores, etc. with well water. Low price and low operating cost. Ask our Engineering Department.

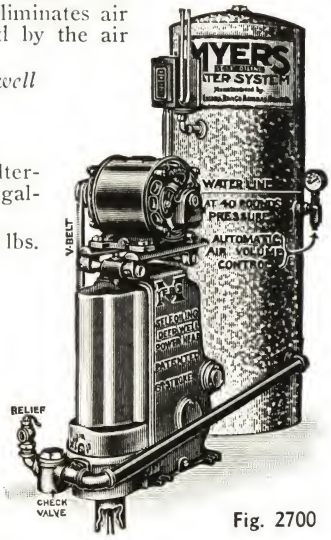


Fig. 2700

Specifications—Fig. 2700—6-Inch Stroke

No. V2950AMT—Complete as shown, including ½-hp., 110-220-volt, 60-cycle, single phase, alternating current motor, V-belt, pressure gauge, air control, electric switch, relief valve and 42-gal. galvanized tank. (Cylinder not included). Weight 384 lbs.

No. V2950AMTS—Same as No. V2950AMT, except with 4-ft. anti-freezing set length. Weight 339 lbs.

Either of above systems is furnished without tank, or equipped with larger size tanks if desired; also equipped with ⅓, ¾ or 1-hp. motor when specified. When ordered, stuffing box instead of plunger tube will be furnished. Working barrel or cylinder not included.

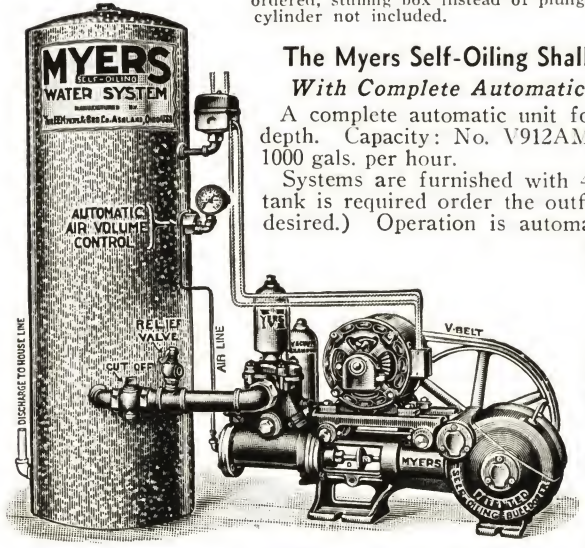


Fig. 2631

The Myers Self-Oiling Shallow Well Water System—Fig. 2631

With Complete Automatic Control and Overload Protection

A complete automatic unit for shallow wells not to exceed 25 ft. in depth. Capacity: No. V912AMT, 500 gals. per hour; No. V913AMT, 1000 gals. per hour.

Systems are furnished with 42-gal. galvanized tanks. (Where larger tank is required order the outfit less the tank and install any size tank desired.) Operation is automatic and with a variation of 20 lbs. between low and high pressure needs no attention, excepting to replenish the oil every three or four months.

Specifications—Fig. 2631

No. V912AMT—V-belt drive, complete as shown in Fig. 2631, including No. 912AM 2½x3-in. pump, ½-hp., 110-220-volt, 60-cycle, single phase, alternating current motor, automatic air and water control valve, pressure gauge, electric switch, 42-gal. galvanized tank, relief valve, cut-off and connecting pipe. Weight 369 lbs.

No. V913AMT—As above, with No. 913AM 3x4-in. pump, 1-hp., 110-220-volt, 60-cycle, single phase alternating current motor. Weight 583 lbs.

Either of above systems furnished without tanks, or equipped with larger size tanks if desired.

Note: If frequency and voltage are other than specified on this page, there will be an extra charge. Specify current used. If alternating current give phase, frequency and voltage. If direct current give voltage.

Meyers Self-Oiling Water Systems—Fig. 3013 with 12-Gallon Galvanized Tanks

With Complete Automatic Control and Overload Protection

This direct shallow well water system with overload protection is automatically controlled, and has a real range of usefulness without the disadvantages of too frequent starting and stopping and excessive wear and tear on pump, motor and switch. Ideal for small homes, summer cottages, filling stations and numerous other places where economical and dependable service is required. Pressure range is 20 to 40 lbs. Air supply in tank is controlled by automatic air volume control. Floor space 25x25x27 ins. high. Furnished complete in three sizes; 250, 340 and 500-gal. capacities.

Pump No.	Capacity, gal. per hour	Motor		Suction, in.	Discharge, in.	Tank, galvanized	Weight, lbs.
		Hp.	Current				
1927AM	250	1/6	A-c.	3/4	3/4	12 gal.	156
1928AM	340	1/4	A-c.	1	3/4	12 gal.	179
929AM	500	1/2	A-c.	1 1/4	1	12 gal.	219

Foot valve, with brass gauze strainer, for any of above systems furnished when ordered.

Above water systems are complete with motor, vacuum chamber, relief valve, pressure control and flexible copper connection between pump and tank. Stainless steel piston rod.

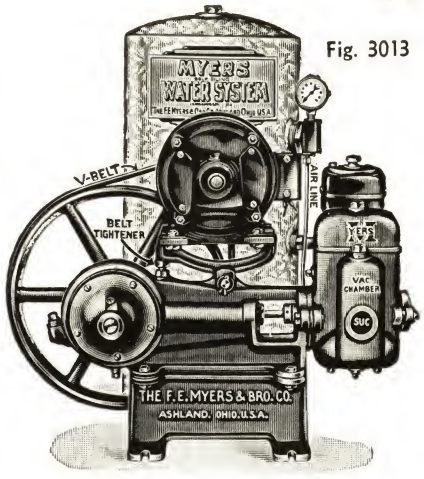


Fig. 3013



Fig. 2741

Myers Deep Well Direct Water Systems—Fig. 2741—V-Belt Drive

With Complete Automatic Control and Overload Protection

A practical deep well direct water system composed of the Myers Self-Oiling Deep Well Power Pump, motor, and 12-gal. tank which affords a sufficient cushion to eliminate the very objectionable feature of too frequent starting and stopping. It is completely automatic with overload protection. Self-starting, self-stopping, self-oiling. Air volume in tank is controlled by automatic air control. Furnished only in 6-in. stroke size. Floor space 16x40x33 ins. high. Ideal for use wherever fresh water is desired from a deep well or other source. Easy to install. Economical to operate. Dependable for service.

Specifications Fig. 2741

No. V2956AM—Complete as shown, including ½-hp., 110-220-volt, 60-cycle, single phase, alternating current motor, V-belt, pressure gauge, automatic air volume control, electric switch, 12-gal. air chamber and relief valve. Weight 318 lbs.

No. V2956AMS—Same as No. V2955AM, with a 4-ft. anti-freezing set length. Weight 324 lbs.

Either of above systems is furnished with ⅓, ¾ or 1-hp. motor if desired; also equipped with stuffing box instead of plunger tube when specified on order.

Myers Shallow Well Self-Oiling Power Pumps—Fig. 2633
250 to 9000 Gallons of Water per Hour

Designed for pumping water from shallow wells or cisterns, ponds, streams, lakes or other sources of supply. Motor or engine operation. Silent chain, V-belt or direct drive. Furnished complete with motor as illustrated, or the bare pump with tight and loose pulleys, or tight pulley only and belt tightener for flat belt drive from motor or engine. Positive self-lubrication, housed working parts, machine cut gears, oversize valves, unrestricted waterways, extra large volume, freedom from wear and breakage, extended service-years. For open tank, pressure tank or other use.

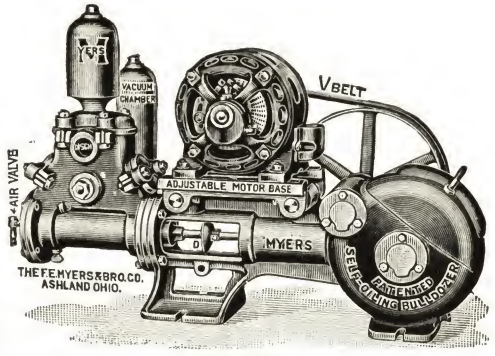


Fig. 2633

Air conditioning with well water for homes, stores, hotels, restaurants and innumerable other places is simple, practical and extremely economical to install and operate. No complicated equipment required. Installation is easy. Write our Engineering Department for reliable information.

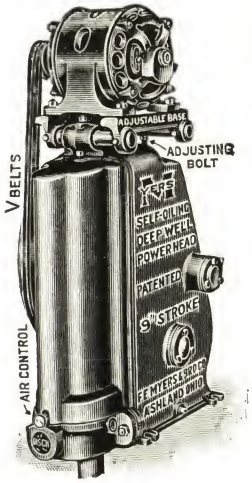


Fig. 2628

Myers Deep Well Self-Oiling Power Pumps—Fig. 2628
6, 9, 12, 18 and 24-inch Strokes

In localities where deep well service is necessary, Myers Deep Well Self-Oiling Power Pumps or Working Heads have firmly established themselves. Their performance records under almost every conceivable condition convince critical buyers of their superiority. Styles and sizes for any service up to 8-in. drop line. With or without motors, V-belt or flat belt drive. Also bare pumps with tight and loose pulleys for engine or tight pulley for motor. Ideal for open tank, pressure tank or other service.

Myers Centrifugal Sump Pump—Fig. 2917

It drains when it rains. Has no equal, as far as we know, at the price for appearance, construction, durability and trouble—free performance. Furnished complete as illustrated ready for quick and easy installation.

Write our Engineering Department for complete information. New 368-page Catalog on request.

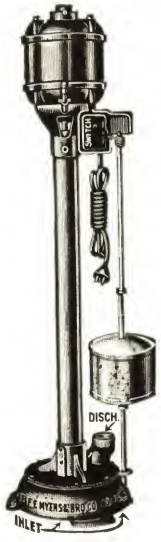


Fig. 2917

ESTABLISHED 1886

PENBERTHY INJECTOR CO.

Automatic Electric Sump Pumps and Automatic Cellar Drainers—Copper and Brass Construction Throughout

DETROIT, MICH.

CANADIAN PLANT: WINDSOR, ONTARIO

For Penberthy Hot Water Heating Specialties, see File Index

Penberthy Automatic Electric Sump Pumps

Used Wherever Water Accumulates

In spite of our efficient municipal sewerage systems, there are numerous places where water accumulates by seepage, overflow, flood or backing up, that can not be drained off directly, either because the flow line of the sewer is not deep enough or because obstacles intervene between the sump and the sewer.

Among the more common instances may be mentioned the cellars of residences where no sewers exist or where the sewer line is above the basement floor level, also deep cellars of buildings, boiler rooms, settling basins, flywheel and elevator sumps, tunnels, and scale pits.

While ordinarily this seepage may amount to only a small trickle, its flow is continuous and if neglected the accumulated water soon becomes a real menace to health and property.

To keep such places dry, the incoming water is most economically disposed of as it accumulates, either by an automatic cellar drainer (water or steam operated) or an automatic sump pump (electrically operated). Local conditions determine which is preferable.

Penberthy manufactures a complete line of both types, and can consequently supply the unit best suited to meet requirements.

Conditions favoring the electric pump are:

(1) For districts where city water pressure is not available, or at least very low. (2) Larger quantities of seepage water to be handled. (3) Discharge heads up to 22 ft. (4) Low cost of operation.

Installation—Model K and Model 36

The automatic electric sump pump is set in a floor sump which can be conveniently made by taking a piece of 15 to 24-in. sewer crock 2 ft. long. A sump cover is recommended. The pump outlet is piped to the nearest and lowest sewer or surface outlet. The motor switch cord is plugged into the nearest plug or light socket and the pump is ready for operation. Be sure that the electric current is left permanently connected to the motor switch, and that the electric current is entirely suitable to the motor furnished with the pump. General instructions accompany each pump. There are no projecting arms or delicate parts to require special supports or protection. The entire unit is simple and easily installed and operated. It meets all the requirements of the various building codes.

*Specifications—Model K Only

Motor—Not an ordinary horizontal motor turned on end, but a special motor with ball thrust bearings for vertical operation. Repulsion induction type which has better characteristics for sump pump service than other types. Motors regularly furnished are for 110 volts and 60 cycles but can be supplied for the following current characteristics at no additional cost: alternating current, 110 volts, 50 or 25 cycles; 220 volts, 60, 50, or 25 cycles; direct current, 110 volts. Motors to suit other current characteristics at slight additional cost.

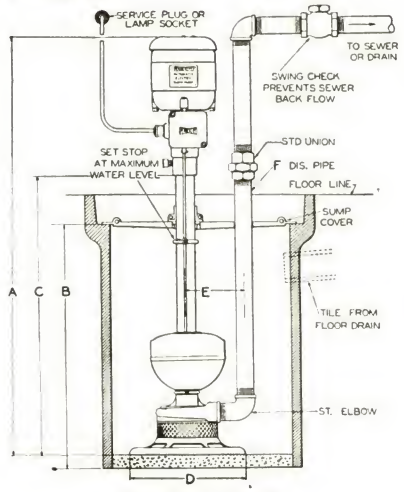
Overload Protection—Built into motor, protects motor in case of improper voltages, overloading or trouble of any kind.

Model K





Model 36



Installation Details

DIMENSIONS OF SUMP PUMPS

Size No.	A Height of pump, ft.	A Height of pump, in.	B Depth of sump, ft.	B Depth of sump, in.	C Base to motor, ft.	C Base to motor, in.	D Diameter of base, in.	E Cent. cut-outs in cover, in.	F Discharge pipe, in.
0-36	3	4½	2	—	2	4¼	8	6	1
1K	3	7¼	2	—	2	4	11¾	6	1¼
2K	4	7¼	3	—	3	4	11¾	6	1¼
3K	5	6	4	—	4	3	11¾	6	1¼
4K	7	11	6	6	6	8	11¾	6	1¼
5K	9	10	8	6	8	7	11¾	6	1¼

Mercury Switch—(Today used almost universally for automatic controls) dependable and particularly adapted to float operation; has no mechanical contacts to wear or spark, mounted in heavy bakelite box, providing complete insulation for all wiring. Switch is controlled by extra heavy copper float sliding freely on supporting column, sensitive to slightest difference in water levels, adjustable bronze ring governs water level at which pump starts.

Impeller Shaft—Bronze, fully inclosed, held to perfect alignment and supported by bearing at both ends, flexible spring coupling relieves motor shaft of sudden starting shocks.

Lubrication—All bearings that require lubrication are provided with oil or grease cups.

Material—This pump is immune to corrosion; it is made of copper and bronze throughout.

Sump Cover—A sump cover is recommended to exclude ashes, coal dust and other solid material from accumulating in sump. Penberthy Sump Pump Covers provide proper working clearances for the automatic control mechanism.



LIST PRICES, SIZES AND WEIGHTS

Cover, No.	List price	Outside diameter, in.	Shipping weight, boxed, lb.
1	$ 8.50	19¾	28
2	12.00	24	47
3	15.00	27½	58

LIST PRICES, SIZES, CAPACITIES, ETC., OF PENBERTHY MODEL 36 AND MODEL K ELECTRIC SUMP PUMPS

Size No.	List prices	Pipe connection, in.	Maximum Sump depth, ft.	Height of pump ft.	Height of pump in.	Approximate capacity, gallons per hour against discharge head of 5 ft.	10 ft.	15 ft.	20 ft.	22 ft.	Size motor, hp.	Weight boxed, lb.
0-36	$ 39.50	1	2	3	4½	1500	1500	1250	750	...	¼	57
1K	65.00	1¼	2	3	7¼	3200	2600	1900	1000	600	¼	102
2K	85.00	1¼	3	4	7¼	3200	2600	1900	1000	600	¼	115
3K	100.00	1¼	4	5	6	3200	2600	1900	1000	600	¼	128
4K	125.00	1¼	6½	7	11	3200	2600	1900	1000	600	¼	149
5K	150 00	1¼	8½	9	10	3200	2600	1900	1000	600	½	195

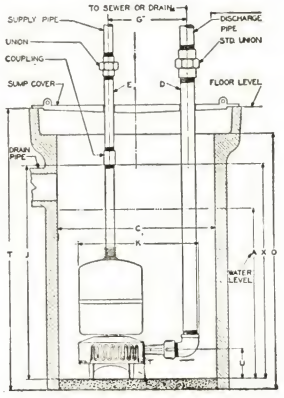
*Model 36 differs in some details but also is copper and bronze throughout.

Penberthy Automatic Cellar Drainers—Water or Steam Operated

The Penberthy Automatic Cellar Drainer has been on the market for many years and is of distinct service for installations such as office buildings, residence or factory basements, sumps, tanks, settling basins, flywheel, elevator, coal and scale pits, or wherever it is desired to remove seepage, flood or backwater from point below the natural drainage level of sewer. For conditions such as these the Penberthy Automatic Cellar Drainer offers a desirable solution, as it operates by city water pressure or steam and the drainer itself is ideally constructed to occupy the least possible space. It is also entirely automatic and requires no attention after installation.

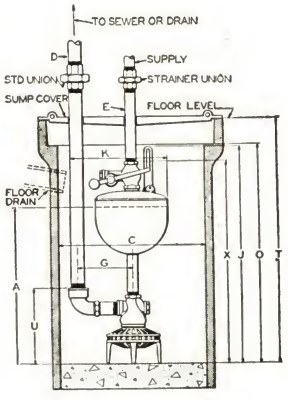
Special Notice: The capacities given are the actual capacities of water taken from sump and not the combined discharge of operating and drainage water as given in most tables. For higher elevations than shown, special drainers can be made.





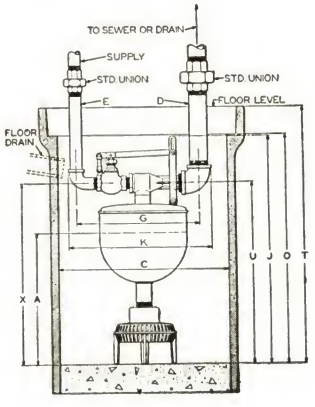
Model "S" Automatic Cellar Drainer
Size 0





Model "R" Automatic Cellar Drainer
Sizes 1 and 2





Model "L" Automatic Cellar Drainer
Sizes 3, 4 and 5

CAPACITIES AT DIFFERENT PRESSURES AND ELEVATIONS

Model	Size No.	Working Head in feet	Table of capacities from sump in gallons per hour at 10 to 150 lbs. water pressure in lbs. per square inch									
			10	15	20	30	40	60	80	100	120	150
S	0	3	80	190	280	400	510	640	690	670	650	600
		6		90	140	300	390	570	670	670	650	600
		9			90	200	280	480	590	650	640	600
		12				140	220	340	530	630	630	600
		15				90	190	270	450	600	620	600
		18					120	250	320	550	610	600
R	1	3	80	210	300	400	510	700	720	700	660	600
		6		90	140	300	390	570	670	690	650	600
		9			90	210	330	480	620	660	640	600
		12				150	220	390	550	630	630	600
		15				90	190	300	450	600	620	600
		18					120	250	320	550	610	600
	2	3	190	390	550	750	910	1180	1240	1220	1170	1100
		6		210	340	600	750	1020	1140	1200	1130	1100
		9			210	380	540	900	1190	1150	1090	1100
		12				300	420	780	1020	1110	1060	1100
		15				210	370	570	940	1050	1030	1100
		18					300	510	850	970	1000	1100
L	3	3		450	600	800	1100	1400	1600	1600	1500	1300
		6			400	650	860	1200	1400	1500	1450	1300
		9				550	720	1000	1300	1400	1420	1300
		12					470	800	1000	1300	1400	1300
		18						500	700	1100	1300	1300
	4	3		600	800	1200	1600	2000	2400	2500	2200	2000
		6			550	1000	1240	1800	1900	2300	2160	2000
		9				800	1040	1600	1800	2200	2130	2000
		12					670	1200	1400	2100	2100	2000
		18						800	1000	1800	2000	2000
	5	3		750	1000	1600	2100	2700	3200	3200	3100	2600
		6			700	1300	1620	2300	2800	3100	3000	2600
		9				1000	1260	1900	2600	2900	2900	2600
		12					840	1500	2000	2700	2800	2600
		18						1000	1500	2300	2600	2600

Standard Drainer Capacities are printed above black line. Five pounds or more water pressure is required for each one foot of elevation. At no additional charge special low pressure drainers can be furnished suitable for conditions below black line. Special drainers can be adjusted to operate on 2 to 4 lbs. water pressure for each one foot of elevation. To avoid delay, when ordering special low pressure drainers give operating pressure, elevation of discharge, etc.

WATER CONSUMPTION

Model	Size No.	Approximate gallons pressure water per hour at pressures of 10 to 150 lbs. per square inch									
		10	15	20	30	40	60	80	100	120	150
S	0	70	90	110	130	160	190	225	250	275	300
R	1	70	90	110	130	160	190	225	250	275	300
	2	135	155	200	230	280	340	390	440	480	520
L	3	330	380	470	570	670	820	950	1060	1180	1310
	4	510	610	730	900	1040	1280	1470	1650	1790	2010
	5	740	870	1060	1300	1500	1840	2130	2380	2570	2880

PRICE LIST

Model "S"		Model "R"		Model "L"		
Size.....	0	1	2	3	4	5
List price.....	$14.50	$25.00	$40.00	$55.00	$80.00	$110.00

DIMENSIONS OF PENBERTHY AUTOMATIC CELLAR DRAINERS

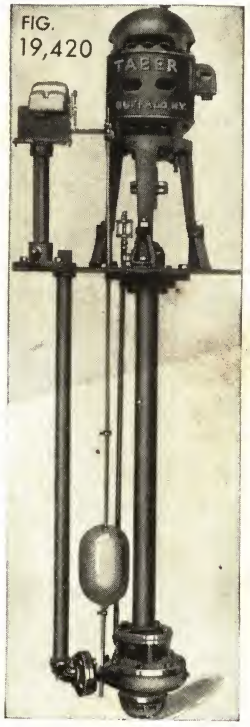
Model	Size No.	A High water, in.	C Diameter crock, in.	D Discharge I. P. diameter	E Supply I. P. diameter	G Centers of cutouts in cover, in.	K Diameter of drainer, in.	J Height of drainer valve open, in.	O Height to seat of socket, in.	T Height to floor level, in.	U Height to outlet, in.	X Height to inlet, in.
S	0	13-18	15	1	½	7½	11¾	19½	24	26½	2¾	19½
R	1	13½	15	1	½	6	10⅜	21½	21	23½	7¾	20⅜
	2	13½	15	1¼	¾	7½	12⅞	21½	21	23½	7¾	20⅜
L	3	12¾	20	1½	1	13	15⅛	25⅜	33	36	19⅜	19⅜
	4	14½	24	2	1¼	15⅞	18½	27½	33	36	20¼	20¼
	5	14½	27	2½	1½	17½	20⅝	27⅝	33	36	20⅜	20⅜

ESTABLISHED 1859

TABER PUMP CO.

Drainage, Sewage and Circulating Pumps; Standard and Specially Engineered; Automatic and Sanitary

315 Elm Street, BUFFALO, N. Y.



Capacities

From 10 to 600 G.p.m., from ¼ to 5 Hp., from 18 to 30 ft. head, also Duplex (2 pumps mounted on one cover plate)—all with fully enclosed pit covers. For heads and capacities other than indicated here, please write us. Cover plates are an integral part of Taber pumps, not "hung on" as an after-thought. In fact, Taber pumps are built to perform satisfactorily rather than to meet the lowest prices available. They have a wide range of capacities without overloading the driving motor at any time. All pumps are shipped complete ready to operate as soon as connected.

Reliability

For many years Taber has furnished drainage or sump pumps, as well as sewage and circulating pumps, for various types of buildings. Often special pumps had to be designed to cope with unusual conditions. From this vast specialized knowledge has emerged a reliability of pump performance which has enabled engineers, architects, maintenance men and plumbing contractors to forget their worries. They know that when they specify "Taber" the performance will be even beyond what was promised. Needless to say, Taber engineering and construction, together with the electrical equipment used, are of the very best.

Complete Bulletins

These are available and will be sent on request. Bulletin S-135 (Drainage Pump Nos. 1 and 2), Bulletin SS-538 (Drainage Pump Nos. 3 and 4) and Bulletin SS-629 (Sump Pumps for Drainage, Sewage and Blow-off Basin). We are always glad to receive requests for information and quotation.

SINGLE UNITS 1750 R.p.m.
Fig. 19,420—60-cycle and D-c.

Type No.	Gallons per minute	Head, ft.	Discharge, in.	Size plate, in.	Hp.	Weight complete, lb.
*AL-25-2	25	20	1	24	¼	272
*ALC-40-1	40	20	1¼	24	½	300
*AL-50-2	50	20	1¼	32	¾	350
*AL-50-3	50	25	1¼	32	1	430
AL-75-2	75	20	1½	36	1	436
AL-75-3	75	25	1½	36	1½	475
AL-100-3	100	30	2	36	1½	517
AL-150-3	150	30	2½	36	2	607
AL-200-2	200	20	2½	36	2	652
AL-200-3	200	30	2½	36	3	675
AL-300-3	300	30	3	36	5	772

The above ratings apply to Fig. 19,420. The same table would apply to the Duplex, Fig. 19,418 except any two units listed are mounted on a single cover plate.

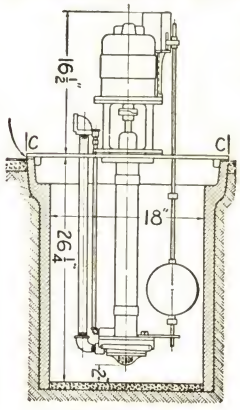


Fig. 90,677
No. 1 and No. 2
Taber Sump Pumps

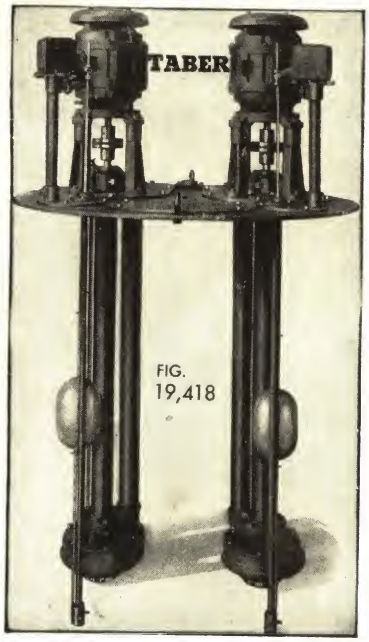
SMALLEST TABER SUMP PUMPS

G.p.m.	Max. head, ft.	Single phase
No. 1		110 or 220-volt motors
10	23	
15	21	(1) ¼ hp.
20	20	
25	18	
No. 2		(2) ½ hp.
20	26	both
25	25	1750
30	23	r.p.m.
40	21	

Motors are of repulsion-induction type.

Special Vertical Pumps

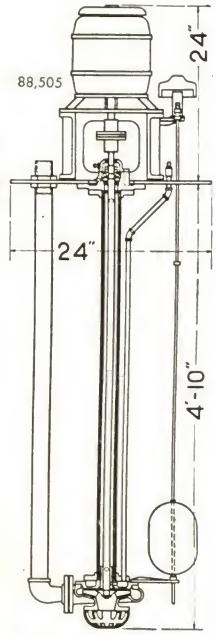
We can furnish pumps to meet any special requirements within range of capacities listed. Simply tell us what you desire to accomplish and we will give you recommendations based on 79 years' experience. No obligation.



RATING TABLE FOR TABER SUMP PUMP No. 3 AND No. 4

G.p.m.	Max. head, ft.	
No. 3		(3) 1 hp. (4) 1½ hp. both motors 1750 r.p.m. Repulsion-induction type
40	35	
60	34	
80	30	
100	26	
No. 4		
60	40	
80	35	
100	32	
120	27	

Send for detailed Taber Bulletins. Complete information contained in each regarding capacities, heads, sizes, ranges—with specifications of driving motor.



No. 3 and No. 4
Pumps

WEIL PUMP COMPANY

215 West Superior Street, CHICAGO, ILL.

SALES AND SERVICE OFFICES IN MOST OF THE PRINCIPAL CITIES

Products—Centrifugal Pumps, Automatic Sewage Pumps, Sump Pumps, Cellar Drainers, Circulating Pumps, House Supply Pumps and Condensation Pumps.

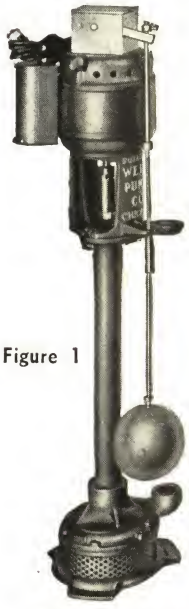


Figure 1

AUTOMATIC SUMP PUMP

The "Electric Water Boy" Cellar Drainer is used to handle basement seepage, basement floor drains, boiler pit drainage, elevator pit drainage and transformer vault drainage.

The "Electric Water Boy" is furnished completely assembled with the motor mounted, automatic float switch wired up, complete with extension cord and plug (AC, 110 volt motors). A self-supporting base plate is standard equipment. (See Fig. 1). The installation can be made in an ordinary sewer crock, 15 in. in diameter or greater, set in the floor. A sump cover should be provided. The figure 3 pump includes a 20 in. diameter adjustable cover plate. Larger covers are furnished for sumps 24 and 30 in. in diameter for single, and 36 in. in diameter for duplex.

CAPACITIES AND HEADS OF THE "ELECTRIC WATER BOY"

¼ hp., 1725 r.p.m.		¼ hp., 1425 r.p.m.		⅓ hp., 1725 r.p.m.		½ hp., 1725 r.p.m.	
Capacity	Dis. hd.	Capacity	Dis. hd.	Capacity	Dis. hd.	Capacity	Dis. hd.
10 g.p.m.	23 ft.	10 g.p.m.	14 ft.	10 g.p.m.	26 ft.	10 g.p.m.	28 ft.
15 g.p.m.	22 ft.	15 g.p.m.	13 ft.	15 g.p.m.	25 ft.	15 g.p.m.	27 ft.
20 g.p.m.	21 ft.	20 g.p.m.	12 ft.	20 g.p.m.	23 ft.	20 g.p.m.	26 ft.
30 g.p.m.	17 ft.	30 g.p.m.	10 ft.	30 g.p.m.	20 ft.	25 g.p.m.	25 ft.
40 g.p.m.	13 ft.	35 g.p.m.	9 ft.	40 g.p.m.	15 ft.	30 g.p.m.	23 ft.
50 g.p.m.	6 ft.	40 g.p.m.	8 ft.	50 g.p.m.	8 ft.	40 g.p.m.	19 ft.
						50 g.p.m.	12 ft.

The total discharge head is the vertical distance from the bottom of the pump to the highest point of delivery plus the friction of the discharge pipe and fittings.

AUTOMATIC CONDENSATION PUMP AND RECEIVER

Type "SRC" Condensation Pump and Receiver is recommended for returning condensation from radiators where gravity return is not practical or efficient. Its sturdy and compact construction makes it desirable for both commercial and residential installations.

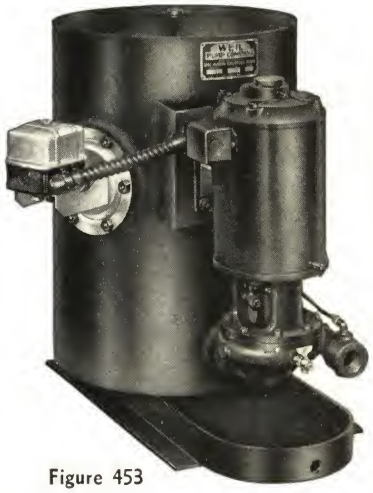


Figure 453

It is available in standard sizes with ratings from 500 to 50,000 sq. ft. E.D.R. It is recommended for use where the return lines are above the floor.

Vertical underground automatic return pumps with cast iron receivers are described in bulletin NRC-200-A. Units for higher pressure are described in bulletin TR-100-A.

SPECIFICATION FORM

Furnish and install in sump where shown on plans a Weil Pump Company's WB ..... (unit number to be given same as depth of sump in feet—for example WB-2 for 2 ft. deep sump), Figure 3, Automatic "Electric Water Boy" Sump Pump, having a capacity of ..... gallons per minutes against a head of ..... feet.

The motor shall be ..... Horsepower* for operation on ..... current, ... volt. The automatic float switch is to be arranged for permanent wiring connections.

The sump is to be (tile, concrete, or cast iron) ..... not less than 15 in. inside diameter (larger diameter better) and 1½ to 2 ft. deeper than the lowest inlet entering it.

*Give size of motor required for head and capacity specified.

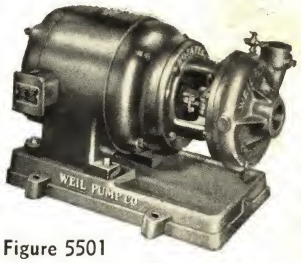


Figure 5501

WEIL ELECTROPUMP

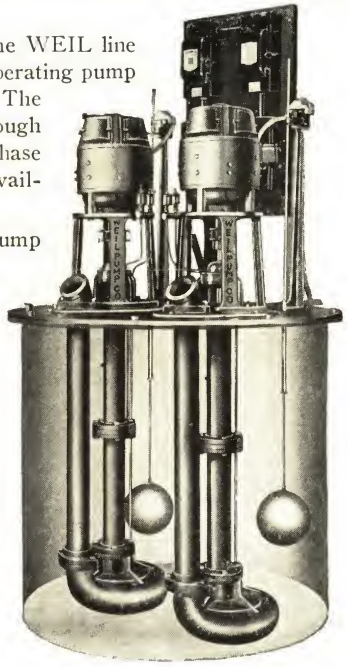
Type "R" Electropump is an all ball bearing motor mounted pump, ideally adapted for circulating hot or cold water, for sprinkler and water supply systems in factories, warehouses, apartment buildings and residences.

It is especially recommended for forced hot water heating systems.

Made in capacities up to 750 G.P.M. and for heads up to 250 ft. Standard construction is bronze fitted, also made in various alloys to meet specific conditions. Write for bulletin R5500.

NON-CLOGGING SEWAGE PUMPS, FIGURE C-900

Weil Pump Company's Non-Clogging Sewage Pumps are designed to pump sanitary waste. The pump is submerged type. It is of such rugged and simple construction throughout that it requires little attention.



The latest development in the WEIL line of Sewage Pumps is a quiet operating pump for *residence installations.* The motors required are small enough to permit operation on single phase current where 3 phase is not available.

It is recommended that a sump not less than 36 in. inside diameter be used for single, and not less than 42 in. inside diameter for duplex.

This new pump is considerably lower in price than the larger sizes in the "CN" line which we manufacture for use in commercial buildings.

Bulletin C-900-A furnishes complete engineering and lay-out data for sizes from 50 to 1500 gallons per minute.

THE ARCHITECTS' AND MECHANICAL ENGINEERS' BOOK OF

YEOMANS PUMPS

FOR USE IN DRAINAGE, SEWAGE, WATER SUPPLY, CIRCULATION, BOILER FEED, CONDENSATION, AND AIR CONDITIONING

YEOMANS BROTHERS COMPANY • 1419 N. Dayton St. Chicago, Ill.



PUMPS HOW TO SELECT THEM

27
38

CONTROLLING FACTORS IN PUMP SELECTION

While many charts and guides have been devised to aid in the selection of drainage and sewage pumps, the conditions alone determine the exact pump to fit a given duty. Many factors influence the decision such as

(1) The nature of the area to be drained
(2) The type of suspended matter in waste waters
(3) The distance below sewer level
(4) Extent of waterproofing in basement

A large safety factor to offset the unexpected should be included, since the safety of property and equipment may depend entirely upon the ability of the pumps to dispose of drainage and sewage. Unusual flood conditions can tax the capacity of the pump beyond its ability.

HOW TO CALCULATE THE DISCHARGE HEAD:

To arrive at the discharge head of a drainage pump or sewage ejector, measure the distance from the bottom of the sump or catch basin to the highest point in the discharge line to the sewer. Then add 1 ft. friction loss for each 20 ft. of discharge pipe. Thus, in the illustration below, the discharge head is figured as follows:

Distance A (Static head) ..... 20 ft.

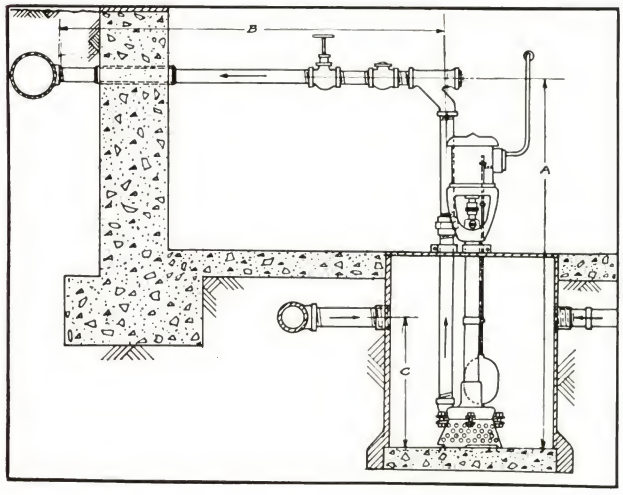
Friction loss. Length of discharge pipe (A+B) app. 40 ft.. 2 ft.

Total discharge head ..... 22 ft.

DETERMINING DEPTH OF BASIN

(SEWAGE AND DRAINAGE)

To allow ample storage of sewage, drainage, etc., provide at least 3 ft. (C) of depth below lowest inlet to the catch basin or sump. This will give reasonably long cycles of pump operation and idleness. It will eliminate too-frequent starting and stopping of apparatus, which causes unnecessary wear and reduces the life of the equipment.



THE APPROXIMATE FLOW FROM VARIOUS PLUMBING FIXTURES

(TO DETERMINE CAPACITY)

The following table gives the approximate flow in gallons per minute from various plumbing fixtures.

	per fixture
Lavatory—two ⅜ inch connections	5 GPM
Bath Tub—two ½ inch connections	8 GPM
Kitchen or Pantry sink—two ½ inch connections	5 GPM
Shower—overhead spray only—two ½ inch connections	10 GPM
Shower—with side sprays in addition to overhead spray connections	20 GPM
Slop sink—two ½ inch connections	6 GPM
Slop sink—two ¾ inch connections	10 GPM
Laundry tray—two ½ inch connections	10 GPM
Water Closet—tank type—one ⅜ inch connection	5 GPM
Water Closet—Flush Valve—one 1 inch or 1¼ inch connection	30 GPM
Urinal stall—one ⅜ inch connection	½ GPM
Drinking Fountain—one ⅜ inch connection	1 GPM
Floor Drains each	1 GPM

Drain Tile. In clay or slow-seeping ground figure approximately 1 GPM per 100 sq. ft. of area. In sand and new made ground figure at least 5 GPM. Final calculations will depend upon nature of soil and other varying conditions.

USE FACTOR FOR DIFFERENT TYPES OF BUILDINGS

Deduct percentages given below from total GPM arrived at as illustrated in the typical example below:

Schools	25%
Mercantile Buildings	40%
Hospitals	25%
Office Buildings	50%
Private Residences	60%
Hotels and Clubs	40%
Apartment Buildings and Apartment Hotels	40%

A TYPICAL EXAMPLE

Suppose that in an apartment building the basement fixtures which cannot drain directly to the street sewer consist of one slop sink (6 GPM); two laundry trays (20 GPM); two water closets (60 GPM); one shower (10 GPM); ten floor drains (10 GPM)—a total of 106 GPM. As indicated above reduce the total pumpage in the building by 40%, making a new total of 64 GPM. Adding a 50% margin of safety, we find that an ejector—because of the water closet waste—of 100 GPM capacity should be used.

Assuming that the catch basin inlet enters at 2 ft. below the floor, and that the bottom of the basin is 3 ft. below the inlet, a basin depth of 5 ft. is the solution. If the sewer is 8 ft. above the floor and friction amounts to 2 additional ft., a total head of 15 ft. must be met.

By referring to the selection charts on page 7, the proper ejector unit can easily be selected.

The same procedure applies to the selection of bilge pumps. Use the selection chart on page 5.

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YEOMANS PUMPS FOR DRAINAGE DISPOSAL

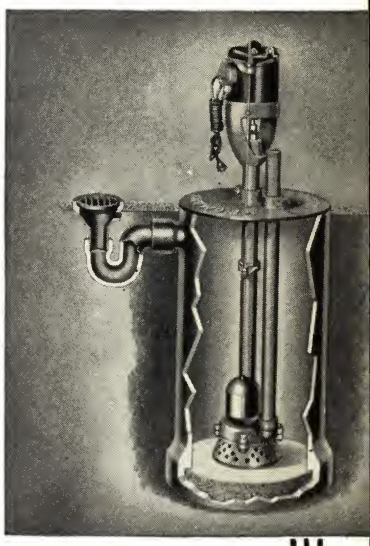
YEOMANS "DRAIN-DRI" PUMPER

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A STURDY, RUST-PROOF PUMP . . . THE KING OF ALL CELLAR DRAINERS

"DRAIN-DRI" is a trouble-proof cellar drainer that is used in garages, residences, factories, elevator pits, coal pits, or wherever it is necessary to remove a relatively small amount of drainage (up to 50-60 GPM and heads up to 20-25 ft.) from a point below the level of the sewer.

While most drainers are fundamentally alike, architects find in "Drain-Dri" a more dependable pump. Probably its greatest virtue lies in its ability to perform whenever necessity arises—day or night—year in, year out. A sticky electrical control or rusted impeller is unknown in "Drain-Dri", for the control is of the dependable industrial type, and the impeller is of the same type as is used on Yeomans sewage ejectors or sewage pumps.



HERE'S HOW IT OPERATES

As the drainage in the sump or basin rises, it lifts the hard rubber float. When drainage has accumulated in the basin to a predetermined level, the float switch automatically starts the motor and pump. As the drainage is pumped out of the basin, the float descends with the falling level of drainage, automatically opening the control switch until the basin has again filled with drainage.

YEOMANS "ADJUSTO" SPLIT CAST IRON COVER

"Drain-Dri" units can be installed in cast iron, steel, concrete, tile, or brick catch basins. Where required by local ordinances, "Drain-Dri" can be furnished with "Adjusto" split cast iron cover. Cover is readily removable without interference to discharge pipe or drainer, permitting easy access to pump and pit.

"Adjusto" covers are available for sump diameters of 18", 20", 24", 30" and 36", for all units listed.

"Drain-Dri" with "Adjusto" cover is known as Model "Y".

"Drain-Dri" without "Adjusto" cover is known as Model "B". All sizes of this type will fit in sump as small as 12" in diameter.



Used on Model "Y" only

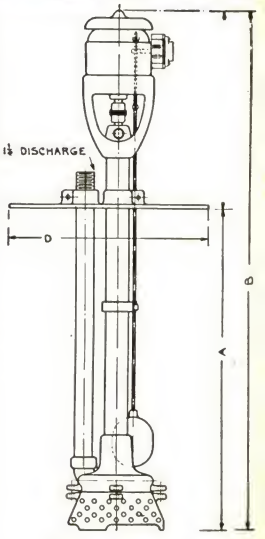
FEATURES OF THE "DRAIN-DRI" DRAINER:

MOTOR: A guaranteed ball bearing capacitor type motor operates the "Drain-Dri". It runs without radio interference, is brushless, quiet and enclosed for moisture protection. **CONTROL:** Cutler-Hammer enclosed, heavy duty float switch with hand reset overload relay. Operates even after long neglect. **PUMP BEARINGS:** Grease lubricated ball-thrust type, easily removable. Also a sealed self-lubricated sleeve bearing is easily removable. **CORD AND PLUG:** Belden cord, unbreakable soft rubber plug. **SHAFT:** Extra large, of polished steel. **COUPLING:** Lovejoy flexible, assuring vibrationless operation. **FLOAT:** Polished, sealed hard rubber, waterproof and acidproof. **SCREEN:** Rustless, galvanized cast iron, not of easily damaged wire mesh. **IMPELLER:** An outstanding feature. Is hand-finished, balanced, non-clogging type, not the little paddle wheel found in most drainers. Delivers more gallons with less power. See tables. **WEIGHT:** Weight indicates value. "Drain-Dri" is the heaviest drainer made. **RUST RESISTANCE:** Hot dipped galvanized body, hard rubber float, sealed shaft, enclosed motor.

DIMENSIONS APPLY TO BOTH MODEL "B" AND MODEL "Y"

Head in Feet	Max. Gals. per Hour Capacity		Size and No.		Normal Sump Depth-Ft.	*Dimension "A" Max. Sump Depth	Dimension "B" Height of Pump		Dimension "D" Diameter of "Adjusto" Cover	Size Discharge Connection In.
	¼ HP Unit	½ HP Unit	¼ HP Unit	½ HP Unit			¼ HP Unit	½ HP Unit		
5	3400	5200	D 2	SD 2	2	2′ 4″	3′11″	4′1″	Determined by diameter of sump. Available in 20″, 22″, 28″, 34″ and 40″ sizes.	1½
8	3200	5000	D 3	SD 3	3	3′ 4″	4′11″	5′1″		1½
10	3100	4800	D 4	SD 4	4	4′ 4″	5′11″	6′1″		1½
12	2900	4650	D 5	SD 5	5	5′ 6″	7′ 1″	7′3″		1½
15	2500	4350	D 6	SD 6	6	6′ 6″	8′ 1″	8′3″		1½
18	1800	3800	D 7	SD 7	7	7′ 8″	9′ 3″	9′5″		1½
20	1200	3500	D 8	SD 8	8	8′ 8″	10′ 3″	10′5″		1½
22	600	3000	D 9	SD 9	9	9′ 8″	11′ 3″	11′5″		1½
25		2200	D10	SD10	10	10′10″	12′ 5″	12′7″		1½
28		1200	D11	SD11	11	11′10″	13′ 5″	13′7″		1½
30		600	D12	SD12	12	12′10″	14′ 6″	14′7″		1½

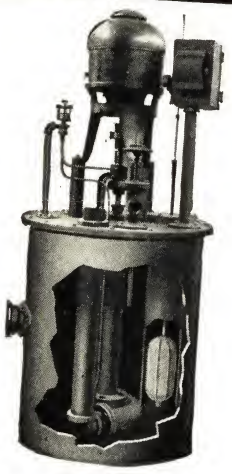
*Dimensions apply to both ¼ and ½ H.P. Units.



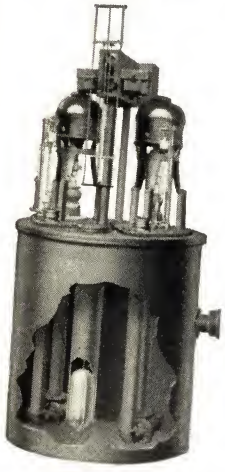
MODEL "Y" with "Adjusto" Cover

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YEOMANS HEAVY DUTY BILGE PUMPS



Single



Duplex

MORE GALLONS WITH LESS POWER

HEAVY Duty is a term applied to all Yeomans Bilge Pumps. It has reference to the high quality of materials and workmanship employed in their manufacture. It pertains to their ability to render the most satisfactory service possible under the most exacting conditions, service with low operating costs and a minimum of attention.

Yeomans Heavy Duty Bilge Pumps are suitable for automatically raising seepage, drainage and flood waters from deep basements to street sewers, and from low level drains in subways, etc.

SINGLE AND DUPLEX INSTALLATIONS

Yeomans Heavy Duty Bilge Pumps are built in single and duplex types. In the duplex installation, the control is so arranged that if one unit fails to handle the inflow, the other unit will cut in automatically, and in the event of inflow exceeding the capacity of one unit, the combined capacity of both units will be delivered.

EXTRA EQUIPMENT

Yeomans Heavy Duty Bilge Pumps can be furnished with extra equipment that increases the life of the pump. This equipment is briefly described on page 5. Additional information concerning this equipment will gladly be sent on request.

HOW HEAVY DUTY BILGE PUMPS OPERATE

The Yeomans Heavy Duty Bilge Pump consists of a submerged vertical centrifugal pump located close to the bottom of the catch basin, and connected to a motor on the basin cover. The pump is constructed with an open type impeller and large water passages, designed to prevent clogging. It is supported from the cast iron catch basin cover by a suspension pipe in which the pump shaft is enclosed.

The pump is entirely independent of the catch basin and can be lifted out by raising the basin cover without removing the drainage in the basin.

As the basin fills with water, the copper float automatically rises. The float-operated automatic starter controls the starting and stopping of the motor—the pump functioning in accordance with the rise and fall of the water in the basin.

FEATURES OF YEOMANS HEAVY DUTY BILGE PUMPS

● **Drainage at High Temperatures:** Pumps operating with a suction lift cannot handle hot liquids which vaporize under a vacuum. Yeomans Heavy Duty Bilge Pumps, being of the submerged type, will handle boiler blow-off, heating returns, engine room drips, and other hot drainage with absolute certainty.

● **Increased capacity in duplex pumps: No inlet check valves.** In the event of unusual inflow to the drainage basin, the combined capacities of both units of a duplex installation will be delivered. Since the inflow to the basin is entirely independent of the pump casings, the pumps do not have to shut down to permit refilling of the basin as in the case of pumping equipment having inlet check valves. Yeomans pumps therefore are capable of delivering full rated capacity.

● **Cannot pump back into fixtures:** In pumps constructed with inlet check valves, the latter may become clogged and cause the drainage to be pumped back into the fixtures. This cannot occur with Yeomans Heavy Duty Bilge Pumps.

● **No cross connections with city water supply.** Always primed, and requiring no city water for operation, Yeomans Heavy Duty Bilge Pumps are pollution proof. Thus, they eliminate hazards to health.

● **Impeller:** As in the case of the Screenless Ejector, the impeller in Yeomans Bilge Pump decides the efficiency of the unit. The impeller used is of the three or four blade, semi-enclosed type, finished, balanced, non-clogging type, and protected against large solids or foreign matter by cast iron suction screen of large size.

● **Efficient lubrication:** The oil reservoir at the top of the bearing housing is filled by hand when the pump is started, and thereafter the proper oil level for lubricating all sleeve bearings is maintained by a sight feed lubricator or by the Yeomans Automatic Oil Economizer.

● **Motors:** All motors are of the vertical ball bearing type, oil or grease lubricated, with drip covers over the top heads, and mounted on heavy cast iron tripod supports, keeping the motors above the floor dirt and drainage.

● **Shaft and Bearings:** The ejector shaft is of high carbon piston steel, turned, ground and polished, of liberal size, and tested for true running.

The ejector shaft and impeller are supported by an adjustable oil or grease lubricated ball thrust and bronze backed genuine babbitt sleeve guide bearing. Proper running clearance for the impeller in the casing is accomplished through the adjustability of this bearing.

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YEOMANS PUMPS FOR DRAINAGE DISPOSAL

TYPICAL SPECIFICATION
HEAVY DUTY ELECTRIC BILGE PUMP

BILGE PUMP: Furnish and install where indicated on plans, one Yeomans No..... Heavy Duty Single (or Duplex) Automatic Electric Bilge Pump having a capacity of ..... G.P.M. (for duplex add..... each unit) against a head of ..... feet.

MOTOR: Pump shall be directly connected by pin and buffer type flexible coupling to .....H.P. vertical motor with cover over top head, operating at not over .....R.P.M. and suitable for ..... current ..... volts .....phase ..... cycle. Motor shall be of ample capacity to perform the above duty without indications of overload.

AUTOMATIC CONTROLLER: Automatic control equipment shall consist of enclosed float switch and an enclosed safety line switch, mounted on pipe stand on basin cover, and shall include fuses, phase protective device for polyphase motor and across-the-line type or resistance starter if size of motor requires it. Float switch shall be actuated by heavy copper float with guided brass rod. (For duplex installations add ..... and Yeomans sequence changer.)

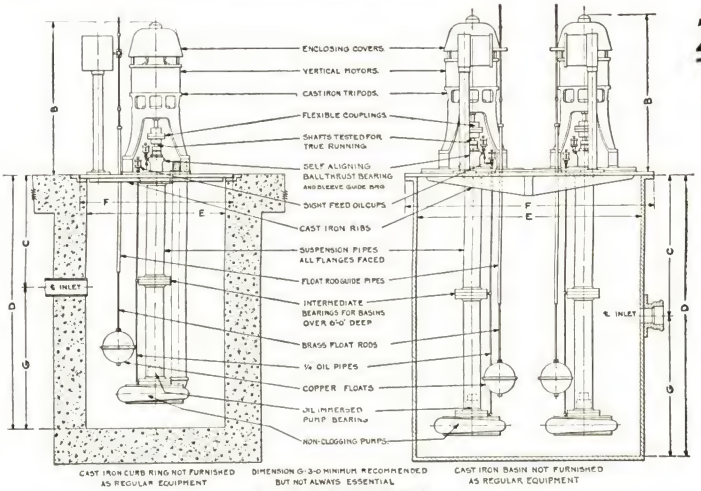
COVER PLATE: Catch basin cover shall be suitable for basin opening of ..... inches in diameter, with finished flange and surfaces for motor supports, bearings and pump suspension pipe. (For duplex installations add ..... and shall be so arranged that one unit may be removed without disturbing the other.)

WIRING: Power wiring shall be brought to outlet within 10 feet of pump location by another contractor. All connections from this point to be made by contractor installing pump.

EXTRA EQUIPMENT: If extra equipment is desired it should be individually called for in the specifications.

DUPLEX INSTALLATIONS: Specifications for duplex installation same as for single pump. See exceptions.

"INTERCHANGER": To provide automatic alteration of pumps in a duplex set, specify Yeomans "Interchanger Automatic Pump Control".



DIMENSIONS

** Pump Number	Size Disch. Each A	B Approx.	C	D	SINGLE E	SINGLE F	SINGLE Bolt* Holes	SINGLE Diam. Bolt Circle	DUPLEX E	DUPLEX F	DUPLEX Bolt* Holes	DUPLEX Diam. Bolt Circle
3153	1½"	30"	Determined By Depth of Drains		36"	40"	4-5/8"	38"	42"	46"	4-5/8"	44"
3203	2"	36"			36"	40"	4-5/8"	38"	42"	46"	4-5/8"	44"
3303	3"	40"			36"	40"	4-5/8"	38"	48"	54"	4-5/8"	51"
3403	4"	44"			48"	54"	4-5/8"	51"	60"	65"	4-¾"	63"
3503	5"	48"			48"	54"	4-5/8"	51"	60"	65"	4-¾"	63"

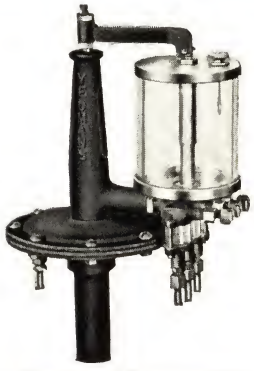
*Bolt Holes drilled ⅛" larger than bolts.
**Letter Designations in Pump Numbers in Selection Charts have no bearing on dimensions in this table.

BILGE PUMP SELECTION TABLE—1750 R. P. M.

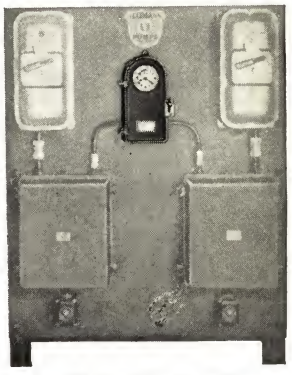
Selection table below gives Pump No., Model Code Word, and Horsepower of Motor required.

Cap. GPM Each Pump	Size Disch. Each Pump	Total head in feet 15	20	25	30	35	40	50	60
35	1½"	3153-A YBCBB ⅓ HP	3153-A YBCBC ½ HP	3153-A YBCBD ½ HP	3153-G YBCBE ¾ HP	3153-G YBCBF 1 HP	3153-G YBCBG 1 HP	3153-L YBCBI 1½ HP	3153-L YBCBJ 1½ HP
50	1½"	3153-A YBCCB ½ HP	3153-A YBCCC ½ HP	3153-A YBCCD ¾ HP	3153-G YBCCE 1 HP	3153-G YBCCF 1 HP	3153-G YBCCG 1½ HP	3153-L YBCCI 1½ HP	3153-L YBCCJ 2 HP
60	2"	3203-A YBCDB ½ HP	3203-A YBCDC ¾ HP	3203-G YBCDD ¾ HP	3203-G YBCDE 1 HP	3203-G YBCDF 1 HP	3203-G YBCDG 1½ HP	3203-L YBCDI 1½ HP	3203-L YBCDJ 2 HP
75	2"	3203-A YBCEB ¾ HP	3203-G YBCEC ¾ HP	3203-G YBCED 1 HP	3203-G YBCEE 1 HP	3203-G YBCEF 1½ HP	3203-G YBCEG 1½ HP	3203-L YBCEI 2 HP	3203-L YBCEJ 2 HP
100	3"	3303-C YBCFB ¾ HP	3303-G YBCFC 1 HP	3303-G YBCFD 1½ HP	3303-G YBCFE 1½ HP	3303-G YBCFF 1½ HP	3303-H YBCFG 2 HP	3303-O YBCFI 3 HP	3303-O YBCFJ 3 HP
125	3"	3303-H YBCGB 1 HP	3303-H YBCGC 1 HP	3303-H YBCGD 1½ HP	3303-H YBCGE 1½ HP	3303-H YBCGF 2 HP	3303-H YBCGG 2 HP	3303-O YBCGI 3 HP	3303-O YBCGJ 5 HP
150	3"	3303-H YBCHB 1 HP	3303-H YBCHC 1½ HP	3303-H YBCHD 1½ HP	3303-H YBCHE 2 HP	3303-H YBCHF 3 HP	3303-O YBCHG 3 HP	3303-O YBCHI 3 HP	3303-O YBCHJ 5 HP
200	3"	3303-I YBCJB 1½ HP	3303-I YBCJC 1½ HP	3303-I YBCJD 2 HP	3303-I YBCJE 3 HP	3303-I YBCJF 3 HP	3303-I YBCJG 3 HP	3303-O YBCJI 5 HP	3303-O YBCJJ 5 HP
250	4"	3403-I YBCLB 1½ HP	3403-I YBCLC 2 HP	3403-I YBCLD 3 HP	3403-I YBCLE 3 HP	3403-I YBCLF 5 HP	3403-I YBCLG 5 HP	3403-O YBCLI 5 HP	3403-O YBCLJ 7½ HP
300	4"	3403-I YBCNB 2 HP	3403-I YBCNC 3 HP	3403-I YBCND 3 HP	3403-I YBCNE 5 HP	3403-I YBCNF 5 HP	3403-O YBCNG 5 HP	3403-P YBCNI 7½ HP	3403-P YBCNJ 7½ HP
400	5"	3503-I YBCRB 3 HP	3503-I YBCRC 5 HP	3503-I YBCRD 5 HP	3503-P YBCRE 5 HP	3503-P YBCRF 5 HP	3503-P YBCRG 7½ HP	3503-P YBCRI 7½ HP	3503-P YBCRJ 10 HP
450	5"	3503-I YBCSB 5 HP	3503-I YBCSC 5 HP	3503-P YBCSD 5 HP	3503-P YBCSE 5 HP	3503-P YBCSF 7½ HP	3503-P YBCSG 7½ HP	3503-P YBCSI 10 HP	3503-P YBCSJ 10 HP
500	5"	3503-P YBCTB 5 HP	3503-P YBCTC 5 HP	3503-P YBCTD 5 HP	3503-P YBCTE 7½ HP	3503-P YBCTF 7½ HP	3503-P YBCTG 7½ HP	3503-P YBCTI 10 HP	3503-P YBCTJ 15 HP

The above table shows only a representative group of Yeomans Heavy Duty Bilge Pumps. Other standard units are furnished in larger or smaller sizes at 850, 1150, 1450 and 1750 R. P. M. (Higher or lower motor speeds are available as special equipment.)



Yeomans Automatic Oil Economizer



"Interchanger" Automatic Pump Control

EXTRA EQUIPMENT AVAILABLE

Yeomans Automatic Oil Economizer: which supplies oil to bearings only when the pump is running, stops needless waste of oil, lessens danger of bearings running without oil, lessens frequency of filling oil container, cuts maintenance and repairs, increases life of equipment, keeps motor floor cleaner.

Slow speed motors: Slow speed motors (850 R.P.M.).

Eight inch float pipe: Protects float from injury from floating objects.

High water alarm: Rings a bell in case pump fails to operate.

Central duplex control panel: All controlling devices mounted on basin cover, saving floor space. Starters and switches are located immediately above motor which they control. Simple wiring connection.

"Interchanger" automatic pump control: Automatically controls alternating of pumps in duplex installations. It equalizes wear and keeps all connections clear by cutting in first one unit and then the other.

Automatic floatless control: Eliminates the use of floats. Assures complete automatic electric control. A-C. only.

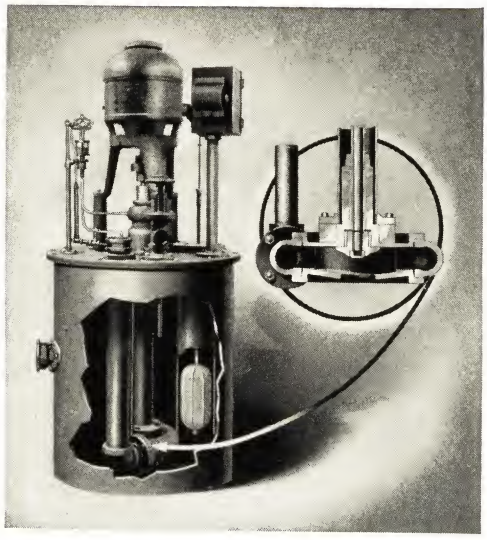
NOTE: Yeomans self-priming device is available for all clear water pumps.

YEOMANS PUMPS FOR SEWAGE DISPOSAL

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YEOMANS SCREENLESS SEWAGE EJECTORS

ENDORSED BY ARCHITECTS AND ENGINEERS THE WORLD OVER



SINCE 1898 Yeomans has specialized in the building of centrifugal pumps for sewage and heavy liquid disposal. That these pumps have given dependable, efficient service is proven by Yeomans acceptance the world over.

Yeomans Screenless Ejectors are widely used in deep basements, disposal works and industrial plants. A common application is in the pumping of liquids containing solids, etc. Unlike suction-type sewage pumps, Yeomans Submerged Screenless Ejectors handle high temperature liquids.

SINGLE AND DUPLEX INSTALLATIONS

Yeomans Screenless Sewage Ejectors are built for single or duplex installations. In the duplex ejectors, the control is so arranged that if one unit fails to handle the inflow, the other unit will cut in automatically, and in the event of inflow exceeding the capacity of one unit, the combined capacities of both units will be delivered.

EXTRA EQUIPMENT

Yeomans Screenless Sewage Ejectors can be furnished with extra equipment that increases the life of the pump. This extra equipment is briefly described on page 5. Additional information will gladly be sent on request.

HOW THE SCREENLESS EJECTOR OPERATES

This unit consists of a centrifugal non-clogging ejector located near the bottom of the sump or catch basin, and directly connected to a vertical shaft, enclosed in a suspension pipe, to an electric motor mounted on the sump cover.

As the basin fills with drainage and sewage, the copper float automatically rises. (See illustration.) The float operated automatic starter controls the starting and stopping of the motor—the pump functioning in accordance with the rise and fall of liquid in the basin.

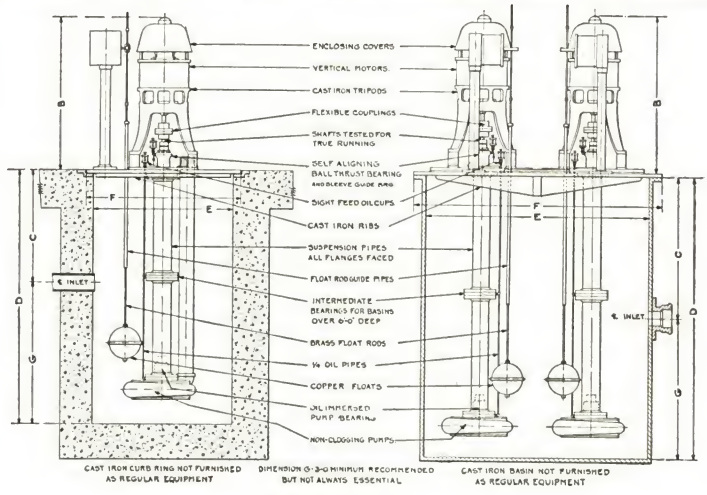
FEATURES

All of the features listed on page 4 under Yeomans Heavy Duty Bilge Pumps also apply to Yeomans Screenless Sewage Ejectors. Note, too, the following additional features:

Impeller: Yeomans 2-blade non-clogging impeller will readily pass rags and solids. This feature results from a design embodying unusual blade width, large water passages and rounded forward blade ends. There are but two waterways in this impeller and no hubs or vanes to obstruct the entrance—thus eliminating a common source of trouble found in ordinary centrifugal pumps.

No inlet check valves: These ejectors are capable of continuous rated capacity because there is no stoppage of inflow into basin while pumps are operating. No screens are required on inlets to basin, ejector casings or in discharge piping, thus assuring freedom from clogging.

Note: Yeomans self-priming device is available for all horizontal pumps operating with a suction lift.



DIMENSIONS

Ejector Number	Size Discharge A	B Approx.	C	D	SINGLE E	SINGLE F	SINGLE Bolt* Holes	SINGLE Dia. Bolt Circle	DUPLEX E	DUPLEX F	DUPLEX Bolt* Holes	DUPLEX Dia. Bolt Circle
8415 to 8435	4"	48"	Determined By Depth of Drains		36"	40"	4-5/8"	38"	48"	54"	4-5/8"	51"
8515 to 8535	5"	51"			48"	54"	4-5/8"	51"	60"	65"	4-3/4"	63"
8625 to 8635	6"	54"			48"	54"	4-5/8"	51"	60"	65"	4-3/4"	63"

*Bolt Holes Drilled 1/8" Larger Than Bolts

YEOMANS PUMPS FOR SEWAGE DISPOSAL

TYPICAL SPECIFICATION

SCREENLESS SEWAGE EJECTOR

SEWAGE EJECTOR: Furnish and install where indicated on plans, one Yeomans No. ..... Single (or Duplex) Automatic Screenless Sewage Ejector having a capacity of ..... G.P.M. (for duplex set add ..... each unit) against a head of ..... feet.

MOTOR: Ejector shall be directly connected to..... H.P. vertical ball bearing motor operating at not over.....R.P.M. and suitable for.....current .....volts.....phase.....cycle.

AUTOMATIC CONTROL: Automatic control equipment shall consist of enclosed float switch and an enclosed safety switch, mounted on pipe stand on basin cover, and shall include fuses, phase protective device for polyphase motor and across-the-line type or resistance starter if size of motor requires it. Float switch shall be actuated by heavy copper float with guided brass rod. (For duplex installations add.....and Yeomans sequence changer.)

COVER PLATE: Catch basin cover shall be gas tight and suitable for basin opening of.....inches in diameter. Provide flanged opening in cover for vent and 11"x15" manhole with cast iron cover.

WIRING: Power wires will be brought to outlet within 10 feet of pump location by another contractor. All connections from this point to be made by contractor installing pump.

EXTRA EQUIPMENT: If extra equipment is desired it should be individually called for in the specifications.

DUPLEX INSTALLATIONS: Specifications for duplex Ejectors same as for Single Ejector. Note exception below:

COVER PLATE: Main catch basin cover shall be gas tight and suitable for opening.....inches in diameter, with separate ejector suspension plates with surfaces for motor supports and bearings, and suspension pipes shall be so arranged that one unit may be removed without disturbing the other. Provide flanged opening in cover for vent and 11"x15" manhole with cast iron cover.

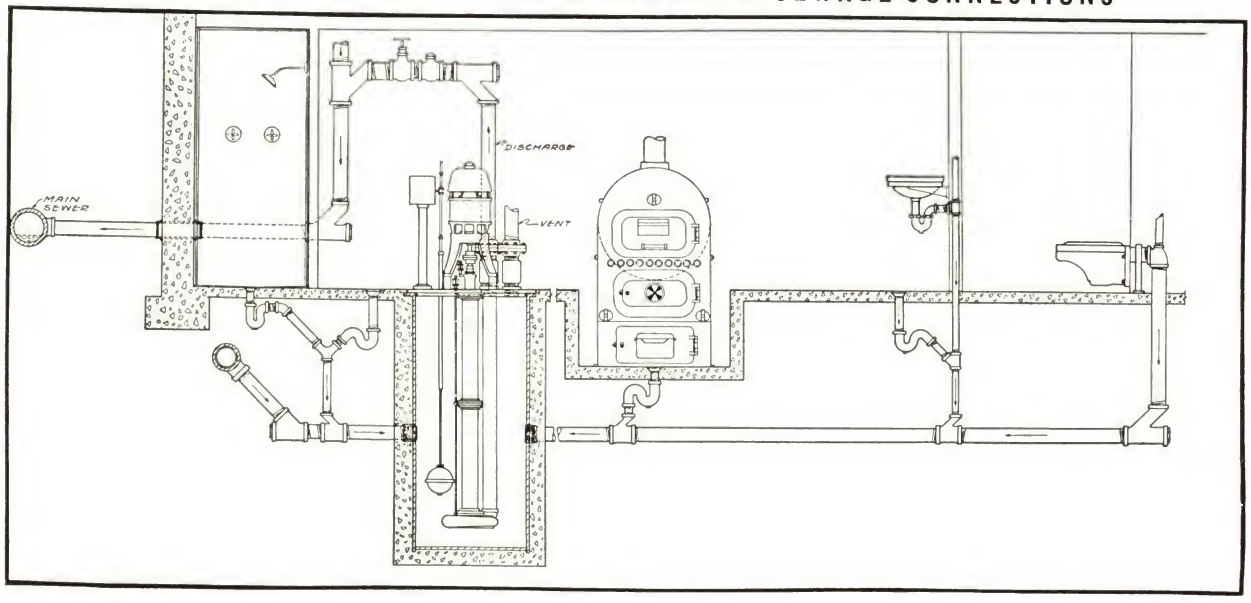
SCREENLESS EJECTOR SELECTION TABLE—1150 R.P.M.

Selection table below gives Pump No., Model Code Word and Horsepower of Motor required.

Pump Cap. G.P.M.	Discharge Size	TOTAL HEAD IN FEET										
		10	15	20	25	30	35	40	45	50	60	75
75	4"	8415 YBCEA ¾ H.P.	8415 YBCEB 1 H.P.	8425 YBCEC 1½ H.P.	8425 YBCED 2 H.P.	8425 YBCEE 3 H.P.	8425 YBCEF 3 H.P.	8425 YBCEG 5 H.P.	8425 YBCEH 5 H.P.	8435 YBCEI 5 H.P.	8435 YBCEIJ 7½ H.P.	8435 YBCEK 10 H.P.
100	4"	8415 YBCFA ¾ H.P.	8415 YBCFB 1 H.P.	8425 YBCFC 1½ H.P.	8425 YBCFD 2 H.P.	8425 YBCFE 3 H.P.	8425 YBCFF 3 H.P.	8425 YBCFG 5 H.P.	8425 YBCFH 5 H.P.	8435 YBCFI 5 H.P.	8435 YBCFJ 7½ H.P.	8435 YBCFK 10 H.P.
125	4"	8415 YBCGA ¾ H.P.	8415 YBCGB 1 H.P.	8425 YBCGC 1½ H.P.	8425 YBCGD 2 H.P.	8425 YBCGE 3 H.P.	8425 YBCGF 5 H.P.	8425 YBCGG 5 H.P.	8425 YBCGH 5 H.P.	8435 YBCGI 7½ H.P.	8435 YBCGJ 7½ H.P.	8435 YBCGK 10 H.P.
150	4"	8415 YBCHA ¾ H.P.	8415 YBCHB 1½ H.P.	8425 YBCHC 2 H.P.	8425 YBCHD 2 H.P.	8425 YBCHE 3 H.P.	8425 YBCHF 5 H.P.	8425 YBCHG 5 H.P.	8435 YBCHH 5 H.P.	8435 YBCHI 7½ H.P.	8435 YBCHJ 7½ H.P.	8435 YBCHK 10 H.P.
175	4"	8415 YBCIA ¾ H.P.	8415 YBCIB 1½ H.P.	8425 YBCIC 2 H.P.	8425 YBCID 3 H.P.	8425 YBCIE 3 H.P.	8425 YBCIF 5 H.P.	8425 YBCIG 5 H.P.	8435 YBCIH 7½ H.P.	8435 YBCII 7½ H.P.	8435 YBCIJ 10 H.P.	8435 YBCIK 15 H.P.
200	4"	8415 YBCJA 1 H.P.	8425 YBCJB 1½ H.P.	8425 YBCJC 2 H.P.	8425 YBCJD 3 H.P.	8425 YBCJE 3 H.P.	8425 YBCJF 5 H.P.	8425 YBCJG 5 H.P.	8435 YBCJH 7½ H.P.	8435 YBCJI 7½ H.P.	8435 YBCJJ 10 H.P.	8435 YBCJK 15 H.P.
225	4"	8415 YBCKA 1 H.P.	8425 YBCKB 1½ H.P.	8425 YBCKC 2 H.P.	8425 YBCKD 3 H.P.	8425 YBCKE 5 H.P.	8425 YBCKF 5 H.P.	8425 YBCKG 5 H.P.	8435 YBCKH 7½ H.P.	8435 YBCKI 7½ H.P.	8435 YBCKJ 10 H.P.	8435 YBCKK 15 H.P.
250	5"	8515 YBCLA 1 H.P.	8525 YBCLB 1½ H.P.	8525 YBCLC 3 H.P.	8525 YBCLD 3 H.P.	8525 YBCLE 5 H.P.	8525 YBCLF 5 H.P.	8525 YBCLG 5 H.P.	8535 YBCLH 7½ H.P.	8535 YBCLI 7½ H.P.	8535 YBCLJ 10 H.P.	8535 YBCLK 15 H.P.
275	5"	8515 YBCMA 1½ H.P.	8525 YBCMB 2 H.P.	8525 YBCMC 3 H.P.	8525 YBCMD 3 H.P.	8525 YBCME 5 H.P.	8525 YBCMF 5 H.P.	8525 YBCMG 5 H.P.	8535 YBCMH 7½ H.P.	8535 YBCMI 7½ H.P.	8535 YBCMJ 10 H.P.	8535 YBCMK 15 H.P.
300	5"	8515 YBCNA 1½ H.P.	8525 YBCNB 2 H.P.	8525 YBCNC 3 H.P.	8525 YBCND 5 H.P.	8525 YBCNE 5 H.P.	8525 YBCNF 5 H.P.	8535 YBCNG 7½ H.P.	8535 YBCNH 7½ H.P.	8535 YBCNI 7½ H.P.	8535 YBCNJ 10 H.P.	
350	5"	8525 YBCPA 1½ H.P.	8525 YBCPB 2 H.P.	8525 YBCPC 3 H.P.	8525 YBCPD 5 H.P.	8525 YBCPE 5 H.P.	8525 YBCPF 5 H.P.	8535 YPCPG 7½ H.P.	8535 YBCPH 7½ H.P.	8535 YBCPI 10 H.P.	8535 YBCPJ 15 H.P.	
400	6"	8625 YBCRA 2 H.P.	8625 YBCRB 3 H.P.	8625 YBCRC 3 H.P.	8625 YBCRD 5 H.P.	8625 YBCRE 5 H.P.	8635 YBCRF 7½ H.P.	8635 YBCRG 7½ H.P.	8635 YBCRH 7½ H.P.	8635 YBCRI 10 H.P.	8635 YBCRJ 15 H.P.	
500	6"	8625 YBCTA 3 H.P.	8625 YBCTB 5 H.P.	8625 YBCTC 5 H.P.	8625 YBCTD 5 H.P.	8635 YBCTE 7½ H.P.	8635 YBCTF 7½ H.P.	8635 YBCTG 7½ H.P.	8635 YBCTH 10 H.P.	8635 YBCTI 15 H.P.	8635 YBCTJ 15 H.P.	
600	6"	8635 YBCUA 3 H.P.	8635 YBCUB 5 H.P.	8635 YBCUC 5 H.P.	8635 YBCUD 7½ H.P.	8635 YBCUE 7½ H.P.	8635 YBCUF 7½ H.P.	8635 YBCUG 10 H.P.	8635 YBCUH 10 H.P.	8635 YBCUI 15 H.P.	8635 YBCUJ 15 H.P.	

The above table shows only a representative group of Yeomans Screenless Sewage Ejectors. Other standard units are furnished in larger or smaller sizes at 850, 1150, 1450 and 1750 R. P. M. (Higher or lower motor speeds are available as special equipment.)

● TYPICAL BASEMENT DIAGRAM WITH DRAINAGE AND SEWAGE CONNECTIONS

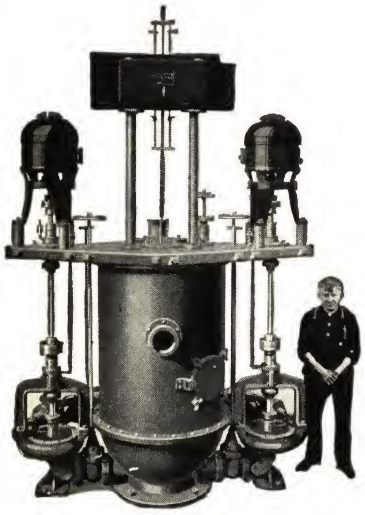


YEOMANS PUMPS FOR SEWAGE DISPOSAL

27
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YEOMANS FORM "A" DUPLEX SCREENLESS EJECTOR

A COMPLETE SEWAGE PUMPING PLANT



Form "A"—Screenless Centrifugal Sewage Ejector

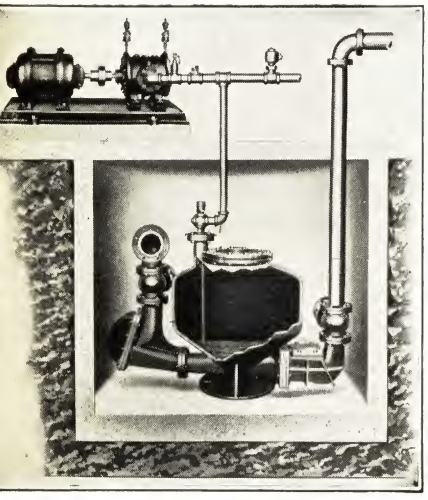
Form "A" ejectors are recommended for use in office buildings, bank buildings, hotels, hospitals, public buildings, and in municipalities where conditions require that the pump handle drainage and sewage from low levels.

One of the most important features of Form "A" is its accessibility and the fact that it is a complete pumping plant, with receiver, complement of valves, etc. The cast iron sewage receiver is located in the center of a dry pit built of concrete or steel embedded in concrete. In the dry annular space between the receiver and the ejector pit is located a Form "A" Ejector, with suctions connected to the bottom of the receiver, and with discharge connections brought together in a double branch fitting. Special flush-back check valves are provided on the discharge of each unit. For additional safeguards, gate valves are installed on the suction and discharge of each pump.

Form "A" is equipped with automatic lubrication and high water alarm. It will handle drainage at boiling point, and assures low maintenance cost and low power consumption. Capacities 100-600 GPM each unit and larger. Heads up to 100 feet and higher.

A few typical installations follow: First National Bank, Boston; Bell Telephone Bldg., St. Louis; Elks Club, Los Angeles; Ritz-Carlton Hotel, Philadelphia; Tutweiler Hotel, Birmingham; Palace Theatre, New York; Chicago Tribune Tower; Masonic Temple, Topeka; Adolphus Hotel, Dallas. Write for Bulletin 2400.

THE SHONE SYSTEM OF SEWAGE EJECTION



Electrically Controlled Ejector
This newest Shone has NO MOVING PARTS on or inside the ejector—the only ejector dispensing with such accessories. High efficiency, lower first cost and maintenance, are characteristic. Bulletin 4050.

The Shone Sewage Ejector was invented over fifty years ago by Isaac Shone, a noted English sanitary engineer. Since then, with few changes in design, it has been accepted as the standard sewage ejector by leading engineers. It is not only the oldest but the most modern ejector on the market today. Capacities range from 50-600 GPM, heads, up to 75 feet.

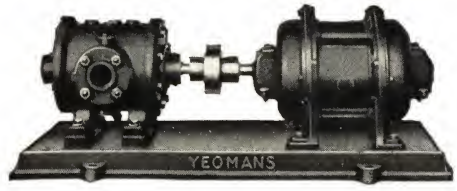
Shone Ejectors are used in large office buildings, hotels, industrial plants, municipal sewerage systems and government buildings. They are especially desirable where compressed air is required for other purposes within the building. The Shone Ejector consists of a closed sewage receiver or pot with complement of gate and check valves and automatic bronze air valves, motor driven air compressor and automatic control. The sewage from the drains enters the vented ejector and when the receiver is full, the automatic bronze air valves are actuated, admitting compressed air to the receiver which in turn discharges the contents to the street sewer.

A few typical installations follow: Armour & Co., Chicago; Federal Reserve Bank, Houston; Philadelphia Convention Hall; Chase National Bank, New York; Sears-Roebuck, Washington; Hotel Gibson, Cincinnati; Book-Cadillac Hotel, Detroit; U. S. Post Offices, Sacramento, Calif.; Camden, N. J.; Pittsburgh; Tyler, Texas; Dept. of Commerce, Washington; Dept. of Labor Bldg., Washington; Municipal installations include Cedar Rapids, Iowa; Dayton, Ohio; Dallas, Texas; Milwaukee, Wis.

Architects and engineers desiring information are requested to write for Bulletins 4000 and 4050.

ROTARY AIR COMPRESSOR

The Yeomans Rotary Air Compressor was designed for operation with the Shone Ejector, but is in use for many other purposes. It has no belts, pulleys or gears and produces a non-pulsating discharge. It operates quietly at high speed, and requires little floor space. These same type machines are available as vacuum pumps and come in sizes to produce pressures as high as 50 lbs., vacua as complete as 27". Send for Bulletin 7200 which describes these rotary air pumps completely.



EQUIPMENT FOR SEWAGE TREATMENT PLANTS

Yeomans makes a complete line of equipment for use in municipal or institutional sewage treatment plants.

For handling the sewage and sludge Yeomans offers centrifugal and plunger type pumps and pneumatic ejectors. These are all built rugged and dependable in modern, highly efficient designs, and in sizes and types to meet every need.

Where only primary treatment is wanted Yeomans makes the Simplex Concentrator or Clarifier to collect the sludge which has settled out in the sedimentation tank. For more complete treatment there is the Yeomans-Simplex Mechanical Aerator and the Rotary Distributor. These machines are in use all over the world, boasting records of unequalled performances.

For complete information and specifications on sewage treatment equipment write to Yeomans factory or to your nearest Yeomans representative (see back page).

YEOMANS PUMPS

FOR CIRCULATION AND WATER SUPPLY

CENTRIFUGAL PUMPS FOR WATER SUPPLY AND CIRCULATION 27/38

The Yeomans pumps described below have various uses such as pumping brine, acid, alkali, etc. They are exceptionally efficient in water supply systems, boosting city pressures and circulating drinking water and hot water. They find service in swimming pools, greenhouses, air conditioning plants and large buildings—in short wherever liquids are to be pumped.

Yeomans makes a complete range of pumping units for such work. If the pumps shown below do not handle your requirements, write to the Yeomans factory or to your nearest Yeomans representative (See Back Page).

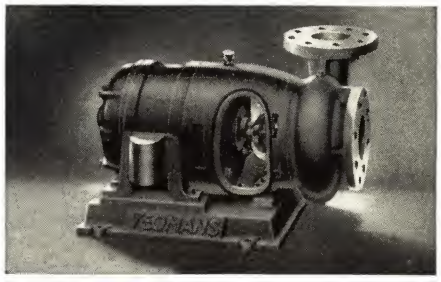


THE "TURRET" PUMP . . . FITS RIGHT IN THE PIPE LINE

In the "Turret" Pump, Yeomans has developed an aggressive and worthy competitor to the familiar horizontal split case centrifugal pump. For here is a pump that fits right in the pipe line. In the smaller sizes, no support is needed; in the larger models, no built up foundation is necessary. The motor is on top, away from floor dirt and moisture. Also, the "Turret" Pump takes but little space. Capacities range from 10-600 GPM, and heads from 10 to 300 feet.

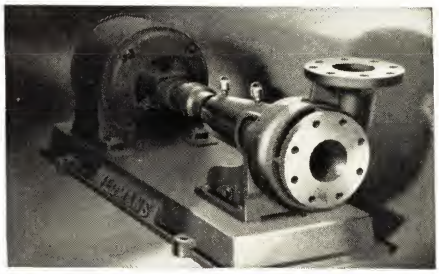
Lighter, more compact, more efficient, the "Turret" Pump is ideal for water supply. It can be used in the gravity, pressure, or tankless booster systems with considerable savings in installation costs and operation. Complete information in Bulletin 1200.

THE "MOTOPUMP" CLOSE-COUPLED CENTRIFUGAL



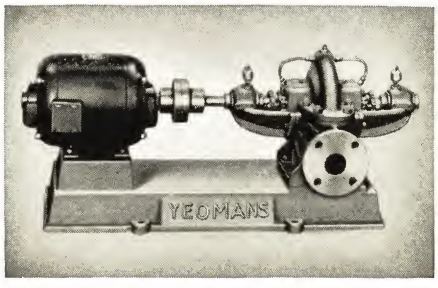
This substantial unit is designed for general service including the handling of hot and cold water, brine, and other liquid circulation. Designed without couplings or intermediate bearings, this pump is compact and flexible. It requires no built up foundation; it may be bolted to floor, wall, or ceiling. There are no bearings inside the pump casing. The impeller is balanced, keyed and locked to the shaft, and factory fitted, requiring no field adjustment. Capacities range from 10-600 GPM, heads from 10-300 feet. Bulletin 1100.

YEOMANS CENTRIFUGAL PUMPS BALL BEARING



This pump is used for pumping high temperature liquids, foodstuffs, certain acids, liquids containing abrasives, etc. The two large ball bearings are outside and independent of the pump casing. This pump is free from vibration and critical speeds. Frictionless all-metal piston ring seal protects the bearings. Construction is extra heavy, and includes a semi-steel, semi-enclosed impeller with efficiencies equaling and exceeding those of highly finished enclosed types. Capacities range from 10-600 GPM, heads from 10-300 feet. Bulletin 1000.

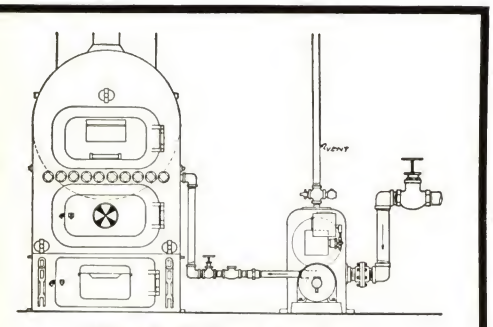
YEOMANS HORIZONTALLY SPLIT CASE PUMPS



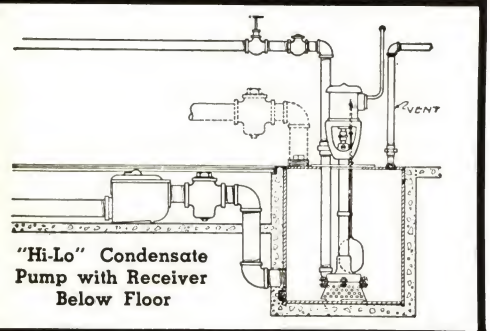
This pump is used for house supply and general service—usually in large installations. It is designed for easy maintenance, and may be inspected without disturbing piping. The impeller is balanced, enclosed. Bearings are ball or roller type, insuring smooth operation and long life. Equipped with extra deep stuffing boxes with bolted glands. Also available in multi-stage type. A highly efficient and satisfactory pump for capacities of 25-1000 GPM, and heads up to 400 feet. Described in Yeomans' fully illustrated Bulletin HS-1300.

YEOMANS PUMPS FOR HEATING SYSTEMS

WHERE AND HOW PUMPS ARE USED IN HEATING SYSTEMS



"Motopump" Condensate Unit with Receiver Above Floor



"Hi-Lo" Condensate Pump with Receiver Below Floor

In many heating installations it is necessary to place radiation or heating units below the boiler water line. In such cases it is only necessary to provide a pump of sufficient capacity to handle the condensate from these units, allowing condensate from radiation on upper floors to return to the boiler by gravity.

These pumps, when properly selected, often make poorly constructed heating systems work better, and also afford great saving of fuel. With gas or oil fired boilers they are often the means of overcoming most of the operating difficulties.

The Yeomans Condensation Pumps and Receivers described below are designed for automatically returning condensate to boilers from gravity steam heating systems.

HOW TO SELECT THE PROPER UNIT

Condensation pumps are rated: (1) according to the total E.D.R. (radiating surface) of the heating units draining into the pump receiver and (2) by the boiler pressure, against which the returns must be pumped. The selection chart for the "Motopump" Type unit below illustrates how these two factors will prescribe the proper unit for each duty.

Duplex sets can be furnished in all the various designs shown here. These are specified often to provide a margin of safety, sometimes merely to provide double capacity. Receivers on duplex units are proportionately larger. (See opposite page.)

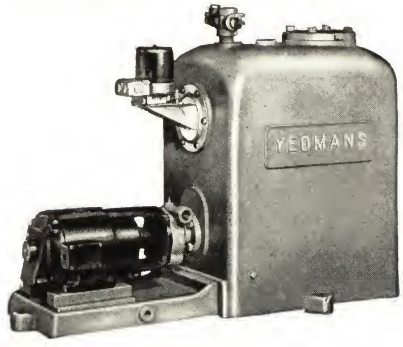
Where the return lines from radiators below boiler water level are above the floor the horizontal units can be used but where the return lines are below the floor, vertical units, set in pits or sumps, must be employed.

"MOTOPUMP" TYPE CONDENSATION RETURN UNIT

"Motopump" Type is a horizontal condensation return unit. It is compact, exceedingly sturdy and performs with high efficiency. All parts are of the finest, assuring long life and dependable, troublefree operation.

Pump is of the close coupled type, bronze fitted. Motor is splashproof and can be removed without disturbing pipe connections. Receiver is of cast iron. Float switch has no stuffing box—seals absolutely.

This new design takes little floor area and does away with the old awkward pipe fittings. It is shipped from the factory completely assembled, ready for installation. This is Yeomans finest condensation pump unit.



"MOTOPUMP" TYPE SELECTION CHART
MOTOR SPEED—3500 R. P. M.

Max. Sq. Ft. Direct Radiation or Equiv.	Pump Cap. G.P.M. Each	TOTAL DISCHARGE PRESSURE (At Discharge Nozzle of Pump)								
		10 lb.	15 lb.	20 lb.	30 lb.	40 lb.	50 lb.	60 lb.	75 lb.	100 lb.
1,000	1½	MP. 73 ½ H.P.	MP. 73 ½ H.P.	MP. 73 ½ H.P.	MP. 74 ¾ H.P.	MP. 74 1 H.P.	MP. 74 1½ H.P.	MP. 75 2 H.P.	MP. 75 3 H.P.	MP. 76 5 H.P.
3,000	4½	MP. 73 ½ H.P.	MP. 73 ½ H.P.	MP. 73 ½ H.P.	MP. 74 ¾ H.P.	MP. 74 1 H.P.	MP. 74 1½ H.P.	MP. 75 2 H.P.	MP. 75 3 H.P.	MP. 76 5 H.P.
6,000	9	MP. 73 ½ H.P.	MP. 73 ½ H.P.	MP. 73 ½ H.P.	MP. 74 ¾ H.P.	MP. 74 1 H.P.	MP. 74 1½ H.P.	MP. 75 2 H.P.	MP. 75 3 H.P.	MP. 76 5 H.P.
10,000	15	MP. 73 ½ H.P.	MP. 73 ½ H.P.	MP. 73 ½ H.P.	MP. 74 1 H.P.	MP. 74 1½ H.P.	MP. 74 1½ H.P.	MP. 75 3 H.P.	MP. 100 5 H.P.	MP. 76 7½ H.P.
15,000	22½	MP. 73 ½ H.P.	MP. 73 ½ H.P.	MP. 73 ¾ H.P.	MP. 74 1 H.P.	MP. 74 1½ H.P.	MP. 75 2 H.P.	MP. 75 3 H.P.	MP. 100 5 H.P.	MP. 76 7½ H.P.
30,000	45	MP. 100 ¾ H.P.	MP. 100 1 H.P.	MP. 100 1½ H.P.	MP. 100 2 H.P.	MP. 100 3 H.P.	MP. 100 3 H.P.	MP. 100 5 H.P.	MP. 76 5 H.P.	MP. 76 7½ H.P.

SPECIFICATIONS

"Motopump" Type Condensation Pump

Furnish and install in location indicated on.....plan, a No. .....Yeomans Single (Duplex) "Motopump" Type Condensation Return Unit, (each) with a capacity sufficient to properly return the condensation to the boilers from the equivalent of.....square feet of direct radiation against a maximum boiler pressure of..... pounds.

(Each) Motor shall be of proper size and suitable for.....current.

(Each) Pump to be a Yeomans "Motopump" close-coupled unit built integral with motor. Pump to have bronze impeller with shaft of stainless steel or fitted with bronze sleeve.

Receiver to be of cast iron with vent connection and strainer, and to have pump suction bolted firmly to receiver and motor bolted to extended cast iron subbase in perfect alignment.

Control for (each) pump shall consist of float and enclosed float switch, steam-tight, assembled without stuffing-box, supported by a bracket on end of receiver and accurately adjusted to govern proper operation of unit.

YEOMANS PUMPS FOR HEATING SYSTEMS

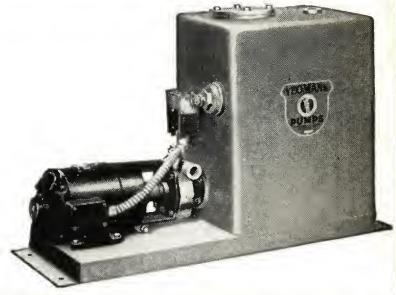
THE "HOT-SHOT"

The purpose behind development of the "HOT-SHOT" was to make a small, high quality unit in one size only, which would meet most requirements for condensation pumps and which could be built in quantity. The result: a compact, rugged, highly efficient condensation pump unit at a very low cost.

Capacity Sq. Ft. Direct C.I. Radiation or Equivalent	Pump Capacity G.P.M.	Discharge Pressure in Lbs. Per Sq. In.
1,000	1½	18.5
3,000	4½	18.
6,000	9	17.5
10,000	15	16.
15,000	22½	12.
16,500	25	10.

"HOT-SHOT" is a horizontal unit, with the famous Yeomans "Motopump" intact. Its design is like Yeomans' heavier duty condensation pumps and its performance is typically Yeomans. Receiver is of copper-bearing steel. Float switch, ⅓ H.P. motor, and all component parts are of the finest quality.

The chart at left shows "HOT-SHOT'S" performance. If your condensation pump needs fall within this range of capacities and pressures, you need only specify "HOT-SHOT" as built by Yeomans.



"HOT-SHOT" Condensation Return Pump



"HI-LO" Condensation Return Pump

THE "HI-LO"

TABLE OF SIZES

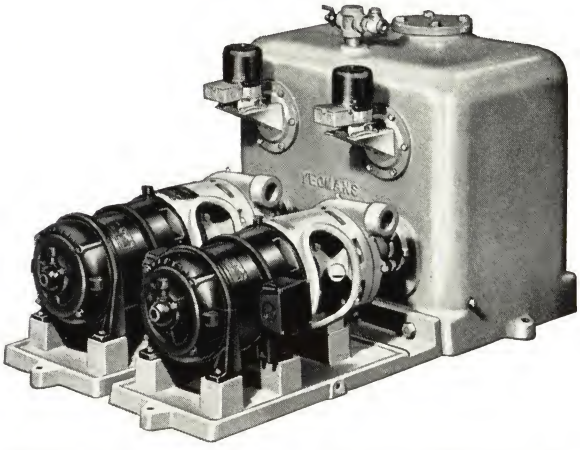
Unit No.	Rating Sq. Ft. Dir. Radiation	Discharge Pressure Lbs.	Max. Pump Cap. G.P.M.	Motor H.P.	Speed R.P.M.
HL-10	5000	10	7½	½	1750
	10000	10	15	½	1750
	15000	10	22½	½	1750
	30000	10	45	½	1750
HL-20	5000	20	7½	½	3500
	10000	20	15	½	3500
	15000	15	22½	½	3500
HL-30	5000	30	7½	¾	3500
	10000	30	15	¾	3500
	15000	20	22½	¾	3500

The "HI-LO" is a vertically arranged condensation pump which can be used, as its name indicates, to handle condensate from return lines either above or below the floor. "HI-LO" is built in three sizes; the accompanying table shows performance of each unit.

No other condensate return unit combines "HI-LO'S" advanced features. The pump is entirely rustproofed. It is quickly installed—comes ready to plug in. Among its many features are high efficiency, liberally rated ball bearing motor, low operating cost, built-in automatic control, enclosed bronze impeller, heavy duty sealed bearings, and a copper-bearing steel receiver 24 inches in diameter by 28 inches deep, furnished with cast iron steam tight cover.

The photograph of "HI-LO" at top of this page shows details of this unusual condensation pump design.

DUPLEX UNITS



Pictured above is a duplex set Yeomans "Motopump" type condensation return unit. Two pumps, each with its own motor and control, are fitted to an extra large receiver. These units are recommended where steam loads fluctuate sharply, and to provide protection against failure of any one pump.

All Yeomans condensation return pumps described on these pages can be furnished in duplex sets.

OTHER VERTICAL UNITS

Yeomans makes heavier duty vertical condensation pumps, for use where return lines are below floor level. These units are known as Type V (with cast iron receiver and cover) and Type VS (with steel receiver and cover).

These condensation pumps are built exceedingly rugged—design and construction being similar to Yeomans heavy duty drainage and sewage pumps. They are capable of most any capacity or performance requirement that could be imposed on a condensation return unit.

Sizes are available to handle condensate from 1000 to 100,000 sq. ft. of radiation against boiler pressures of 10 to 100 pounds.



EXTRA EQUIPMENT

All Yeomans condensation return pumps can be equipped, at slight extra cost, with:

Make-up Water Valve—to compensate for losses in the system.

Boiler Water Level Control—water level in boiler controls operation of pump.

Inlet Strainers—to prevent rust, scale, etc., from entering receiver.



YEOMANS
SALES AND SERVICE OFFICES

For street addresses see local phone directory

Burford, Hall & Smith, Atlanta, Ga.
Morton McI. Dukehart & Co., Baltimore, Md.
F. L. Kendig, Birmingham, Ala.
Power Equipment Co., Boston, Mass.
J. H. Roseberry, Buffalo, N. Y.
J. R. Purser, Charlotte, N. C.
H. N. Willard, Chattanooga, Tenn.
O. J. Allonier, Cincinnati, Ohio
Cleveland Pump & Supply Co., Cleveland, Ohio
Columbus Steam Pump Works Co., Columbus, Ohio
W. E. Lewis & Co., Dallas, Texas
D. C. Murphy Co., Davenport, Iowa
Kelso-Wagner Co., Dayton, Ohio
D. C. Murphy Co., Des Moines, Iowa
Power Plant Supply Co., Detroit, Mich.
Geo. W. Herlin, El Paso, Texas
Dakota Electric Supply Co., Fargo, N. D.
Johns Equipment Co., Fort Wayne, Indiana
R. E. DeKraker Co., Grand Rapids, Mich.
Texas Engineering Co., Houston, Texas
W. P. Whittington Co., Indianapolis, Ind.
Karl J. Hart, Jackson, Miss.
Forslund Pump & Machinery Co., Kansas City, Mo
C. O. Miller Co., Little Rock, Ark.
Smith Booth Usher Co., Los Angeles, Calif.
Andriot & Davidson, Louisville, Ky.
R. M. Overstreet, Louisville, Ky.
Hoshall Machinery Co., Memphis, Tenn.
C. W. Miller, Milwaukee, Wis.
Wm. H. Ziegler Co., Minneapolis, Minn.
Ryan Sales Corp., Nashville, Tenn.
Walter Castanedo, Inc. New Orleans, La.
Ralph B. Carter Co., New York City, N. Y.
C. A. Zink, Oklahoma City, Okla.
D. E. McCulley Co., Omaha, Nebr.
A. R. Amos, Jr., Philadelphia, Pa.
Bushnell Machinery Co., Pittsburgh, Pa.
Portland Engineering Co., Portland, Ore.
Power Equipment Co., Richmond, Va.
General Equipment Co., Rochester, N. Y.
H. A. Grossmann Co., St. Louis, Mo.
Stewart Machinery Co., St. Louis, Mo.
Healy-Ruff Co., St. Paul, Minn.
Williams & Richardson, Salt Lake City, Utah
R. S. Ryden, San Antonio, Texas
C. H. Cobb, San Francisco, Calif.
F. H. Godfrey Engineering Co., Seattle, Wash.
Smith-Monroe Co., South Bend, Ind.
A. Carle Rogers, Toledo, Ohio
E. I. Van Doren Companies, Troy, N. Y.

FOREIGN REPRESENTATIVES

Buxton, Ltd., Buenos Aires
Purdy & Henderson Trading Co., Havana
Honolulu Iron Works, Honolulu, T.H.
The General Supply Co., Mexico City
Darling Brothers, Ltd., Montreal, Toronto, Winnipeg
Frank Darling & Co., Vancouver, B. C.

Throughout the civilized world, pumps bearing this familiar trade mark are working night and day. Let the trustworthy Yeomans name be your guide in the specifying of precision pumps for any use.

YEOMAN BROTHERS COMPANY
1419 NORTH DAYTON STREET • CHICAGO

EDISON GENERAL ELECTRIC APPLIANCE COMPANY, INC.

5600 West Taylor Street
CHICAGO, ILL.

FOR COMMERCIAL COOKING EQUIPMENT, SEE FILE INDEX

ELECTRIC WATER HEATERS

Heating water by electricity is not expensive. Recent refinements, plus low power rates now available, make it economical, convenient, safe and clean.

Typical of all Hotpoint appliances, Hotpoint electric water heaters are rugged, dependable, and attractive. Ranging from 1 gal. (accessory heaters in professional offices, tourist cabins, etc.) up to 140 gals., most models are available with either galvanized copper bearing steel tanks, or monel metal tanks.

The heating unit is the renowned long-life Calrod immersed from the side of the tank into the water. A completely automatic temperature control switch—the Hotpoint Thermo-snap—guarantees uniform hot water temperature. It is adjustable from 130° to 200° F. A thick blanket of rock wool insulation keeps all the heat within the tank. Both round and rectangular models are standard. The Vogue Table Top is specially designed to fit in with the other Hotpoint appliances to form the streamlined, Hotpoint, all-electric kitchen.



Vogue Model



Master Model

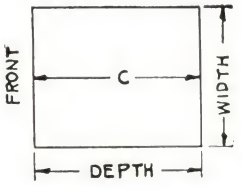


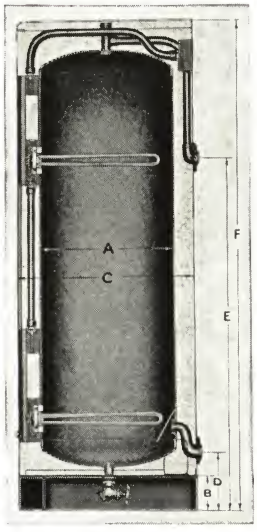
Vogue Table Top

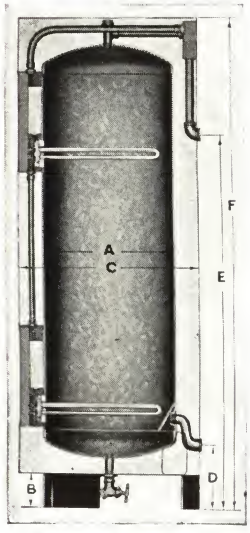
Right:

Vogue (Rectangular)

Capacities: 10 to 140 gals. Ideal for modern all-electric kitchens, basements or bathrooms. In most cases, galvanized copper bearing steel tanks are recommended, but monel tanks should be used where corrosive water exists



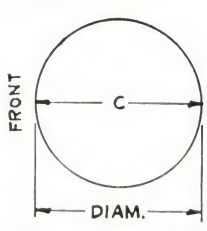




Left:

Master (Round)

Capacities: 1 gal. to 86 gals. Embody same features and refinements of internal construction as the rectangular Vogue model. Small capacity heaters are unexcelled for use in professional offices, business offices, filling stations



DIMENSIONS—ALL TANKS 300-POUND TEST PRESSURE

	Catalog No.	Cap., gal.	Tank diam. (A)	Base height (B)	Over-all dimen. Width	Over-all dimen. Depth (C)	Floor to cold water inlet (D)	Floor to hot water outlet (E)	Over-all height (F)	Av. insul. thick.
Galvanized Copper Bearing Steel Tanks	**Vogue Models (Rectangular)—Back Connected**									
	W113	30	14″	4″	17½″	19½″	7⅞″	42 7/16″	57″	3 3/16″
	W114	40	16″	4″	19½″	21½″	7 15/16″	43¼″	58″	3 5/16″
	W115	52	18″	4″	21½″	23½″	8¼″	43 11/16″	58″	3 7/16″
	W116	66	20″	4″	23½″	25½″	8″	45 7/16″	60″	3 9/16″
	W118	86	22″	4″	25½″	27½″	8″	48 7/16″	63″	3 11/16″
	W120	110	24″	4″	27½″	29½″	9 1/16″	53 5/16″	68″	3 13/16″
	W121	140	26″	4″	29½″	31½″	8⅞″	58 5/8″	73″	3 15/16″
	Master Models—All Back Connected									
	W96	30	14″	4″	20½″	20½″	7 15/16″	41 15/16″	57″	3″
	W97	40	16″	4″	22½″	22½″	7 15/16″	42¾″	58″	3″
	W98	52	18″	4″	24½″	24½″	8¼″	43⅛″	58″	3″
	W101	66	20″	4″	26½″	26½″	7⅞″	44⅞″	60″	3″
	W102	86	22″	4″	28½″	28½″	7⅞″	47⅞″	63″	3″
	Master Models (Round)—Small Capacity Heaters									
	W48	1	4½″		8⅜″	8⅜″	2 9/16″	16 5/16″	20¾″	1¾″
	W78	3	7″		12⅛″	12⅛″	3⅞″	20⅛″	24⅛″	2½″
	W67	5	8″		12⅛″	12⅛″	1⅝″	25⅜″	29⅛″	2″
	Vogue Models—Small Capacity Heaters									
	W94	10	10″	3″	13⅛″	14⅛″	43⅜″	43⅜″	43⅜″	2 11/16″
	W95	18	10″	3″	13⅛″	14⅛″	64⅜″	64⅜″	64⅜″	2 11/16″
	Vogue Models—Bottom Connected									
	W143	30	14″	9″	17½″	19½″	8¾″	8¾″	63″	3 3/16″
	W144	40	16″	9″	19½″	21½″	8¾″	8¾″	63″	3 5/16″
	W145	52	18″	9″	21½″	23½″	8¾″	8¾″	63″	3 7/16″
	Vogue Table Top									
	WG330	30	20″	7″	24″	25″	6¼″	6¼″	39½″	3 9/16″
	Vogue with Large 4-In. Lower Unit Opening									
	W213	30	14″	4″	17½″	19½″	7⅞″	42 7/16″	57″	3 3/16″
	W215	52	18″	4″	21½″	23½″	8¼″	43 11/16″	58″	3 7/16″
	W218	86	22″	4″	25½″	27½″	8″	48 7/16″	63″	3 11/16″
	Master Models with Large 4-In. Lower Unit Opening									
	W196	30	14″	4″	20½″	20½″	7 15/16″	41 15/16″	57″	3″
	W198	52	18″	4″	24½″	24½″	8¼″	43⅛″	58″	3″
Monel Tanks	**Vogue Models**									
	W123	30	12″	4″	15½″	17½″	6¾″	54 11/16″	69″	3 1/16″
	W124	40	14″	4″	17½″	19½″	7⅛″	54⅜″	69″	3 3/16″
	W125	50	16″	4″	19½″	21½″	7⅛″	54 3/16″	69″	3 5/16″
	W126	66	20″	4″	23½″	25½″	7¼″	48 9/16″	63″	3 9/16″
	W128	86	22″	4″	25½″	27½″	7⅜″	52 1/16″	67″	3 11/16″
	W130	110	24″	4″	27½″	29½″	9 1/16″	53 5/16″	68″	3 13/16″
	W131	140	26″	4″	29½″	31½″	8⅞″	58 5/8″	73″	3 15/16″
	Master Models—Small Capacity Heaters									
	W148	1	4½″		8⅜″	8⅜″	2 9/16″	16 5/16″	20¾″	1 13/16″
	W178	3	7″		12⅛″	12⅛″	3⅞″	20⅛″	24⅛″	2½″
	W167	5	8″		12⅛″	12⅛″	1⅝″	25⅜″	29⅛″	2″
	Vogue Models—Small Capacity Heaters									
	W194	10	10″	3″	13⅛″	14⅛″	43⅜″	43⅜″	43⅜″	2 11/16″
	W195	18	10″	3″	13⅛″	14⅛″	64⅜″	64⅜″	64⅜″	2 11/16″

Note: In this catalog we do not attempt to state the delivery capacity of each heater because of the variables involved. Consult Hotpoint Engineers when hot water problems arise. You should have Hotpoint's Water Heater Sales Manual in your file—it will be sent from Chicago office for a small charge.

GERSTEIN & COOPER COMPANY

COPPERSMITHS

Manufacturers of Range Boilers, Tanks and Storage Heaters
in All Copper and Copper Silicon Alloy

FACTORY AND MAIN OFFICES
SOUTH BOSTON, MASS.

NEW YORK, N. Y., 440 West 22nd Street BALTIMORE, MD., 522 Park Avenue

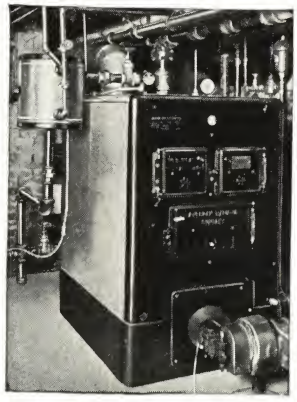


G & C Copper Range Boilers

25, 30, 40, 50 and 60-gal. range boilers will be regularly furnished with Lowtap or Hilowtap tappings.

80 to 100 gals. regularly furnished with 1¼-in. tappings.

Extra tappings or tappings larger than those regularly furnished may be supplied.



A Typical Hot Water Installation of Tankless Heater

G & C Copper-Silicon-Alloy Range Boilers

Electric welded construction throughout: Regularly furnished in 25, 30, 40, 50 and 60 gals. with Lowtap or Hilowtap tappings, 80 to 100 gals. regularly furnished with 1¼-in. tappings.

Extra tappings or tappings larger than those regularly furnished may be supplied.

G & C Tankless Water Heater

The Gerstein & Cooper Water Heater is a ruggedly built, practical heater, capable of delivering 360 gals. of hot water per hour at low operating cost. The shell is heavy gauge copper, electrically welded and thoroughly insulated. The copper tubing is silver-brazed to the headers with no threaded or ground joints. It is ideally adapted for installation on automatically fired coal, oil or gas burning boilers in institutions, dwellings, industrial plants, etc. It is supplied in red, green or blue lacquer.

G & C Storage Tanks

G & C Storage Tanks are made of all-copper or copper silicon alloy of the proper gauge metal for specified operating pressures.

Copper tanks are of riveted and brazed construction and are tin lined.

Copper silicon alloy tanks are of electric weld construction throughout.

Both types are rigidly inspected and tested in accordance with Massachusetts Regulations. They are provided with handholes or manholes, or both.

Recent Gerstein & Cooper Installations

House of Representatives Office Building
U. S. Senate Office Building
Potomac Power Company Plant, Washington, D. C.
Botanical Gardens, Washington, D. C.
Internal Revenue Building, Washington, D. C.
National Health Institute, Washington, D. C.
U. C. Capitol Terrace Garage, Washington, D. C.
Naval Ammunition Depot, Thorne, Nev.
U. S. Post Office, Cordova, Alaska
U. S. Post Office, Breckenridge, Tex.
Marine Hospital, Baltimore, Md.
U. S. Post Office, Malone, N. Y.
U. S. Post Office, Arlington, Mass.
U. S. Post Office, Des Moines, Iowa
U. S. Post Office, Mobile, Ala.
San Diego, Cal. (Naval Station)
U. S. Coast Guard, Biloxi, Miss.
U. S. Naval Barracks, Charleston, S. C.
U. S. Quarantine Station, Tampa, Fla.
U. S. Post Office, Warren, Ohio



4x16-Ft. 300-Lb. Test Everdur Storage Heater—Fabricated for Laundry Work

NATIONAL PIPE BENDING COMPANY

INCORPORATED 1883

Feed Water Heaters, Storage Heaters, Instantaneous Heaters, Fuel Oil Preheaters, Coils and Bends of Pipe and Tubing, Seamless Spun Kettles of Brass

140 River Street, NEW HAVEN, CONN.

AGENCIES: NEW YORK, N. Y. and BOSTON, MASS., AND OTHER PRINCIPAL CITIES

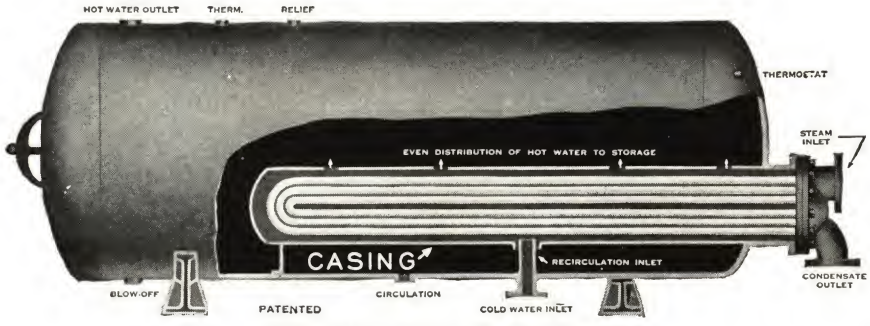
THE NATIONAL SUPER-SERVICE STORAGE HEATER

An Entirely New Application of the Fundamentals of Design and Control for Heating Water for Exacting Service

Hot Water service requirements may be constant, may be at a few fixed intervals during the regular working period, or may be at frequent irregular intervals extending over the entire actual period of daily operation.

Any or all such conditions of operation are efficiently and economically served by this *New and Improved National Super-Service Storage Heater.*

No Danger of Short Circuiting of Heating Surface, with a National Super-Serice Storage Heater



Maximum Water Capacity Instantaneously Heated and Distributed Direct to Storage Space

National Super-Service Storage Heater
Showing control of entering water direct to heating element

In the usual storage heater, the design of the heating element seldom permits it to extend over the full length of the storage tank. Consequently, all of the water to be heated does not pass over the entire heating surface at all times. At such times a certain percentage of the water which may be large or small, passes between the heating element and the shell without coming in contact with any part of the heating surface.

The National Super-Service Storage Heater provides for intimate contact of all of the water with all of the heating surface at all times.

The entering water passes directly into the bottom of a casing completely enclosing the heating element.

Outflow openings at top of casing are so proportioned and located, that the flow of water before passing to storage, is distributed over the entire heating surface.

The water inlet opening at bottom of the casing, is so proportioned and arranged, that recirculation of the stored water occurs at all times, whether water is being drawn or not.

A complete line of sizes is available, designed to properly proportion the storage capacity with the heating capacity and adapted to the many types of service for hot water requirements.

Heating elements are for use with either exhaust or live steam in the tubes. When desirable, two heating elements may be used—one for exhaust and the other as a booster—using live steam, thermostatically controlled.

Specifications

Shells—***Steel***—Riveted or welded.

Everdur, Olympic, Herculoy, or Other Alloys—Welded.

Solid Copper—Riveted and brazed. Hydrostatic test to specifications.

Heating Element—Removable set of copper U-bends, expanded into a steel or bronze tube plate. Bronze tube supports on long tubes. Hydrostatic test, 300 lbs. per sq. in.

Steam Cover—Cast iron "Fre Flo" type with large drain pocket.

Element Port—Material to match shell, welded to shell.

MEMORANDA

ESTABLISHED 1880

THE PATTERSON-KELLEY CO., INC.

Water Heating Engineers and Manufacturers of Hot Water Heaters for More Than 50 Years

101 Park Avenue
NEW YORK, N. Y.

BRANCH OFFICES IN PRINCIPAL CITIES

Products

PATTERSON HOT WATER SERVICE HEATERS; STORAGE and INSTANTANEOUS TYPES.

Also manufacturers of Converters for hot water heating systems; Swimming Pool Heaters; Preheaters or Condensation Coolers; Reclaimers for recovering heat from waste liquids; Feed Water Heaters and Purifiers; Fuel Oil Heaters; Kelley Hot Water System for Laundries; Freon Water Coolers.

Co-operative Engineering Service

Architects place themselves under no obligation by permitting Patterson-Kelley Engineers to submit suggestions regarding heaters required for specified purposes. We offer such service without charge and, when an installation is made in accordance with our recommendation, we positively guarantee that it will furnish *all of the hot water required, as hot as required and when required.*

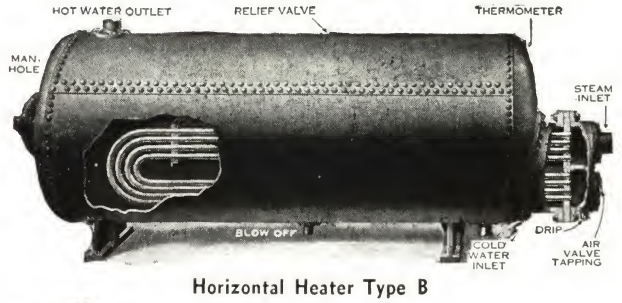
General Construction

The tubes in all Patterson Hot Water Heaters, Types B, D, E, F and L, are of heavy gauge, seamless drawn copper, tested to 1000-lb. hydrostatic pressure per sq. in. All tube heads are forged steel. The shells are either boiler plate or best quality dry sand castings of ample thickness. After assembling, each heater is tested to a hydrostatic pressure 50% greater than the specified working pressure.

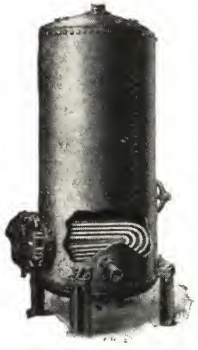
Guarantee

We guarantee the materials and workmanship of each heater to be first class in every respect, and any part proving defective within one year from date of shipment will be replaced without charge. We also guarantee each heater to heat its rated capacity of water.

Patterson Combined Hot Water Service and Storage Heaters



Horizontal Heater Type B



Vertical Heater Type L

Both the Type B, horizontal, and Type L, vertical, provide any combination of storage and heating capacities. They require only a small continuous supply of steam to heat and store sufficient water for peak load periods.

The tubes are "U" shaped seamless copper, both ends of each tube being expanded in a forged steel removable tube head and the overhanging ends supported with bronze tube supports.

Shells are of steel, steel copper lined, Everdur or solid copper. In the last three types the water comes in contact with no steel whatever, thus preventing rusty water and insuring long life to the heater.

PATTERSON COMBINED HOT WATER SERVICE AND STORAGE HEATER TYPE B

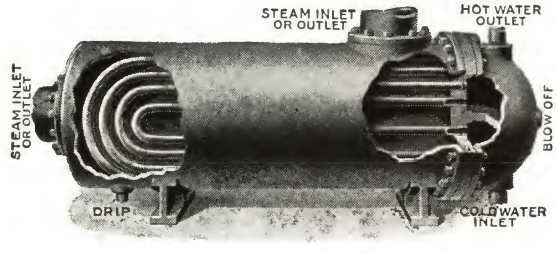
Storage capacities				Heating capacities 40° F. to 180° F.–steam at atmospheric pressure		
No.	Dimensions, in.	Capacity gal.	Approx. wt., lb.	No.	Gal., per hour	Approx. wt., lb.
1 S	24x 48	94	650	1 H	100	100
2 S	24x 60	118	750	2 H	150	115
3 S	24x 72	141	850	3 H	200	125
4 S	24x 84	164	950	4 H	250	165
5 S	30x 60	180	875	5 H	300	175
6 S	30x 72	215	975	6 H	400	200
7 S	30x 84	255	1100	7 H	500	230
8 S	30x 96	285	1200	8 H	600	265
9 S	30x120	360	1450	9 H	700	285
10 S	36x 72	310	1200	10 H	800	310
11 S	36x 84	365	1350	11 H	1000	340
12 S	36x 96	415	1450	12 H	1250	375
13 S	36x108	475	1575	13 H	1500	450
14 S	36x120	500	1700	14 H	1750	500
15 S	36x144	640	1950	15 H	2000	600
16 S	42x 72	430	1600	16 H	2500	700
17 S	42x 84	500	1800	17 H	3000	800
18 S	42x 96	575	2000	18 H	3500	900
19 S	42x108	650	2175	19 H	4000	1000
20 S	42x120	720	2300	20 H	4500	1100
21 S	42x144	860	2700	21 H	5000	1200
22 S	42x168	1000	3000	22 H	6000	1500
23 S	42x192	1155	3400	23 H	7500	2000
24 S	48x 96	750	2400	24 H	10000	2400
25 S	48x120	940	2800	25 H	12500	2800
26 S	48x144	1125	3250	26 H	15000	3200
27 S	48x168	1300	3650	27 H	20000	4400
28 S	48x192	1500	4100	28 H	25000	5500
29 S	54x120	1190	3500			
30 S	54x144	1425	4100			
31 S	54x168	1665	4600			
32 S	54x192	1900	5100			
33 S	60x120	1400	4000			
34 S	60x144	1700	4500			
35 S	60x168	2000	5200			
36 S	60x192	2240	5800			
37 S	72x174	3000	7500			
38 S	84x168	4000	10000			
39 S	96x168	5200	11200			
40 S	96x192	6000	12500			

Note—To specify Type B heaters, combine the numbers of the required storage and heating capacities. For example, "One Patterson Type B heater with No.22S. and No. 17H." has 1000 gal. storage with 3000 gal. hourly heating capacity.

Storage capacity weights are for 100-lb. W. P. shells.

Type B Heaters may also be connected below the water line of a steam boiler, and when so installed, furnish an ample supply of hot water at all times even though the boiler is not steaming.

Patterson Instantaneous Hot Water Service Heater, Type D



A water tube heater ideal for installations where requirements for hot water are nearly constant. May also be used as a booster heater installed in the discharge line from a storage heater, and is particularly adapted for heating water for swimming pools or as a converter on heating systems. With slight modifications it is used as a Condensation Cooler or as a Lo-Flo Heater in connection with a storage tank.

MEMORANDA

REVERE COPPER AND BRASS INCORPORATED

EXECUTIVE OFFICES AND GENERAL SALES DEPARTMENT
230 Park Avenue, NEW YORK, N. Y.
For Division Offices, Mills and District Sales Offices, see our Catalogue on Pipe
For Other Revere Products, see File Index

HERCULOY

COPPER-SILICON ALLOYS

(U. S. Patent Nos. 1,868,679; 1,924,581; 2,002,460; 2,009,977 and 2,035,414)
(Licensed under U. S. Patent Nos. 1,539,260; 1,933,390; 1,936,397 and others)

For Range Boilers, Storage Tanks, Chemical Containers and Unfired Pressure Vessels of all Types and Sizes

HERCULOY is the name applied to improved Copper-Silicon alloys as manufactured by Revere Copper and Brass Incorporated. The alloys manufactured and sold under this name are of two basic types: the Copper-Silicon Tin and the Copper-Silicon Manganese. These alloys combine high strength and excellent physical properties with a high resistance to corrosion. Their strength is comparable to that of the low and medium carbon steels and their resistance to corrosion is comparable to and roughly the equivalent of pure copper.

Advantages of Herculoy For Tanks

Herculoy has the following advantages for tank construction:

(1) Unusually high strength—its strength is comparable to that of low and medium carbon steel.

(2) Corrosion resistance similar to that of pure copper. Herculoy is immune to rust and unusually resistant to a large number of corrosive agents.

(3) Ease of drawing and forming — the ease with which Herculoy may be drawn and formed, plus the fact that it is not necessary to line the basic material, makes for economy in construction and maintenance.

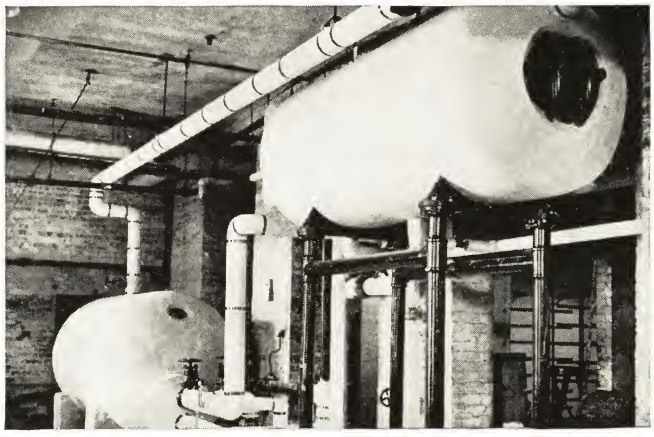
(4) Fabrication by any of the standard welding processes—Herculoy sheets and plates are readily welded with welding rod of the same material. The joint produced by the use of Herculoy welding rod on Herculoy sheets is of the same composition as the sheet itself and of approximately the same strength. The use of Herculoy welding rod eliminates the danger of electrolytic corrosion which is present when welds are made with welding rod differing in composition from the material welded.

(5) Herculoy meets Federal Specifications WW-P-541-9 for Copper-Silicon tanks, also A.S.M.E. Boiler Code Specifications S-36 and S-37 for unfired pressure vessels.

Net Result

The net result is that tanks made of Herculoy are dependable, durable and last a life-time. They are particularly adapted for use under conditions of high working pressures such as are found in hot water storage tanks in large office buildings, hotels, apartment houses, etc.; also for tanks used in the process industries.

Leading tank manufacturers in all sections of the country use and endorse Herculoy. It is to your client's advantage for you to specify Herculoy tanks wherever copper or brass piping is installed. By this combination of rust-proof materials, a completely permanent installation is assured.



Herculoy Storage Tanks—National Health Institute, Washington, D. C. Fabricated by Gerstein & Cooper Company, South Boston, Mass.

Physical Properties and Tank Design

Herculoy tank plates and sheets meet all the requirements of A.S.T.M. Specifications B96-36T; also A.S.M.E. Boiler Code Specifications S-36 and S-37.

Minimum physical properties are listed as follows:

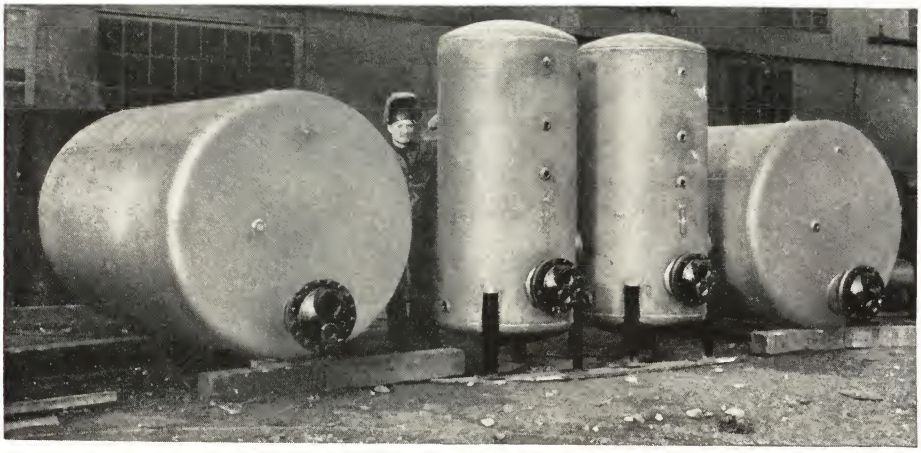
Tensile strength, lbs. per sq. in.	55,000
Yield point*, lbs. per sq. in.	20,000
Elongation in 2" percent	50

Herculoy is available in sizes and gauges for all types of tank construction. Leading manufacturers of tanks and pressure vessels are in a position to furnish Herculoy tanks.

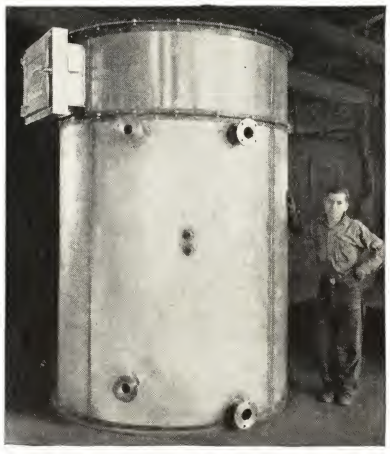
Copper Tanks

For years Revere sheet copper has been the standard of many manufacturers of copper tanks. Revere is the oldest and largest roller of copper in America and furnishes tank stock in all commercial sizes, gauges and tempers.

*Stress corresponding to 0.5 percent strain.



Four large tanks fabricated from Herculoy by The Richmond Engineering Company, Richmond, Virginia, for the Veterans' Administration Facility, Tuskegee, Alabama



1400 gal. Herculoy Drinking Water Tank—Library of Congress Annex, Washington, D. C. By L. O. Koven and Brother, Inc., Jersey City, N. J., for The Carrier Corporation.

TACO HEATERS, INCORPORATED

342 Madison Avenue, NEW YORK, N. Y.

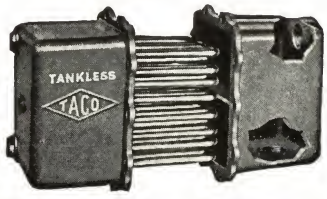
Taco Heaters

TACO HEATERS, INCORPORATED, offers a complete line of storage and tankless type indirect water heaters for use with the patented Taco Abbott System in large and small sizes, both Biltin and External Types.

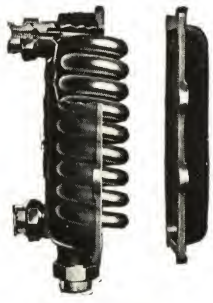
Biltin Taco Heaters are standard equipment with leading heating boilers. For information consult Boiler catalogues, or write direct to TACO HEATERS, INC.

Abbreviated information for selection of residential Taco Heaters, storage and tankless type, is furnished on this page.

Information on larger sizes of Taco Heaters for Apartments, Hotels and Housing Projects supplied on request.



Tankless Taco Nos. 14, 15 and 18



Domestic Taco

TANKLESS TACO NOS. 14 AND 16

No. 14—One or small two-bath residences.
Nos. 15 and 16—One to three baths.
No. 18—Two to four baths.

Size of Taco	Cap. gal. in 1 hour heated 40° F. to 140° F. Boiler water at 180° F. Per min.	Cap. gal. in 1 hour heated 40° F. to 140° F. Boiler water at 180° F. Per hour	Boiler conn., in.	Water conn., in.	Height by length, in.	Shipping weight, lbs.
14	3	180	2	½	14 x17 9/16	115
15	4	240	2	½	14 ½x20 ¼	141
16	4 ½	270	2	¾	21 x13 ½	165
18	5	300	2 ½	¾	17 x22	185

Size of Taco	Capacities: Gallons in 3 hours heated from 40° F. to 140° F. — Taco below water line: Boiler water at 212° F.	†Boiler water from 160° to 190° F.	Taco on steam of 0 lbs. gauge pressure	Square feet hot water radiation 175° water: Taco* below water line boiler at 212° F.	Taco** on steam of 0 lbs. gauge pressure
A	B	C	D	E	F
DOMESTIC TACO					
00	30	.....	.....	.....	.....
0	30	.....	40	15	20
30	30	.....	50	20	30
1	40	.....	75	30	50
1A	52	30	100	40	65
1B	66	30 to 40	125	50	85
2	82	40 to 52	150	60	100
2A	100	52 to 66	175	75	125
2B	120	66 to 82	225	90	150
2C	144	82 to 100	275	105	175
3	160	100 to 120	300	120	200
3A	200	120 to 144	375	150	250
MULTI-COIL TACO					
M 60	250	120 to 185	450	210	300
M 75	300	150 to 220	600	250	400
M100	400	200 to 300	750	320	500
M125	500	250 to 360	900	420	600
M150	600	300 to 430	1200	500	800
M200	800	400 to 570	1500	640	1000

*Based on 120° F. inlet temp. to heater and 160° F. outlet temp.
**Based on 140° F. inlet temp. to heater and 180° F. outlet temp.
†Automatically fired installations—Taco-Abbott System for year 'round operation.

Taco Warm Water Heating Specialties

TACO HEATERS, INC., offers a complete line of specialties for warm water heating systems, both one and two pipe. Layouts and specifications are gladly furnished.

Catalogue on these items supplied on request.

Taco One Venturi System

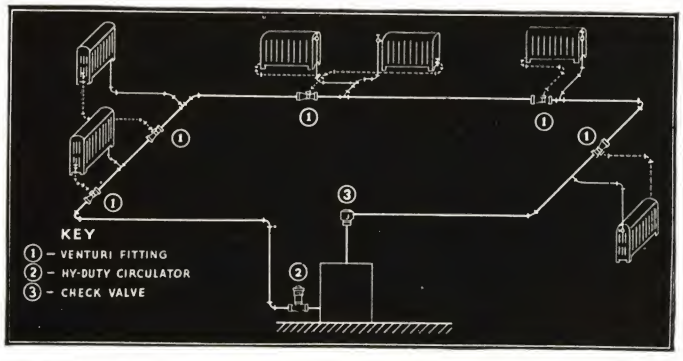
With "Taco-One" Venturi System, efficiency of the combination of Taco Hy-Duty Circulator and Taco Venturi fitting makes it possible to meet the vast majority of installation requirements with a single circuit of pipe. With most jobs, totalling 1000 sq. ft. of radiation, main length not over 125 ft. and not more than 12 Venturi Fittings required, only a single circuit with 1¼ in. size of Venturi Fittings and main is required. Double or multiple circuit installations can also be used. For uses of various sizes of Taco Venturi Fittings see design table.

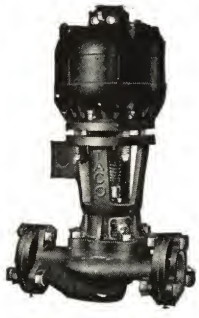


Taco Venturi Fitting

Taco Hy-Duty Circulator

A super-efficient circulating unit designed to deliver more water and to operate efficiently against higher heads than the standard circulators. Taco Hy-Duty Circulator will deliver 20 gal. per minute against a 10-ft. head which is equivalent to a 20 degree temperature drop, to 200,000 B.t.u. Regularly furnished with 1½-in. flanges.





Taco Circulator

DESIGN TABLE FOR "TACO-ONE" VENTURI SYSTEM

Maximum radiation for various B.T.U. emissions and water temperatures: 150 B.T.U. 175° water	200 B.T.U. 200° water	240 B.T.U. 215° water	Maximum length of longest circuit in feet	Size of Taco Hy-Duty circulator	Maximum number of Venturi fittings to be used on systems: One circuit	Double circuit	Main sizes: Single circuit: Circuit	Double circuit: Trunk	Double circuit: Circuits	Size of Venturi fittings	Radiator Branch and Riser Pipe Size See Note "A"	Maximum amount of radiation per Venturi fitting for various B.T.U. emissions and water temperatures: Single radiator above main: 150 B.T.U. 175°	200 B.T.U. 200°	240 B.T.U. 215°	*Total two rads. Above main or one below main: 150 B.T.U. 175°	200 B.T.U. 200°	240 B.T.U. 215°
500	375	308	100	1½"	12	12-per Circ.	1"	1¼"	1"	1" x ½"	½"	75	56	46	60	45	38
1000	750	625	125	1½"	12	12-per Circ.	1¼"	1½"	1¼"	1¼" x ½"	½"	100	75	62	80	60	50
1000	750	625	125	1½"	12	12-per Circ.	1¼"	1½"	1¼"	1¼" x ¾"	¾"	150	112	94	120	90	75
1000	750	625	150	1½"	12	12-per Circ.	1½"	2"	1½"	1½" x ½"	½"	100	75	62	80	60	50
1000	750	625	150	1½"	12	12-per Circ.	1½"	2"	1½"	1½" x ¾"	¾"	150	112	94	120	90	75

NOTE "A" Where Supply and Return Branches to Radiators exceed 8'-0" in length, Branch Size should be increased one size beyond those shown. For most installations not more than one half of total job should be installed Below Main, and in no case should Branches to Radiators Below Main exceed 9'-0" in length.

*Care must be taken in placing radiators below main on two circuit jobs. It is suggested that complete information on such installations be submitted to TACO HEATERS, INC., for layout.



RUUD gas WATER HEATERS

GO GAS
FOR HOT WATER

Why



GAS WATER HEATERS?

Because...

Gas is the only quick-heating fuel that can be used in a *fully-automatic* water heater.

Gas represents the concentration of many heat units in a small volume of fuel. Gas is clean; it leaves no residue. Gas is quick-heating. Fuel-handling and fuel storage are unnecessary. Water temperature is completely and automatically controlled. There is no water or fuel waste from overheating; there is no inconvenience from under-heating. Service is perfect. Cost has been steadily lowered during the past five years and is most reasonable.

RUUD WATER HEATERS?

Because...

For fifty years, RUUD has devoted itself to one specialized field — the manufacture of gas-fired water heaters.

The group of water heaters here shown is representative but not complete. In the complete line, there are . . .

. . . automatic and non-automatic models.

. . . a complete range of prices starting from the very lowest.

. . . suitable for use with natural, mixed, manufactured and liquefied petroleum (bottled) gases.

. . . a nation-wide system of branches (see phone book) in larger cities and traveling representatives everywhere.

. . . complete factory engineering assistance in selection of type and size, specification writing and installation procedure.

RUUD MANUFACTURING COMPANY

PITTSBURGH
PENNSYLVANIA

Founded 1889
Incorporated 1897

BRANCH OFFICES IN ALL LARGE CITIES

Ruud **Prices Are Low**

Description

The world's finest automatic storage water heater is the Monel-tanked RUUD. The true and tested RUUD chassis makes perfect, low-cost performance a certainty and the rust-proof tank of solid, silvery MONEL makes sure a long-life of clean, crystal-pure hot water.

Automatic action is extremely simple and reliable. Heat from the quick-speed burner is absorbed by the water through the bottom and sides of the full-floating tank. When the pre-set temperature is reached, the thermostat shuts the gas off. When hot water withdrawals reduce the temperature of the water in the tank, gas is automatically turned on and the heating action repeated. Thus, hot water is always at hand in abundance and without thought or attention.

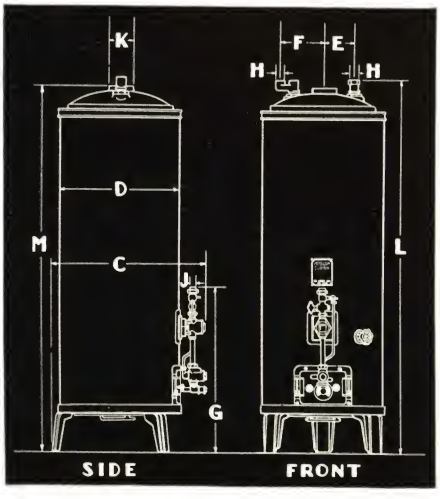
Features

Four sizes (20, 30, 45 and 60 gallon storage tanks) meet the hot water requirements of most homes and many commercial buildings. The tank is solid MONEL, a natural alloy of 2/3 nickel and 1/3 copper, rust-free and corrosion-proof, its glass-like sides providing no lodging place for dirt. The Monel tank is guaranteed for 20 years. The automatic movement of the snap-action thermostat controls the flow of gas to the quick-heating bunsen burner. Pilot flame failure actuates the gas cut-off to close all gas lines automatically. Heat is conserved by a thick blanket of rock-wool insulation. The heavy flue liner is lead-coated. In hard water districts a two-inch cleanout plug is supplied as extra equipment. Gas lines and accessories are aluminized brass. Full-front mechanism. High-lustre porcelite finish.

Where to Specify

For homes and institutions that want the finest automatic storage water heater made, one of blue-ribbon performance and super-life.

For hot water requirements ranging from average families using from 60 to 100 gallons of hot water a day to larger homes and institutions requiring between 300 and 400 gallons a day. For any water supply that attacks galvanized iron tanks, either mildly or actively. Where the water supply contains considerable lime and other precipitating minerals, specify Ruud-and-Monel with a two-inch cleanout plug.



ROUGHING-IN DIMENSIONS (INCHES)

No.	1220	1230	1245	1260
C	22¼	24¼	28½	28½
D	18¼	20⅜	24½	24½
E	4½	4½	6	6
F	6¼	6¼	8	8
G	24¼	23¾	26	26
H	¾	¾	¾	¾
J	⅜	⅜	½	½
K	3	3	4	4
L	53⅜	58⅛	58½	69½
*M	52¼	56¾	58⅛	69⅛

**For draft-hood, add 5¾" to dimension "M" for No. 1220—5¾" for No. 1230—and 7⅜" for Nos. 1245 and 1260.*
NOTE: For general table figures and roughing-in dimensions on the Ruud-and-Monel 1200 W Series, write Ruud Manufacturing Company, Pittsburgh, Pa.



GENERAL TABLE

Number	1220	1230	1245	1260
Tank Capacity (gallons)	20	30	45	60
Heat-Speed in gallons per hour (60° rise)	28	35	63	70
Hourly B.T.U. (Nat. or Manf. Gas)	20,000	25,000	45,000	50,000
Gas line (inches)	⅜	⅜	½	½
Water line (inches)	¾	¾	¾	¾
Flue (inches)	3	3	4	4

Capacities

No. 1220

Capacity: 20 gallons storage. Heat-speed, 28 gallons an hour, 60 degree rise.

For: Average families normally using between 60 and 100 gallons of hot water a day. In general, for one bathroom houses.

No. 1230

Capacity: 30 gallons storage. Heat-speed, 35 gallons an hour, 60 degree rise.

For: Average families normally using between 100 and 200 gallons a day. In general, for one or two bathroom houses.

No. 1245

Capacity: 45 gallons storage. Heat-speed, 56 gallons an hour, 60 degree rise.

For: Larger families normally using between 200 and 300 gallons a day. In general, for two and three bathroom houses.

No. 1260

Capacity: 60 gallons storage. Heat-speed, 70 gallons an hour, 60 degree rise.

For: Large homes, small apartments and many commercial and industrial requirements.

MONEL

Monel is stronger than bridge steel. In the presence of water, regardless of its temperature, Monel is completely rust-free, a faithful protector of purity. Since there is no corrosive action, there is no practical limit to the life of the Monel tank. RUUD selects it—for ***strength, for purity and for long-life!***

27
45



GENERAL TABLE

Number	1-15	2-20	3-30	4-45	5-75
Tank Capacity (gallons)	15	20	30	45	75
Heat-Speed in gallons per hour (60° rise)	22.4	28	35	56	77
Hourly B.T.U. input (Nat. or Manf. gas)	16,000	20,000	25,000	40,000	55,000
Gas Line (inches)	3/8	3/8	3/8	1/2	1/2
Water Line (inches)	3/4	3/4	3/4	1	1
Flue (inches)	3	3	4	4	5

Capacities

No. 1-15

Capacity: 15 gallons storage. Heat-speed, 22.4 gallons an hour, 60° rise.

For: Small families normally using between 30 and 60 gallons of hot water a day. In general, for very small houses.

No. 2-20

Capacity: 20 gallons storage. Heat-speed, 28 gallons an hour, 60° rise.

For: Average families normally using between 60 and 100 gallons a day. In general, for one bathroom houses.

No. 3-30

Capacity: 30 gallons storage. Heat-speed, 35 gallons an hour, 60° rise.

For: Average families normally using between 100 and 200 gallons a day. In general, for one and two bathroom houses.

No. 4-45

Capacity: 45 gallons storage. Heat-speed, 56 gallons an hour, 60° rise.

For: Larger families normally using between 200 and 300 gallons a day. In general, for larger homes and for small and average commercial institutions.

No. 5-75

Capacity: 75 gallons storage. Heat-speed, 77 gallons an hour, 60° rise.

For: Large homes, small apartments of not more than four families—office building, institution and many other commercial requirements.

Description

RUUD answers the need for a modern automatic storage water heater at a cost well within the limits of small budgets. Its five quick-heating sizes will perfectly serve practically all residences and many commercial institutions.

Operation is full-automatic. Heat from the quick-speed burner is absorbed through the bottom and sides of the full-floating tank as it passes up the flue which completely envelopes the tank. Temperature of the water is rigidly held within pre-determined limits by the all-metal thermostat, which automatically opens and closes the main gas valve as heat is or is not needed. Hot water is thus on hand at all times and in abundance. All sizes have complete automatic equipment.

Features

Five sizes (15, 20, 30, 45, and 75 gallon storage tanks) practically blanket the field of automatic water heating with the exception of the very large requirements that are best served by multi-coil and continuous flow types.

The main gas control is the all-metal thermostat, snap-action and reliable, which automatically controls the flow of gas and through it the operation of the complete machine. The all-metal automatic gas cut-off shuts off all gas if the pilot flame fails. Supplied with new-process, super-weight galvanized steel tanks, — saddle-top and full-floating. Two-inch cleanout plug is special equipment for hard water districts. Heat-guarding insulation is thick rock-wool. Unit bunsen burner with adjustable orifice. Entire combustion chamber assembly is quickly removable. Brass and copper fittings are aluminized. Full-front mechanism. All parts accessible and interchangeable. Porcelite finish.

Where to Specify

For hot water users who desire fine quality and performance at a price well within the limits of most budgets.

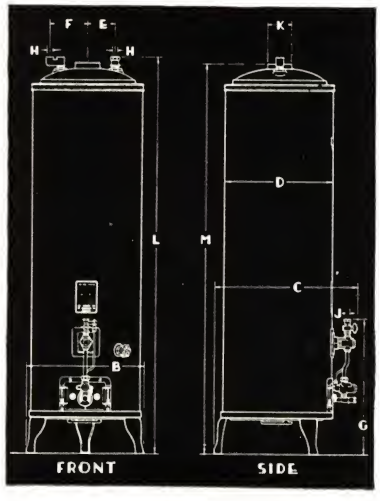
For hot water requirements that range from small families in small homes using from 30 to 60 gallons of hot water a day to the large home or building that needs the 75 gallon storage capacity and the 77 gallon an hour heat-speed of the Ruud No. 5-75.

Since Ruud is made with galvanized steel tanks only, it should not be used where the water supply attacks and corrodes iron quickly. For this, the Ruud 1200 Series (with the 20-year guaranteed Monel tank) is recommended. If the water supply is hard (contains easily precipitated minerals, — lime, etc.), specify Ruud with the special two-inch clean-out plug.

ROUGHING-IN DIMENSIONS (INCHES)

No.	1-15	2-20	3-30	4-45	5-75
B	17 1/8	17 1/8	18 5/8	23	27 1/8
C	21 5/8	21 5/8	23 3/8	28 5/8	31 1/4
D	16 1/4	16 1/4	18	22 1/2	26 5/8
E	4	4	4 1/2	6	6
F	5 3/4	5 3/4	6 1/4	8	8
G	22 3/4	22 3/4	22 3/8	26 1/2	28
H	3/4	3/4	3/4	1	1
J	3/8	3/8	3/8	1/2	1/2
K	3	3	4	4	5
L	50 3/4	62 1/2	65 3/4	64 1/4	69 3/4
*M	49 3/4	61 1/4	64 3/8	62 7/8	68 1/2

*For draft-hood, add 6 3/4" to dimension "M" for Nos. 1-15 and 2-20,—8" for Nos. 3-30 and 4-45, —9 1/2" for No. 5-75.



RUUD CABINET AUTOMATIC STORAGE WATER HEATER
RUUD TABLE-TOP AUTOMATIC STORAGE WATER HEATER

Description

The RUUD Cabinet and Table-Top models fill the need for automatic storage water heaters of modern appearance to harmonize with other appliances. Very popular for kitchen installations, the Cabinet model can be used where height is no special factor and the Table-Top where it is. The first is made in 20 and 30 gallon tank sizes—the second in 14 and 20 gallon sizes.

Operation is quick-speed and full-automatic. Heat from the burner travels upward through a baffled flue in the center of the tank and is transmitted to the surrounding water which is protected from radiation by a thick blanket of insulation. Temperatures are held closely within usable limits by the automatic, all-metal thermostat and operation of the unit is controlled so that hot water is constantly on tap.

Features

This group is designed chiefly to meet the hot water requirements in one and two bathroom homes. Water temperature is automatically maintained by the all-metal thermostat. In case of pilot flame failure, the automatic gas cut-off closes all gas lines. The tank is of new-process galvanized steel, made with a corrosion-resisting saddle-top; it is of center-flue construction with a spiralled heat baffle. Quick-speed bunsen burner. Rock-wool insulation from 1½ to 4 inches thick. All mechanism is concealed in the cabinet but is quickly accessible by a one-hand removal of the entire front panel. Finish is white porcelite; chrome hardware; black base and trim.

Where to Specify

For homes and other buildings where a water heater of cabinet design and white finish is wanted so that its appearance will match that of the automatic refrigerator and similar equipment. For small and average families requiring from 30 to 200 gallons of hot water a day. For stores and other buildings with a like hot water demand.



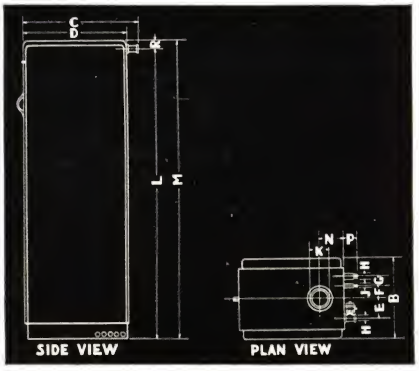
GENERAL TABLE

Number	TABLE-TOP		CABINET	
	15-15TT	16-20TT	17-20C	18-30C
Tank Capacity (gallons)	14	20	20	30
Heat-Speed in gallons per hour (60° rise)	22.4	28	28	35
Hourly B.T.U. input (Nat. or Manf. Gas)	16,000	20,000	20,000	25,000
Gas Line (inches)	⅜	⅜	⅜	⅜
Water Line (inches)	¾	¾	¾	¾
Flue (inches)	3	3	3	3

Capacities

No. 15-15TT
Capacity: 14 gallons storage. Heat-speed, 22.4 gallons an hour, 60 degree rise.
For: Very small families and other establishments where normal hot water use is between 30 and 60 gallons of hot water a day.
No. 16-20TT
Capacity: 20 gallons storage. Heat-speed, 28 gallons an hour, 60 degree rise.
For: Small and average families normally using between 60 and 100 gallons a day. In general, for one bathroom houses.
No. 17-20C
Same as No. 16-20TT above.
No. 18-30C
Capacity: 30 gallons storage. Heat-speed, 35 gallons an hour, 60 degree rise.
For: Families normally using between 100 and 200 gallons a day. In general, one and two bathroom houses.

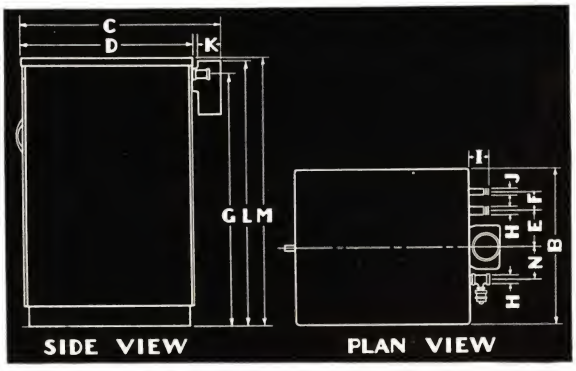
RUUD CABINET



ROUGHING-IN DIMENSIONS (INCHES)

No.	17-20C	18-30C
B	15½	17½
C	22½	24½
D	20	22
E	4	5
F	2¼	2¾
G	1¾	2¼
H	¾	¾
J	⅜	⅜
K	3	3
L	55½	60
M	56¾	61¼
N	4	6
P	2½	2½
R	1¼	1¼

RUUD TABLE-TOP



ROUGHING-IN DIMENSIONS (INCHES)

No.	15-15TT	16-20TT
B	18	20½
C	25¼	26¼
D	22	23
E	4½	4½
F	2¼	2¼
G	34½	34½
H	¾	¾
I	2½	2½
J	⅜	⅜
K	3	3
L	35¾	35¾
M	36	36
N	4½	4½

Add 6¾" (draft-hood height) to "M" for overall height



GENERAL TABLE

Number		42-20	44-30	46-50
Tank Capacity (gallons)		20	30	50
Heat-Speed in gallons per hour (60° rise)	Adj. No. 1 Adj. No. 2 Adj. No. 3	4.2 7.0 11.2	4.9 9.1 14.0	5.6 11.2 16.8
Hourly B.T.U. input (Nat. or Manf. Gas)	Adj. No. 1 Adj. No. 2 Adj. No. 3	3,000 5,000 8,000	3,500 6,500 10,000	4,000 8,000 12,000
Gas Line (inches)		3/8	3/8	3/8
Water Lines (inches)		3/4	3/4	1
Flue (inches)		3	3	3

Capacities

No. 42-20

Capacity: 20 gallons storage. Heat-speed on full burner 11.2 gallons an hour, 60 degree rise.

For: Small homes and families normally using between 30 and 70 gallons a day, 60 degree rise. In general, for one bathroom houses.

No. 44-30

Capacity: 30 gallons storage. Heat-speed on full burner, 14 gallons an hour, 60 degree rise. In general, for one bathroom houses.

For: Average homes and families normally using between 50 and 90 gallons a day.

No. 46-50

Capacity: 50 gallons storage. Heat-speed with full burner, 16.8 gallons an hour, 60 degree rise.

For: Larger homes and families normally using between 70 and 135 gallons a day. In general, for one and two bathroom houses. Ideal for certain classes of commercial installations.

Note:
See Back Cover for
Special Service to Architects

Description

Where fuel expense is an important factor, the RUUD C. C. (Customer Control) Automatic Storage Water Heater is recommended. The unit is fully automatic, but by simple manipulation of the three-speed C. C. Burner, the owner can himself set the heat-speed (rate of gas burning and water heating), selecting it either on the basis of self-determined fuel cost limits or extent of hot water service desired.

Change in heat-speed can be made at the owner's will, increasing or decreasing it as he wishes, with hot water supply and fuel cost likewise changing in the same ratio. This is true made-to-measure and customer-controlled hot water service.

Features

Three sizes (20, 30 and 50 gallon storage tanks) supply the three common classes of hot water demand — small homes, those of average size and those a little larger than average.

RUUD C. C. has full-automatic equipment, — all-metal thermostat and gas cut-off. Thick insulation surrounds the tank sides and is extra thick on top. The owner can control his own gas cost through simple changes of the two gas cocks. All three sizes are made with new-process, super-heavy tanks of galvanized steel; Nos. 44-30 and 46-50 are also built with tanks of Ruud-a-loy (strengthened copper). The unit is compact; finish is colorful porcelite with aluminum and chrome trimming.

Where to Specify

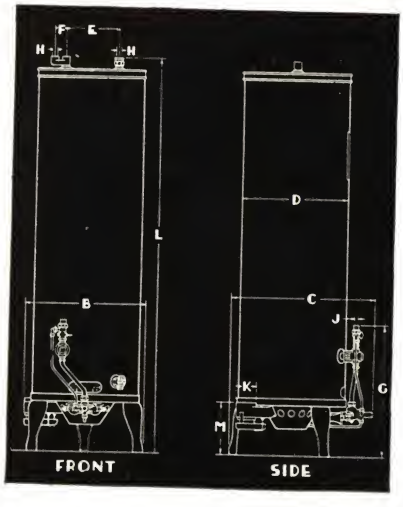
Where fuel expense is an important factor; where the owner desires to regulate and control his own gas cost.

For small, average and average-plus homes where the owner wishes to select his own class of hot water service and thereby control his own fuel expense. Very popular for use with bottled or tank gas (butane or propane). Ruud-a-loy (strengthened copper) tanks should be specified where the water supply attacks steel tanks or where the owner wants the longer life that Ruud-a-loy will give him.

ROUGHING-IN DIMENSIONS (INCHES)

Number	42-20	44-30	46-50
B	21	21	23
C	23 1/2	23 1/2	28 1/4
D	17 1/4	17 1/4	21 1/4
E	4 1/2	4 1/2	6
F	1 3/4	1 3/4	2
G	21	21	22 1/8
H	3/4	3/4	1
J	3/8	3/8	3/8
K	3	3	3
L	49 1/4	65 1/2	66 1/8
M	8 3/4	8 3/4	8 3/4

Add 6 1/4" to M for draft-hood



Description

Extreme low price without sacrifice of basic quality and performance is the prime feature of the Crescent Automatic Storage Water Heater.

The automatic action of the all-metal thermostat maintains a constant supply of evenly-tempered hot water in the thickly insulated tank, ready for instant withdrawal at all times. Compact, smart and colorful, Crescent is a modern automatic water heater in every detail of design and operation.

Features

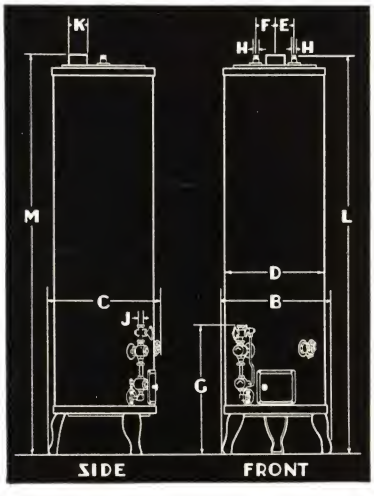
Three sizes (15, 20 and 30 gallon storage tanks) are designed to cover the hot water requirements of small and average homes and for other buildings with like demands. The all-metal, snap-action thermostat automatically controls gas flow, proportioning it to the owner's demands and keeping an ample supply of hot water ready in the heavily-insulated tank.

If the pilot flame goes out, the automatic gas cut-off acts to close both main and pilot gas lines. The new-process galvanized steel tank is made with an internal baffled flue. It is heavy, long-wearing and built with a corrosion-resisting saddle-top. Rock-wool insulation is full thickness. Quick-heating bunsen burner. The entire combustion chamber assembly can be removed as a unit. Mechanism is full-front; no side-rigging. Finish is colorful, high-lustre porcelite.

Where to Specify

Where extreme low price is an important factor.

For hot water requirements that range from 30 to 200 gallons a day; — from very small homes with one bathroom to larger homes and families with two; — for commercial demands in the same class.



ROUGHING-IN DIMENSIONS (INCHES)

No.	CR 15	CR 20	CR 30
B	14 1/8	14 1/8	16 1/8
C	15 7/8	15 7/8	17 7/8
D	13 7/8	13 7/8	15 7/8
E	3	3	3
F	3	3	3
G	19 1/2	19 1/2	19 7/8
H	3/4	3/4	3/4
J	3/8	3/8	3/8
K	3	3	3
L	49 5/8	58 1/4	62 1/2
M	49 3/4	58 3/8	62 5/8

Note: Add 6 3/4" to M for draft-hood



GENERAL TABLE

Number	CR15	CR20	CR30
Tank Capacity (gallons)	15	20	30
Heat-Speed in gallons per hour (60° rise)	22.4	28	35
Hourly B.T.U. input (Nat. or Manf. gas)	16,000	20,000	25,000
Gas Line (inches)	3/8	3/8	3/8
Water Line (inches)	3/4	3/4	3/4
Flue (inches)	3	3	3

Capacities

No. CR15

Capacity: 15 gallons storage. Heat-speed, 22.4 gallons an hour, 60 degree rise.

For: Small families normally using between 30 and 60 gallons a day.

No. CR20

Capacity: 20 gallons storage. Heat-speed, 28 gallons an hour, 60 degree rise.

For: Small families normally using between 60 and 100 gallons a day. In general, for one bathroom houses.

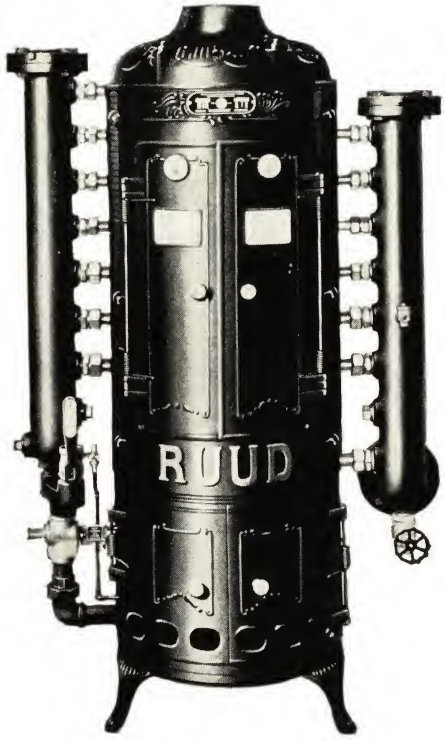
No. CR30

Capacity: 30 gallons storage. Heat-speed, 35 gallons an hour, 60 degree rise.

For: Average families normally using between 100 and 200 gallons a day. In general, for one and two bathroom houses.

RUUD MULTI-COIL AUTOMATIC STORAGE WATER HEATER

27
45



Description

From this heavy-duty group, practically every requirement of Volume Water Heating can be met. Water is heated as it passes through copper coils and circulates through manifolds to and from the tank until the pre-set temperature is reached at which time the all-metal thermostat shuts off the flow of gas.

When the temperature drops through hot water withdrawals, the thermostat opens the gas line again and the heating operation is repeated. The automatic cycle is complete.

Extra ruggedness marks every detail of construction, a quality that is translated into a reliable and continuous hot water service at low cost for fuel and maintenance. Single or battery installations.

Features

RUUD Multi-Coil Automatic Storage Systems are made in four standard water heater sizes and in a range of storage tanks of many capacities, which are furnished as specified in black iron, galvanized steel and Ruud-a-loy (strengthened copper). Tanks with steam coils are supplied as ordered. Installations may be made singly (one water heater and one tank) or in battery (two or more water heaters connected to one tank).

Fuel control is close and economical through the RUUD all-metal thermostat and automatic gas cut-off. Coils are heavy, premium copper; they are separate and independent so that removal of one or more for inspection or repair does not throw the equipment out of service. Porcelain-enameled manifolds. Two piece, easy-to-clean bunsen burners. Heavy shell. Extreme ruggedness characterizes the system throughout.

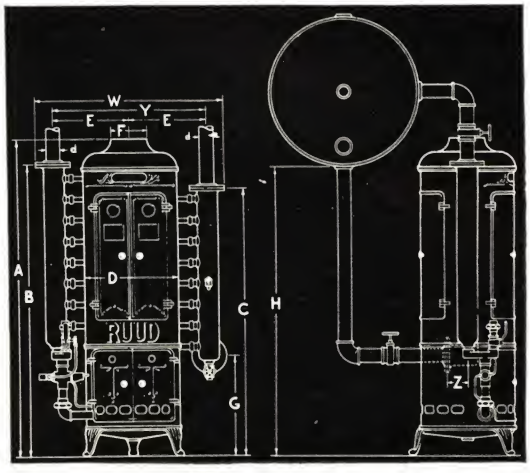
Where to Specify

For practically every heavy-duty water heating job except in those cases where hot water demands are intermittent and best served by the RUUD Continuous Flow Water Heater, —a unit of intermittent action. Large homes, apartment buildings and every manner of commercial and volume water heating can be perfectly supplied by the RUUD multi-coil group. Since requirements in this field are so varied and special, it is urged that the Ruud engineering department be called upon for specification help.

ROUGHING-IN DIMENSIONS (INCHES)

No.	100	200	350	500
A	45	53 3/8	61	64 1/8
B	41 3/4	49 1/2	56 1/4	58 1/2
C	37 3/4	45 1/2	52	53 1/2
D	12 1/2	16	18 1/2	20 1/2
E	10 3/4	13	14 3/4	15 3/4
F	5	6	7	8
G	17 1/4	18	19	18 1/2
H	41	49	56	58
d	1 1/2	2	2 1/2	2 1/2
W	27	32	36 1/2	38 1/2
Y	21 1/2	26	29 1/2	31 1/2
Z	3	3 1/2	4	4

Note: H equals minimum dimension.



GENERAL TABLE

Size	Heat Speed in Gallons per Hour 60° Rise		No. of Coil Sections	Size Manifold Connection	Size Gas Inlet	Size Flue Connection	Number of Burners	Orifice Natural Gas	Orifice *Manufactured Gas	Size Thermostat Required	Tank Tapping Required for Thermostat	Size of Gas Meter	Hourly B.T.U. Input	
	Natural Gas	Manufactured Gas											Natural	Artificial
100	107.7	111.9	6	1 1/2"	3/4"	5"	6	52	40	3/4"A	1 1/4"	20	77,000	80,000
200	215.4	223.8	7	2"	1"	6"	12	52	40	1"	1 1/4"	45	154,000	160,000
350	377.6	391.6	7	2 1/2"	1 1/4"	7"	21	52	40	1 1/4"	1 1/4"	60	270,000	280,000
500	538.5	559.4	8	2 1/2"	1 1/2"	8"	30	52	40	1 1/2"	1 1/2"	80	385,000	400,000

*Manufactured Gas Orifice varies with Specific Gravity, B.T.U. and Pressure of the Gas.

Capacities

No. 100

Capacity: Heat-speed at 60 degree temperature rise is 107.7 gallons an hour (natural gas) — 111.9 gallons an hour (manufactured gas). Furnished regularly with tanks of 80, 100 and 150 gallons storage capacity.

For: In general, homes having from three to five bathrooms, bedroom lavatories, large kitchen sink and laundry. Apartment buildings with six apartments of four and five rooms each.

No. 200

Capacity: Heat-speed at 60 degree rise is 215.4 gallons an hour (natural gas) — 223.8 gallons an hour (manufactured gas). Furnished regularly with tanks of 100, 150, 200, 250, and 300 gallons capacity, singly or in duplex.

For: In general, homes having five to eight bathrooms, large kitchen sink, dishwashing machine, large laundry. Apartment buildings with six to twelve apartments of five or six rooms each.

No. 350

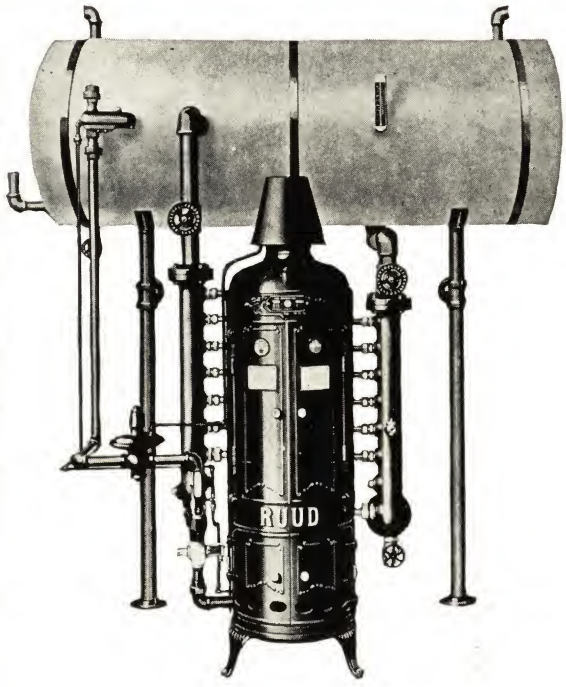
Capacity: Heat-speed at 60 degree rise is 377.6 gallons an hour (natural gas) — 391.6 gallons an hour (manufactured gas). Furnished regularly with tanks of 300, 365, 425, 500 and 600 gallons capacity, singly and in duplex.

For: In general, homes having seven to ten bathrooms, large kitchen sink, pantry sink, dishwashing machine, large laundry. Apartment buildings with ten to twenty apartments of five and six rooms each.

No. 500

Capacity: Heat-speed at 60 degree rise is 538.5 gallons an hour (natural gas) — 559.4 gallons an hour (manufactured gas). Furnished regularly with tanks of 425, 500, 600, 700, 800, 1,000, 1,200, 1,500, 1,800, 2,000, and 2,500 gallons capacity in black iron and galvanized. Ruud-a-loy (strengthened copper) tanks furnished up to 1,200 gallons capacity.

For: Single, duplex and triplex installations.



Note:

See Back Cover for

Special Service to Architects

RUUD ALL-METAL THERMOSTATS

Size of Valve	Std. With Heater No.	Total Length	Length Inside Tank	Length Outside Tank	Tank Tapping Reqd.
¾"-A	100	23¾"	15½"	8¼"	1¼"
1"	200	32"	22"	10"	1¼"
	350				
1¼"	Duplex 200	32"	22"	10"	1¼"
	500				
1½"	Duplex 350	42½"	30½"	12"	1½"
2"	Duplex 500	42½"	30½"	12"	1½"

Standard Combinations

Black and Galvanized Iron Standard Tank Combinations

Line No.	Number No. Heater	Capacity of Tank in Gallons	Number of Tank	Diam. of Tank	Length of Tank	Number of Heaters Tapped for	Cold Inlet to Tank	Hot Outlet from Tank	Size of Circulators	Line No.
1	100	80	1	20"	5'-0"	1	1¼"	1¼"	1½"	1
2	100	100	2	22"	5'-0"	1	1¼"	1¼"	1½"	2
3	100	150	4	24"	6'-4"	1	1¼"	1¼"	1½"	3
4	200	100	5-B	22"	5'-0"	1	1¼"	1¼"	2"	4
5	200	150	7-B	24"	6'-4"	1	1½"	1½"	2"	5
6	200	200	8-B	24"	8'-6"	2	2"	1½"	2"	6
7	200	250	9-B	30"	7'-0"	2	2"	1½"	2"	7
8	200	300	10-B	30"	8'-0"	2	2"	1½"	2"	8
9	350	300	16-B	30"	8'-0"	2	2½"	2½"	2½"	9
10	350	365	17-B	30"	10'-0"	2	2½"	2½"	2½"	10
11	350	425	18-B	36"	8'-0"	2	2½"	2½"	2½"	11
12	350	500	19-B	36"	9'-6"	2	2½"	2½"	2½"	12
13	350	600	20-B	42"	8'-6"	2	2½"	2½"	2½"	13
14	500	425	21	36"	8'-0"	2	2½"	2½"	2½"	14
15	500	500	22	36"	9'-6"	2	2½"	2½"	2½"	15
16	500	600	23	42"	8'-6"	2	2½"	2½"	2½"	16
17	500	700	24	42"	10'-0"	2	2½"	2½"	2½"	17
18	500	800	25	48"	8'-6"	2	2½"	2½"	2½"	18
19	500	1000	26	48"	10'-9"	2	2½"	2½"	2½"	19
20	500	1200	27	48"	13'-0"	3	3"	3"	2½"	20
21	500	1500	28	54"	12'-9"	3	3"	3"	2½"	21
22	500	1800	29	54"	15'-3"	3	3"	3"	2½"	22
23	500	1800	29-A	60"	12'-6"	3	3"	3"	2½"	23
24	500	2000	30	54"	17'-0"	4	3"	3"	2½"	24
25	500	2500	31	60"	17'-0"	4	3"	3"	2½"	25

Above Tanks may be equipped with Steam Coils, Manholes and Handholes.

GALLONS PER HOUR DELIVERED BY RUUD MULTI-COIL STORAGE HEATERS

Size of Heater	TEMPERATURE RISE IN DEGREES F.														
	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150
100	630	315	210	158	126	105	90	79	70	63	57	52.5	48.5	45	42
200	1260	630	420	315	252	210	180	157.5	140	126	114.5	105	90	79	84
350	2205	1102.5	734.5	551	441	367.5	315	275.5	244.5	220.5	200	183.5	169.5	157.5	147
500	3150	1575	1050	787.5	630	525	450	394	350	315	286	262	242	225	210

RUUD NOS. 50 AND 75 MULTI-COIL WATER HEATERS

27
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GENERAL TABLE

No.	Size Moment Valve	Thermostat Tank Tapping Required	Heat Speed Gallons Per Hour 60° Rise	Hourly B.T.U. Input Nat. or Man. Gas	* Gas Line	Water Circulating Lines	Flue
50	¾"	1¼"	49	35,000	½"	1¼"	4"
75	¾"	1¼"	77	55,000	½"	1½"	4"

** ½" between water heater and thermostat; ¾" to thermostat*

Capacities

No. 50

Capacity: Heat speed at 60 degrees temperature rise is 49 gallons of hot water an hour. Furnished regularly with tanks of 50, 60 and 80 gallons but can be connected to tanks of other sizes, singly and in duplex.

For: Larger-than-average homes and a variety of commercial requirements.

No. 75

Capacity: Heat-speed at 60 degrees temperature rise is 77 gallons of hot water an hour. Furnished regularly with tanks of 60, 80, and 100 gallons, but can be connected to tanks of other sizes, singly and in duplex.

For: Large homes having from three to five bathrooms. Apartment buildings with four apartments of four and five rooms each. For many commercial and volume water heating requirements

Description

These units are specially adapted for the conversion of heavy-duty coal or oil-fired systems to gas by connection, in unit or battery, to the existing storage tank, the automatic action being controlled by the RUUD all-metal thermostat. They are also supplied complete with water heater, a thermostat and a new RUUD tank (black iron, galvanized or Ruud-a-loy strengthened copper).

Operation follows the principle of the RUUD Multi-Coil Automatic Storage System—the automatic heating of water to balance hot water withdrawals from the tank. Gas is controlled by the thermostat which is reliable and positive-acting, holding the main gas valve fully open or completely closed, without gas-wasting midway positions.

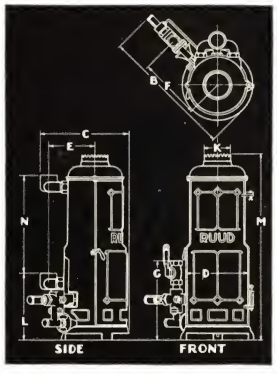
Features

Jacket is heavy cast-iron. Coils are made from heavy premium copper tubes, and so staggered as to baffle most effectively the rising heat from the quick-speed bunsen burner, which is equipped with a needle valve adjustment and an adjustable air shutter. Manifolds are brass. Rugged construction throughout.

Primary control of gas is in the hands of the RUUD all-metal thermostat, as described. A secondary control is the RUUD automatic gas cut-off which closes both main and pilot gas valves in case of pilot flame failure.

Where to Specify

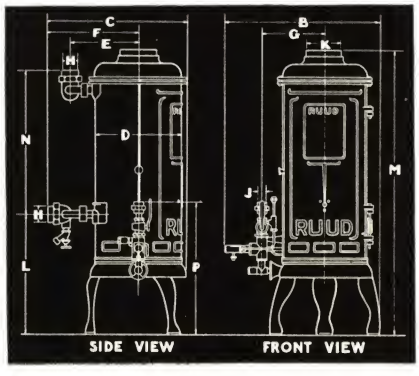
For homes and buildings where hot water requirements fall within the capacities listed. Uses are quite flexible because of the quick heat-speed and the various sizes of storage tanks to which the water heaters may be connected. Both models have many commercial adaptations and provide an inexpensive way of switching from other fuels to gas, and utilizing the present storage tank.



No. 50 ROUGHING-IN DIMENSIONS (INCHES)

Number	50
B	17¾
C	14
D	9¾
E	7
F	8⅞
G	12
K	4
L	10⅛
M	27
N	14¾

Add 8½" to "M" for draft-hood



No. 75 ROUGHING-IN DIMENSIONS (INCHES)

Number	75
B	20
C	18¼
D	11⅞
E	8½
F	11¾
G	8⅜
H	1½
J	½
K	4
L	16⅝
M	39½
N	21¾
P	18⅝
R	46¼

Add 8½" to "M" for draft-hood
Legs are 7½" high.

Description

This type provides an instant, continuous, uninterrupted flow of uniformly tempered water. The action is controlled entirely by the faucets opening and closing, plus the automatic temperature regulation of the internal thermostat.

The heating action is instant. Opening the faucet starts gas burning and water flows at once through long copper coils which are enveloped in hot gases, so that water entering the machine cold, is hot when it leaves. Closing the faucet stops the machine's operation automatically.

Features

Five sizes with capacities ranging from 2-plus to 8 gallons a minute can care for a large majority of home and commercial hot water requirements, and when installed in battery for even the largest demands. Two separate and independent gas valves, one actuated by water flow and the other by water temperature. Thermostat is in the heart of the heat zone and is instantly responsive to temperature changes. All-metal automatic gas cut-off. Coils are seamless, premium copper, baffle-wound. Two piece, easy-to-clean burners. Waterways are brass and copper, assuring rust-free hot water. Heavy cast-iron shell. Long-life construction.

Where to Specify

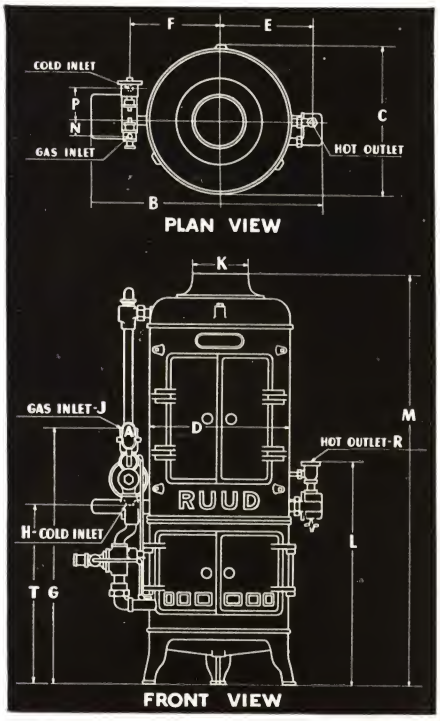
This is a tankless system without stand-by losses. It is ideal for all homes and buildings where instant, inexhaustible and rust-free hot water is desired, — for intermittent demands where hot water storage would be wasteful (shower rooms of athletic plants, autowash stations, soda fountains, etc.), — for draws over a long period that would exhaust a tank supply, — and for water conditions that corrode iron and steel tanks quickly. This type is extremely flexible and when installed singly or in battery, there are but few hot water demands that it cannot care for.



GENERAL TABLE

Number	95	3	4	6	8
Capacity in gallons per Minute (63° rise)	2 plus	3	4	6	8
Hourly B.T.U. input					
Nat. Gas	92,000	110,000	137,500	220,000	275,000
Manf. Gas	97,000	116,000	145,000	232,000	290,000
Gas Line (inches)	¾	1	1¼	1½	2
Cold Water Line (inches)	½	½	½	¾	¾
Hot Water Line (inches)	½	½	½	¾	1
Flue (inches)	5	6	6	7	8

Note: 25 pounds minimum water pressure required for standard water heaters. From 5 to 25 pounds use the low pressure type supplies in the No. 4, 6, and 8 sizes where pressure is below five pounds, use the storage type.



ROUGHING-IN DIMENSIONS (INCHES)

Number	95	3	4	6	8
B	21 7/8	25½	27¼	30¼	32⅜
C	16½	17½	19	22½	23½
D	13⅞	14½	16⅜	19	21¼
E	9⅜	10⅛	11⅛	12⅜	13⅜
F	9¼	10	10¾	12⅜	13¾
G	16¾	29¼	31	33½	33¾
H	½	½	½	¾	¾
J	¾	1	1¼	1½	2
K	5	6	6	7	8
L	19¾	26½	27½	28⅝	29½
M	42⅝	45½	47¼	55½	58½
N		2¼	2¼	2⅜	2⅜
P		3½	3½	3½	3½
R	½	½	½	¾	1
S	49⅜	53¼	55	63¼	67¼

Capacities

No. 95. Capacity: Two gallons plus a minute, 63 degree temperature rise. For: Very small homes with compactly arranged fixtures.

No. 3. Capacity: Three gallons a minute, 63 degree temperature rise. For: Small homes having ordinary bathroom, kitchen and laundry fixtures.

No. 4. Capacity: Four gallons a minute, 63 degree temperature rise. For: Average, modern homes having kitchen, one or two bathrooms and laundry.

No. 6. Capacity: Six gallons a minute, 63 degree temperature rise. For: Homes with two or three bathrooms and other fixtures in proportion. For small duplex apartments.

No. 8. Capacity: Eight gallons a minute, 63 degree temperature rise. For: Large homes with from three to five bathrooms and other fixtures in proportion. Also for small hotels, apartment houses and restaurants. Note: This is only a general guide to be supplemented by study of individual requirements. In addition to residences, this type has wide application in commercial building. Ask for RUUD specification help.

CAPACITIES OF CONTINUOUS FLOW WATER HEATERS
TEMPERATURE RISE IN GALLONS PER MINUTE

Number	50°	60°	70°	80°	90°	100°	110°	120°	130°	140°	150°
95	3.15	2.62	2.25	1.97	1.75	1.58	1.43	1.31	1.21	1.12	1.05
3	3.78	3.15	2.70	2.36	2.10	1.89	1.72	1.58	1.45	1.35	1.26
4	5.05	4.20	3.60	3.15	2.80	2.52	2.29	2.10	1.94	1.80	1.68
6	7.58	6.30	5.40	4.73	4.20	3.87	3.52	3.23	2.98	2.76	2.58
8	10.10	8.40	7.20	6.30	5.60	5.04	4.59	4.20	3.88	3.60	3.36

Note: See Back Cover for Special Service to Architects

RUUD

Engineering and Specification Service

★

The largest line of gas water heaters in the world is trade-marked "RUUD." Any hot water requirements that can be met by gas, can be met by some type and size in the RUUD line, whether that requirement be for one faucet or a thousand.

There are so many varieties of hot water demands, many of which have their own individual problems, that you are urged to accept the no-charge, no-obligation services of the RUUD engineering department in specification and installation problems.

If you live in a large city, consult your phone book for the name and address of a RUUD representative. If not, write direct to . . .

★

RUUD MANUFACTURING COMPANY
PITTSBURGH, PA.



THE DURO COMPANY

ESTABLISHED 1915

Electric Pumps, Water Systems, Water Softeners and Water Treatment Equipment

DAYTON, OHIO

NEW YORK OFFICE: 50 Church Street — LOS ANGELES OFFICE: 7267 Beverly Boulevard — BOSTON OFFICE: 274 Franklin Street

SALES AND SERVICE BRANCHES IN ALL PRINCIPAL CITIES

WATER SOFTENERS AND WATER TREATMENT EQUIPMENT



Pushing control lever forward once automatically starts and completes regeneration.

Duro Water Softener tanks are made of *special* Armco Ingot enameling iron. Vitreous porcelain enameled inside and out.

Mineral—Highest grade zeolite.

Fittings—Brass and heavily galvanized pipe.

Model No.	Type control	Grain gallons, capacity	Service connections, inches	Dimensions, inches		
				Depth	Width	Height
M-71	Automatic	20,000	¾	20	30	58
SF-2	Semi-auto.	20,000	¾	16	26	60

Other models are made in capacities up to 2,000,000 grain gallons.

How to Figure Water Softener Capacity—To determine gallons of soft water between regenerations divide grain gallons by hardness of water to be softened.

Example—If water is 20 grains hard and capacity of softener 20,000 grain gallons; 20 grain hardness into 20,000 grain gallons capacity of softener equals 1000 gallons of soft water between regenerations.

Important Water Softener Data

Because Water Softener and Water Treatment requires specialized engineering knowledge in the selection of suitable equipment for given requirements, we list here only two types of Water Softeners in capacities for average home.

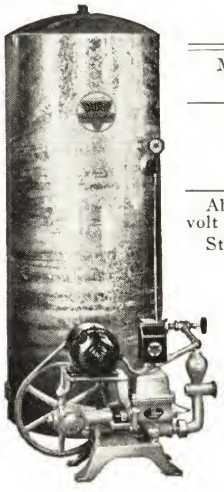
We respectfully urge that you write us or contact one of our Representatives located in 65 convenient distributing centers.

Free Water Analysis

Upon request we will send you a special bottle and mailing carton and will furnish you with chemical analysis and specifications on proper equipment for softening water, removal of iron, sediment, taste and odors in water and for thorough balancing of the alkalinity of water.

Send for Special Bulletin AIA 29-D-32.

AUTOMATIC PUMPS AND WATER SYSTEMS FOR DEEP AND SHALLOW WELLS



Model No.	Capacity, gal. per hr.	Motor hp.	Pipe sizes, inches	
			Suct.	Dischg.
250	265	⅙	1	¾
500	525	⅓	1½	1
720	720	½	1½	1
111	1200	1	2	1½
131	2000	2	2	1½

Above pumps are equipped with standard AC 110 or 110-220-volt motors. Odd cycle or direct current motors if specified.

Standard switch pressure 25-45 lbs.

Duro Deep Well Pumps

Depths—22 to 500 ft.

Capacities—160 to 2100-gals. per hour.

Capacity of deep well pump depends on size of the well and depth to water. Give us following deep well information for complete specifications: Diameter and total depth of well. Depth to water level. How many people will be served. Number of bathrooms and will water be used for sprinkling.

Complete Automatic Water Systems

Duro Pumps are supplied with tanks in capacities from 10 to 500 gallons, making complete automatic systems.

Duro Pump Features

Brass fitted throughout.

Double main phospher bronze bearing.

One-piece drop forged steel crankshaft.

Chromium plated valve seats.

Heavy duty shallow and deep well pumps equipped with Timken roller bearings.

Repulsion-Induction motors are Duro made.

Send for Special Bulletin AIA 31-H-31.

AUTOMATIC WATER HEATERS



GAS—STORAGE TANK TYPE

Model No.	Tank capacity, gal.	Hourly B.t.u. capacity on natural or artificial gas
HS-20	20	20,000
HS-30	30	30,000
HS-45	45	45,000

HS Models—Under-fired outer-flue storage tank.

ELECTRIC—STORAGE TANK TYPE

Model No.	Tank capacity, gal.	*Total wattage
HE-310	30	2000
HE-510	50	2000
HE-810	80	2000

*Upper and lower units 1000 watts each.

Features—*Tanks:* copper bearing steel. *Insulation:* mica pellet. *Fittings:* brass. *Finish:* white enamel.

Recommendations—*Average family:* 1 bathroom, HS-20 or HE-310. *Larger family:* 2 bathrooms, HS-30 or HE-510.

DURO GUARANTEE

We build our own Pumps, Water Softeners for Domestic and Industrial Application, Electric Motors, Filters and Water Conditioning Equipment, Switches, Pressure and Water Softener Tanks, and do our own Hot Galvanizing.

This enables us to *guarantee* the complete equipment.

THE FILTRINE MANUFACTURING COMPANY

Specialists in Efficient Liquid Cooling and Filtration

53 Lexington Avenue, BROOKLYN, N. Y.

SERVING ARCHITECTS AND ENGINEERS FOR THIRTY YEARS

Products

FILTERS—PURIFIERS for water, alcohol and other light liquids, (hot or cold): for ice-making, photo-developing, laboratories, apartment houses, residences, institutions, private water supply, industries, hotels, steamships, etc.

IRON REMOVAL FILTERS for residences and apartment buildings, hot or cold water lines.

WATER COOLERS and FILTERS, combined, cooled by ice.

WATER COOLERS and FILTERS, combined, for use with York, General Electric, Frigidaire, Westinghouse, Carrier, etc., refrigerating machines.

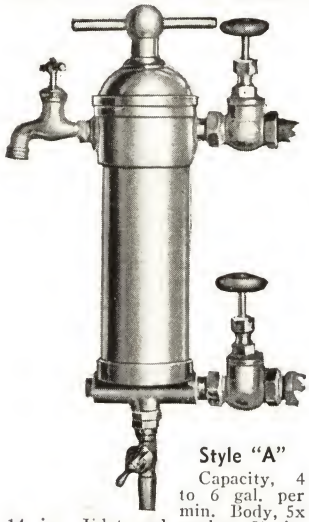
CIRCULATING DRINKING WATER SYSTEMS.

SHELL and TUBE EXCHANGERS and CONDENSERS.

TANKS and COILS—all metals.

General

Filtrine is the renewable filtering element used in all Filtrine Filters. Exceptionally high efficiency, clarity and purity. Filtrine retains all suspended matter and is easily, quickly replaced with new at low cost. Compactness of Filtrine Filters and light weight, permit installation in minimum space. *Used in many of the world's finest buildings.*



Style "A"
Capacity, 4 to 6 gal. per min. Body, 5x 14 in. Inlet and outlet, ¾ in. Weight, 20 lb.

"Filtrine" Style "A" Filter

This filter is designed to be set in the supply line with a number of outlets.

Especially suitable for: *Drinking water* in factories, hotels, office buildings, banks, theaters, etc. *Hot Water lines* in private homes, apartments, etc. *For general installation* in bottling plants, laboratories, restaurants, ice-making plants, etc. For greater capacity, filters can be mounted in multiples.

Made of heavily nickeled brass, valves and fittings of finest material. Tested for 75 lb. working pressure. All capacities are based on 25 lb. pressure per square inch.

Operation — Water enters center standpipe from the bottom where the force is broken by specially designed "baffle." From the standpipe water works outward through encasing cylinder of "Filtrine," depositing all suspended matter on the surface of the filtering material, purified water flowing off at either of the outlet valves. To clean, merely close inlet and outlet valves, open waste, remove top and lift out, and replace the "Filtrine." The entire replacement takes less than one minute.



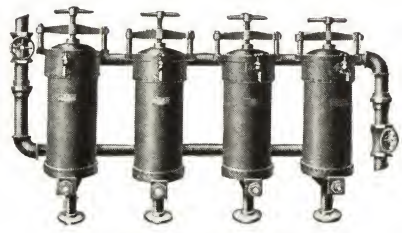
Style "B"
Capacity, 15 to 20 gal. per min. Weight, 100 lb. Floor space required 18x18 in. x 24 in. high. Inlet and outlet, 1½ in.

"Filtrine" Style "B" Filter

Suitable for general circulating water systems in hotels, theaters, restaurants, apartment houses, department stores, and for filtering water for swimming pools, ice plants, factory and industrial use. Installed at any point in water service line.

Made of galvanized iron. Can be installed in batteries of two or more units with capacities up to 100 gal. per minute.

Style "B" Filters in Multiple—Suitable for ice plants, hospitals, hotels, swimming pools, industries, residences, etc. Where large capacity is required, two or more units may be mounted in multiple. Each filter has individual inlet and outlet control valves, permitting independent operation. Light weight and minimum space required. May be installed in penthouse or any out-of-the-way place. No special foundations necessary.



Style "B" Filters in Multiple



Style No. 4

Style No. 4 Filter

For installation in water line to water coolers, drinking fountains, mixing tanks, kitchen sinks, etc. For hot or cold water. Solid, heavy, all-brass construction. Over-all dimensions 8 x 5 in. Water inlet ½ in., water outlet ⅜ in. Capacity 2 g.p.m. under 25 lbs. pressure.



Style No. 1

Style No. 1 Filter

For installation in place of hot or cold water faucet, in hospitals, homes, hotels, restaurants, etc. Solid, heavy, all-brass construction, highly nickel plated, with control valve. Over-all dimensions 8 x 10 in. Water inlet ½ in., water outlet ⅜ in. Capacity 2 g.p.m. under 25 lbs. pressure.

Architect's Specifications for Filtrine Filters

Plumbing contractor shall furnish and install, as shown on plans, in circulating drinking water system (two) filters, each filter having a published capacity rating of (4) g.p.m. under 25 lbs. operating pressure. Filters shall be of all-brass construction suitable for 75 lbs. working pressure. Filters shall be mounted on (1-in.) brass inlet and outlet headers with individual control valves for each filter. Filters shall employ renewable filtering element and be guaranteed to remove all suspended matter from the water. Filters shall be in detail accordance with Style ("A") as manufactured by THE FILTRINE MANUFACTURING COMPANY, Brooklyn, N. Y.

Shell and Tube Cooler for Air Conditioning and Industrial Application

Steel shell with bolted flanged steel head, supported in horizontal position by loose cradle supports. Evaporator consists of steel or copper tubes in U-bend formation. Tube bundle removable. Tube ends securely rolled to full depth of grooved tube sheet. Closely spaced circular orifice type steel baffles, prevent channeling of water. Refrigerant connections at one end, separated by one or more partitions in the head dividing the cooler into from one to four "circuits" depending on the number of condensing units to be used. Drywells for thermostat bulbs. Flanged water connections. Refrigerant in tubes.

Remote Models



M-150-R, M-75-R, M-40-R, M-25-R, M-14-R, X-5-R, X-2-R

Model	Storage, gals.	Evap. surface, sq. ft.	Overall dimensions, in.	Water, in.	
				In	Out
X-2-R	2	1.75	10x21¼	⅜	⅜
X-5-R	5	3.3	14x25½	⅜	⅜
M-14-R	14	9.0	18½x18½x25½	½	½
M-25-R	25	16.5	21 x21 x33½	½	½
MA-40-R	40	16.5	23 x23 x52½	¾	¾
M-40-R	40	44.0	23 x23 x52½	¾	¾
M-75-R	75	50.0	30 x30 x48	1	1
M-150-R	150	103.5	35 x35 x68	1	1

Cafeteria Type Water Coolers

Designed for restaurants and cafeterias. Filtrine insulated storage cooler in upper section provides large storage of chilled water to meet "peak" demands. Lower suitable for housing refrigerating unit (by others). (Numerals in model numbers indicate storage in gallons). Furniture steel construction on angle iron frame. White Duco finish or to suit. Polished monel top, large round-cornered drip tray. Two or more chromium push-back glass fillers. With or without side brackets for glasses.



MC-14-S and MC-25-S

DRINKING WATER REQUIREMENTS
Standards approved by NEMA

Type of service	Delivered water temp. F.	Gal. per person per hour	Waste and consumption per person per hour, oz.	Consumption only per person per hour, oz.	People served per gal.
Office (cup)	45-50	.033	4.2	4.2	30
Office (bubbler)	45-50	.083	10.5	4.2	12
Light mfg.	45-50	.143	18.3	7.32	7
Heavy mfg.	50-55	.20	25.6	10.24	5
Hot heavy mfg.	55-60	.25	32.0	12.8	4
Restaurant	40-45	.1 gal. per person			
Cafeteria	40-45	.083 gal. per person			
Theater	45-50	1.0 gal. per 100 seats continuous capacity.			
Schools	45-50	.083 plus 5 gal. storage per fountain.			
Hospitals					
A. per bed	45-50	.083 gal.			
B. per attendant	45-50	.083 gal.			
Hotels	45-50	.08 gal. per hour per room.			
Department stores, hotel and office building lobbies	45-50	4 to 5 gal. per hour per fountain.			

Circulating Systems

The use of storage type water coolers in circulating drinking water systems have proven, after years of use, the most dependable and best method of chilling water for:

Hotels	Restaurants	Hospitals
Theatres	Public buildings	Institutions
Libraries		Office buildings

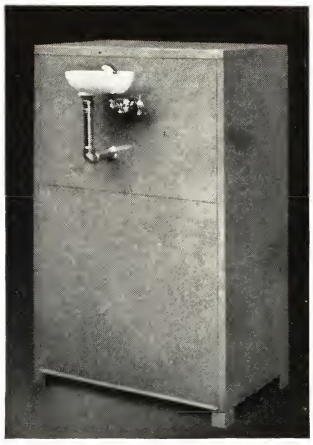
Filtrine storage type Models MA-40-R, M-40-R, M-75-R and M-150-R, (numerals indicate storage in gallons) and other sizes made to meet larger requirements are particularly designed for this application.

General—A complete circulating system generally consists of one of the above model coolers; one or more condensing units; one or more circulating pumps; one or more Filtrine Filters (Style A). A return loop of pipe thoroughly insulated (ice water cork thickness) carries the chilled water to the remote fountains and back to the cooler.

Filters—The use of filters in a circulating drinking water system is just as important as chilling the water. Filters act as a safety valve to keep all impurities from settling in the system. Filtrine Filters render pure sparkling "Conditioned-Water."

Industrial Type Water Coolers

Designed for "heavy" requirements in steel mills, railroad shops, foundries, cotton mills, etc. Heavy steel plate construction. Filtrine insulated storage cooler in upper section. Lower suitable for housing refrigerating unit (by others). (Numerals in model numbers indicate storage in gallons). Additional fountains and faucets optional.



MI-14-SB and MI-25-SB

CAPACITY DATA—FILTRINE WATER COOLERS

Filtrine Model No.	Suction temp. °F.	Water temp. out	Water cooling capacities—gals. Per hour water temp. in 70°	80°	90°	2-hour peak water temp. in 70°	80°	90°
X-2-R	25	50	4.7	3.6	3	10.4	8.2	7
X-5-R	25	50	8.9	6.8	5.8	18.8	14.6	12.6
M-14-R, MC-14-S, MI-14-SB	26	45	25.5	16.8	12.8	38	40.6	32.6
		50	31.8	21.6	16	70.6	50.2	39
M-25-R, MC-25-S, MI-25-SB	26	45	41	32	27	89	71	61
		50	59	45	34.4	125	97	75.8
MA-40-R	26	50	59	45	34.4	138	110	88.8
M-40-R	26	45	106	78	65	224	172	150
		50	145	105	80	310	230	180
M-75-R	26	45	141	88	70	285	209	177
		50	173	115	87	383	267	211
M-150-R	26	45	252	180	148	589	421	359
		50	326	232	178	727	539	431

B.T.U. REFRIGERATION LOAD PER GALLON OF WATER

Inlet water temp.	Outlet water temp.	B.t.u. per gallon	Inlet water temp.	Outlet water temp.	B.t.u. per gallon	Inlet water temp.	Outlet water temp.	B.t.u. per gallon
70°	45°	208	80°	45°	291	90°	45°	374
	50°	166		50°	250		50°	333

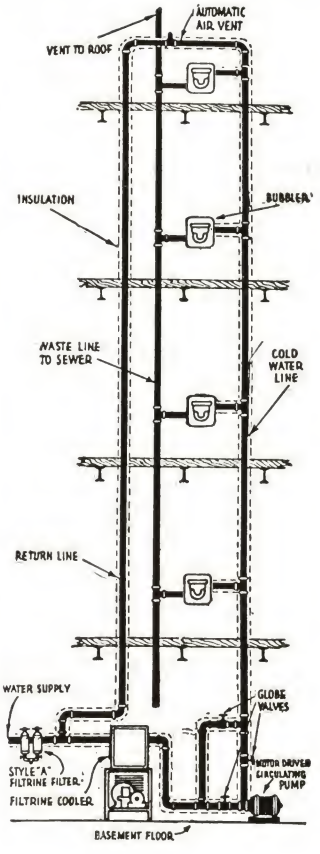
Typical Specifications for Architects and Engineers

Contractor shall furnish and install complete circulating drinking water system as shown on drawing comprising:

Insulated Storage Water Cooling Tank, Water Filters, Circulating Pump, Automatic Refrigerating Machine, all with necessary valves, electrical controls, insulated water supply and return lines and fountains.

Insulated Storage Water Cooling Tank—To have a storage of not less than (....) gallons made of extra heavy riveted and welded steel construction, containing not less than (....) lineal feet of specially processed steel pipe evaporator coil. Inside and outside of tank and outside of coil to be hot dipped galvanized after fabrication. Tank to be housed in galvanized steel container and insulated with not less than 3-in. cork insulation. All as per model (....) as manufactured by The Filtrine Manufacturing Company, Brooklyn, N. Y.

Water Filters—Furnish and install, as shown on plans, two Style (...) Filters, all-brass construction, having a published capacity rating of (...). Filters to be mounted on (...) inlet and outlet headers, with individual control valves for each Filter. Filters shall employ renewable filtering element and be guaranteed to remove all suspended matter from the water and to be in accordance with Style (...) as manufactured by The Filtrine Manufacturing Company, Brooklyn, N. Y.



THE H.L.G. COMPANY

Manufacturers of a Complete Line of High Quality Domestic Zeolite Water Softening Equipment—Warranted Good

TELEPHONE
8415

KALAMAZOO, MICH.

VELVET AND KALAMAZOO WATER SOFTENERS

Selecting the Correct Size

Both simple and important for any job. Three points must be considered: hardness of water, amount of water used, how often to regenerate.

Hardness of water—rated in "grains per gallon"—can usually be secured from your local water department or company. If not, and in doubt, send us at least a 1-qt. sample for free analysis. Mark it city water, or private well, with name and address.

Amount of soft water used varies with the number of people in a family and with the installation. If connected for—

Supplying soft water at all hot and cold fixtures, toilets and sprinklers, estimate 400 gals. per person weekly.

Supplying all hot and cold water fixtures but not toilets and sprinklers, estimate 200 gals. per person weekly.

Supplying soft water to hot water fixtures and cold only to laundry, estimate 125 gals. per person weekly.

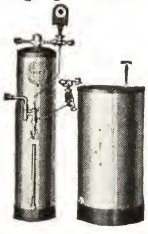
Special: For toilets and for sprinkling, use hard water; soft water is not required. These uses are heavy.



Velvet Full Electric Automatic Water Softener, Type D

Fully automatic, requiring only addition of salt to brine tank a few times yearly. Type D is equipped with omitting device electric time control and with automatic brine control valve. Both are easily adjustable, so that, if proper sized equipment is selected, most exacting requirements can be met.

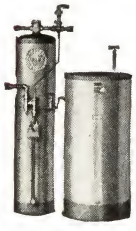
Velvet Full Electric Automatic Water Softeners, Type D, are fully proven and represent today's outstanding user value in domestic water softening equipment.



Velvet Water Softener, Type C

Mechanical time-controlled semi-automatic softener and is equipped with a selective type of regeneration control. It is only necessary to set the mechanical timer and turn a button. Regeneration from that point is completely automatic.

Velvet Water Softener, Type C, is easily converted to Velvet Full Automatic, Type D, simply by addition of the electric controls.



Velvet Water Softener, Type B

Conventional semi-automatic softener with brine tank.

The simplicity of the regeneration is due to the use of but one valve which, when regeneration is started manually, continues until manually stopped.

Velvet Water Softener, Type B, has the same basic design as Types D and C and can be easily converted into either of these models.

Kalamazoo Water Softener, Type KB



Conventional semi-automatic softener with brine tank. The simplicity of the regeneration is due to the use of but one valve which, when regeneration is started manually, continues until manually stopped.

Kalamazoo Water Softener, Type KB, is of highest quality but priced comparatively low for wide sale. This has been accomplished through exclusive design without sacrifice of high basic quality.



Kalamazoo Water Softener, Type KA

Hand regenerated, direct salting, and represents the latest developments in this type of equipment.

Type KA is fitted with mineral retaining screen to prevent loss of mineral and permitting an unusually high flow rate for a given size of tank diameter. The mineral retaining screen being attached to the filling plug is easily removed for cleaning.

VELVET WATER SOFTENERS

Model	Total capacity, grains	Flow rate, g. p. m.	Soft, tank, in.	D-C	B	Height over-all, in.	Floor space, in.	Pipe, in.
				Brine tank, in.				
D-C-B-8	15,000	8	10x36	16x36	14x28	42	18x30	¾
D-C-B-10	20,000	10	10x48	20x36	16x36	54	22x34	¾
D-C-B-14	30,000	14	12x48	20x36	16x36	56	22x38	¾
D-C-B-18	40,000	18	14x48	24x36	20x36	58	26x42	¾-1¼
D-C-B-24	50,000	24	16x48	30x36	20x36	60	32x50	1¼
D-C-B-30	60,000	30	18x48	36x36	24x36	62	38x60	1¼
D-C-B-36	80,000	36	20x48	36x36	30x36	66	38x62	1¼

In general Velvet Water Softener models are suitable for installation as follows: No. 8—1 and 2 bathrooms; No. 10—2 and 3 bathrooms; No. 14—3 and 4 bathrooms; No. 18—5 bathrooms; No. 24—12 outlets; No. 30—16 outlets; No. 36—20 outlets.

KALAMAZOO WATER SOFTENERS

Model	Total capacity, grains	Flow rate, g. p. m.	Soft, tank, in.	KB Brine tank, in.	Height over-all, in.	KB Floor space, in.	KA Floor space, in.	Pipe size, in.
KB-KA-1	12,000	8	10x36	14x28	42	16x28	12x14	¾
KB-KA-2	18,000	10	10x48	16x36	54	16x28	12x12	¾
KB-KA-3	24,000	12	12x48	16x36	56	16x32	14x16	¾
KB-KA-4	30,000	14	12x48	16x36	56	20x36	14x16	¾
KB-KA-5	36,000	16	14x48	20x36	58	22x36	16x18	¾
KB-KA-6	48,000	22	16x48	24x36	60	26x42	18x20	1¼
KB-KA-7	60,000	30	18x48	24x36	62	26x44	20x22	1¼

In general both KA and KB models are suitable for installation as follows: No. 1—1 and 2 bathrooms; No. 2—2 and 3 bathrooms; No. 3—3 and 4 bathrooms; No. 4—12 outlets; No. 5—14 outlets; No. 6—16 outlets; No. 7—20 outlets.

Note: To obtain total capacity in gallons divide the total capacity in grains, as shown by second column, by the grains hardness of water to be used.

Velvet Water Softeners, Type E

Manufactured in larger sizes for industrial, commercial and institutional requirements. In nine sizes, from 100,000 grains to 1,000,000 grains capacity.

Due to the fact that most jobs of this nature are special, it is necessary for our Engineering Department to furnish complete details and specifications based upon requirement data. Please write.

Quality

Velvet and Kalamazoo Water Softeners are of highest quality, fully guaranteed as to material, workmanship and performance Highest grade, high capacity, white synthetic zeolite used.

All are beautifully finished in two-tone green and two-tone gray, salt and rust-resisting enamel, to meet modern-day appearance requirements.

Note: Velvet and Kalamazoo Water Softeners are sold only by the plumbing trade and through recognized plumbing trade channels.

Further Information

Please write for up-to-date price lists, detailed specifications, engineering data and descriptive folders.

Technical information, water analysis, etc., gladly and promptly supplied upon request.

THE PERMUTIT COMPANY

World's Largest Exclusive Makers of Water Conditioning Equipment For Household and Industrial Use—All Types, Sizes, Purposes

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"Permutit, New York"

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Cincinnati—3119 Griest St.
PENNSYLVANIA: Philadelphia—34 So. 17th St.
Pittsburgh—615 Dollar Savings & Trust Bldg.
TENNESSEE: Chattanooga—415 Provident Bldg.

PERMUTIT COMPANY OF CANADA, LTD.
1440 St. Catherine Street, W., Montreal, Que.

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PERMUTIT PRODUCTS

WATER SOFTENERS, FILTERS and other WATER CONDITIONING EQUIPMENT, including:

Fully automatic or manually operated Downflow and Upflow Zeolite Water Softeners equipped with porous and non-porous zeolites; Hot Process and Cold Process Intermittent and Continuous Lime Soda Softeners; Spaulding Precipitator; Internal Boiler Feedwater Treatment; Pressure and Gravity Filters; Taste, Color and Odor-removing Equipment; Activated Carbon Filters; Coagulant and Corrective Chemical Feeds; Iron and Manganese Removal Equipment; Continuous Blowoff Equipment; Carbon-dioxide Stationary Indicators and Recorders, Portable Indicators; Gas Density Measuring Equipment.

HOUSEHOLD AUTOMATIC WATER SOFTENERS

These zeolite water softeners are of the finest quality throughout, and are built to give long years of trouble-free service. Automatic in operation, they can be furnished with any of three types of control: (1) A switch located on the softener or at a remote point, initiates regeneration when thrown by hand. This is then automatically carried through, and the softener automatically returned to service. (Model ES.) (2) An electric clock may be set for any hour of the day, and any day or days of the week, regenerating the softener under fully automatic control. (Model EST.) (3) A specially designed meter causes the softener to regenerate when a specified number of gallons of water has passed through it. (Model ESM.)

In addition to these automatic household softeners, there is a wide range of models and sizes of hand-operated equipment, using both natural and synthetic zeolites.



Household water softeners are now available in sizes to fit any income, any requirement. A small portable unit can be used to soften water from one faucet—there are intermediate models for use in kitchens and bathrooms of apartment houses, etc.—and full-sized equipment can be fitted to any home. As choice of model and size is usually determined by size of home and hardness of water, it is desirable to consult THE PERMUTIT COMPANY as to details and prices. Free water analysis service.

Other Household Products—THE PERMUTIT COMPANY likewise offers a full line of supplementary household water conditioning equipment: Filters to remove dirt and turbidity, equipment to remove iron, activated carbon filters to remove taste and odor, anti-corrosion devices to prevent red water troubles. Full details on request.

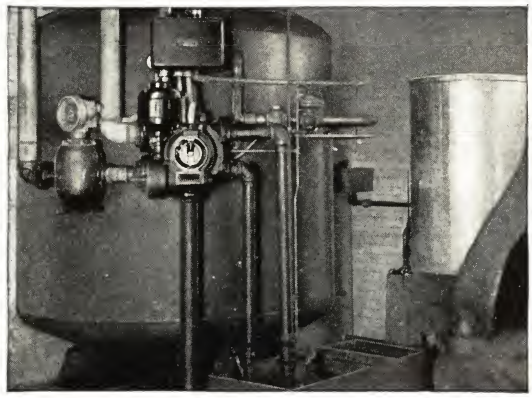
Write for Bulletin—Send for copy of "Household Water Conditioning" which contains full specifications and data. Free on request.

INDUSTRIAL AUTOMATIC WATER SOFTENERS

These zeolite water softeners are the latest development in the field of industrial water treatment. Fully automatic operation assures freedom from the errors of human control, and produces a supply of uniformly softened water at a lower cost per thousand gallons.

Besides the automatic softener, which is an exclusive Permutit development, industrial water softeners with single-valve control, or multi-valve control, manually operated, are available.

There are about 160,000 zeolite water softeners now in use. THE PERMUTIT COMPANY originated zeolite water softening, and this equipment is widely used in buildings, clubs, hospitals, hotels, power plants, mills, factories, laundries, food plants, municipalities, etc., in capacities from a hundred to millions of gallons per day.



Other Industrial Equipment

In addition to zeolite water softeners, Permutit offers filter equipment for removal of dirt, turbidity, iron, and oil, and special equipment for removal of color, taste, odor, etc., from water.

A water supply, through a combination of Permutit equipment, can be practically built to individual specifications of physical and chemical analysis. Impurities can be removed; desired ingredients can be added.

THE PERMUTIT COMPANY maintains large laboratories and a highly trained technical staff for the solution of your water problems. Write us whatever questions you have in mind.

Write for Booklets—Authoritative booklets can be had for the asking, covering any phase of water conditioning. Send us the details of your problems—no charge or obligation.

ROBERTS FILTER MANUFACTURING CO.

606 Columbia Avenue
DARBY, PA.

For Roberts Swimming Pool Recirculation Systems, see File Index

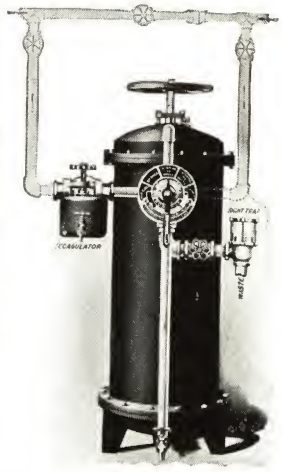
TECHNICAL DATA ON ROBERTS FILTERS

Types

Pressure and Gravity Filters for all requirements and capacities. Filters for residences; apartment houses; hotels; hospitals; institutions; factories; swimming pools; and public or private water supply systems, whether small or large. Stock filters are designed for 60 lbs. working pressure, but all styles are available for higher pressures when specified.

Style D Filter

Sizes: 12, 16 and 20 ins. The ideal household filter. Cylinder is of heavy cast iron. All operations controlled through a single, all-bronze, operating valve. Style DH Filter built to same specifications but arranged for gate valve control. Write for Bulletin 20.



Style "D" Filter

Style E Filter

Sizes: 12, 16, 20, 24, 30, 36, 42 and 50 ins. Cylinder is of heavy cast iron. Filter equipped with single operating valve. Style M and Style O filters consist of two Style E filters in series, the second cylinder being charged with bone charcoal or activated carbon for taste and odor absorption. Write for Bulletin 40.

Style H and Style G Filters

Sizes: 30, 36, 42, 48, 54 and 60 ins. Cylinder constructed of steel, with welded seams. Operations of Style H filter controlled through gate valves. Style G filters available in same sizes and constructed to same specifications, except that a single operating valve is substituted for gate valves. Write for Bulletin 60.

Style L Filter

Sizes: 66, 72, 78, 84 and 96 ins. Cylinder is of steel. Piping arranged with gate valve control. Valves and fittings can be of screwed or flanged pattern, as preferred. Write for Bulletin 80.

General

All Roberts Filters include an automatic coagulator for feeding minute quantities of alum when filtering turbid water. Filter beds in all units consist of properly graded silica sand superimposed on a bed of graded filter gravel. Cleaning of all filters is thoroughly and easily accomplished by reversing the flow of water, which lifts and liquefies the silica sand, scouring it on itself, and flushing the collected impurities and suspended matter to the drain with the waste wash water.

VERTICAL PRESSURE FILTERS, DIMENSIONS, CAPACITIES, ETC.

Size (inside diam.), in.	Filtering area, sq. ft.	Capacity, gal. per hr.			Height overall, in.	Pipe connections, in.		Floor space, ft.
		2-gal. rate	3-gal. rate	4-gal. rate		Inlet and outlet	Waste to sewer	
12	.78	95	140	190	58	1	1¼	2¼x2¼
16	1.39	170	250	340	63	1	1¼	2½x2¼
20	2.19	265	395	530	64	1	1¼	3 x2½
24	3.14	380	565	760	64	1¼	1½	3½x2¾
30	4.91	595	885	1190	74	1½	2	5¼x4
36	7.07	850	1275	1700	75	2	2½	5¾x4
42	9.62	1155	1735	2310	76	2	2½	6¼x4
48	12.56	1510	2265	3020	78	2½	3	6¾x4½
54	15.90	1910	2865	3820	78	2½	3	7¼x5
60	19.63	2360	3535	4720	79	2½	3	7¾x5¼
66	23.76	2850	4280	5700	87	3	4	8½x6
72	28.27	3395	5090	6790	90	3	4	9 x6½
78	33.17	3980	5970	7960	91	3	4	9½x7
84	38.48	4620	6930	9240	95	4	5	10½x7½
96	50.26	6035	9050	12070	98	4	5	11 x8½

Notes on Specifications

Always specify Filters by size (inside diameter) and style. Capacity is meaningless unless the rate of filtration in gallons per square foot per minute is fixed by the specifications. Refer to tabulation on this page and use the minimum, or 2-gal. per sq. ft. per minute rate for all domestic services and for filtering all water of more than average turbidity regardless of use of filtered water. Use the intermediate, or 3-gal. rate when filtering water of limited turbidity for purposes other than domestic. The 3-gal. rate is also recommended for swimming pool recirculation; but the maximum, or 4-gal. rate can be used for this service with safety when the bathing load will not be heavy. See File Index for our pages on Swimming Pool Recirculation.

Co-operative Service

Our Technical Department welcomes water treatment problems from architects and engineers, and in all cases will be glad to make specific recommendations regarding size and type of equipment for a given need.

Other Products

Horizontal Pressure Filters. Sizes: 8 ft. diameter, 10 ft. long to 8 ft. diameter, 25 ft. long. See our Bulletin 100.

Zeolite Water Softeners.

Concrete and Wood Gravity Filters.

Units for every problem of Water Treatment.



Style "G" Filter

WM. B. SCAIFE & SONS CO.

The Oldest Manufacturers of Water Softening and Filtration Systems in America—Founded 1802

EXECUTIVE OFFICES, LABORATORY AND WORKS

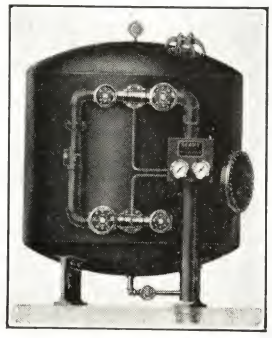
Department P, OAKMONT, PA.

SALES OFFICES

BALTIMORE, MD., W. 506 Redwood St.
BOSTON, MASS., 224 State St.
BUFFALO, N. Y., 481 Winspear Ave.
CHICAGO, ILL., First National Bank Bldg.
CINCINNATI, OHIO, 3424 No. Cluberest Ave.
DAYTON, OHIO, 623 W. Norman Ave.
DENVER, COLO., 725 Denver National Bank Bldg.
DETROIT, MICH., 2970 W. Grand Blvd.
LOUISVILLE, KY., 411 W. Market St.
MILFORD, CONN., 5 Thompson St.
MINNEAPOLIS, MINN., Metropolitan Life Bldg.
NEW YORK, N. Y., 30 Church St.
PITTSBURGH, PA., Oliver Bldg.
RICHMOND, VA., 2620 W. Grace St.
ST. LOUIS, MO., 6524 Hancock Ave.
SALT LAKE CITY, UTAH, Kearns Bldg.
TOLEDO, OHIO, 1815 No. 13th St.
WASHINGTON, D. C., 1437 Whittier St., N. W.

Products

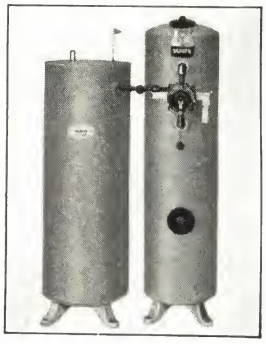
LIME SODA WATER SOFTENERS (Hot Process, Cold Process Intermittent); LIME ZEOLITE WATER SOFTENERS; ZEOLITE WATER SOFTENERS (Natural Greensand, Activated Greensand, Synthetic); GRAVITY WATER FILTERS; GRAVITY MUNICIPAL FILTRATION SYSTEMS; PRESSURE WATER FILTERS (Industrial, Home and Municipal); CHEMICAL FEEDERS; HOUSEHOLD WATER FILTERS and WATER SOFTENERS; SWIMMING POOL RECIRCULATING SYSTEMS; AERATORS; CONTINUOUS BLOWDOWN SYSTEMS.



Pressure Water Filters

Bulletin No. 275

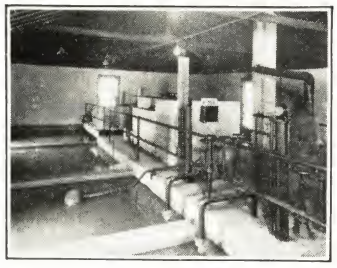
Pressure Water Filters in both the vertical and horizontal styles, manufactured in 30 sizes. These filters are designed as clarification units. Special filter beds are used for turbidity, taste and odor, iron and oil removal filters.



Household Water Softeners
Household Water Filters

Bulletin No. 259A
Bulletin No. 239
Bulletin No. 227A

Household Water Filters and Water Softeners in sizes ranging from 10 to 24 in. in diameter to fit the modern home.



Gravity Water Filters

Bulletin No. 184

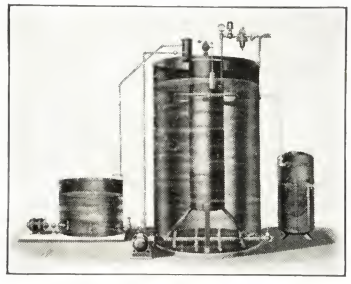
The Gravity Water Filter is one of our original products. The municipal gravity water filtration system is one of our specialties. Complete plans designed and installed.



Swimming Pool Recirculating Systems

Bulletin No. 220

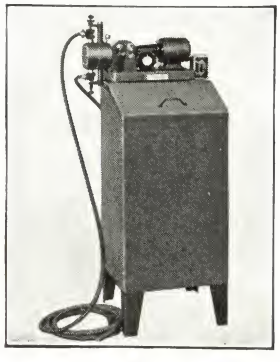
Swimming Pool Recirculating Systems properly designed to comply with State Board of Health Regulations.



Lime Soda Water Softeners

Bulletin No. 296—Type BI
Bulletin No. 236—Type CS

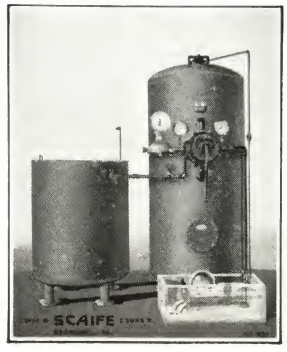
Chemical Water Softeners for every industrial, private estate or small municipal water works purpose. Designed for every need where lime soda water softening is applicable.



Chemical Feeders and Chlorinators

Bulletin No. 293
Bulletin No. 275

Chemical Feeders of all types for constant or proportional chemical feeding, designed to meet every need and for handling various chemical solutions.



Zeolite Water Softeners

Bulletin No. 295—Small Industrial
Bulletin 242—Industrial

Zeolite Water Softeners especially designed for small or large industrial and municipal demands, manufactured in all sizes.

THE AMERICAN BRASS COMPANY

GENERAL OFFICES
WATERBURY, CONNECTICUT

MANUFACTURING PLANTS
ANSONIA, CONN.
BUFFALO, N. Y.
TORRINGTON, CONN.
DETROIT, MICH.
WATERBURY, CONN.
KENOSHA, WIS.

OFFICES AND AGENCIES IN PRINCIPAL CITIES
IN CANADA: Anaconda American Brass Limited, NEW TORONTO, ONT.

For Other Pages, see File Index

EVERDUR METAL FOR NON-RUST TANKS



ANACONDA
from mine to consumer
REG. U.S. PAT. OFF.

Everdur for non-rust tanks is a high strength, corrosion-resistant alloy composed of copper, silicon, and other controlled elements. It was developed for structural and engineering uses which require a metal with the tensile strength of mild steel, combined with immunity to rust and corrosion-resistance equal to or better than copper.

Everdur, costing less than most special corrosion-resisting metals, is relatively inexpensive. Fabricating costs for welded Everdur tanks are closely comparable with those for welded steel and considerably less than those for riveting and brazing construction.

Everdur tanks in service today range in size from 1-gal. containers for gasoline stoves to 20,000-gal. pressure vessels operating as units in chemical process work. Everdur tanks have been constructed by practically all the standard methods, including resistance seam welding, carbon arc, metallic arc and oxy-acetylene welding. Riveted construction has been employed for vessels of unusual design. Today, Everdur storage water heaters and service water heaters, built to specification, are in use in laundries, textile plants, hotels, hospitals, schools, apartment houses, office buildings and private residences. And Everdur has been adopted as the standard for non-rust tanks by leading manufacturers of domestic automatic storage heaters and hot water storage tanks (range boilers).

GENERAL CHARACTERISTICS

Strength—Hot rolled and annealed Everdur tank plate has a minimum tensile strength of 55,000 lbs. p.s.i. and a minimum yield point of 20,000 lbs. p.s.i. (taken at 0.5% extension under stress). The elongation is over 50% in 2 in. The minimum physical properties of annealed Everdur sheet as required by the A.S.M.E. Code are: tensile strength 50,000 lbs. p.s.i.; yield point 18,000 lbs. p.s.i.; elongation 40% in 2 in.

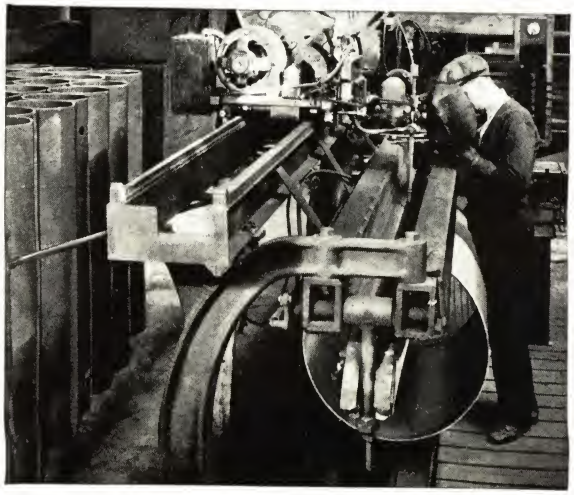
Corrosion-Resistance—Everdur, generally speaking, is equal to or better than copper, in its resistance to the action of corroding agents. It is not generally subject to selective corrosion or pitting. This is also true of welds made with Everdur rod.



Upper Left:
Typical All-welded Everdur Storage Tank as Used by Manufacturers of Domestic Automatic Heaters

Lower Left:
Welding Head Into a 10,000-Gal. Electrically Welded Everdur Tank

Photo, courtesy Whitlock Coil Pipe Co.



Lower Right:
Automatic Arc Welding Seam of All-Welded Everdur Tank

Photo, Courtesy W. A. Case & Sons

Weld Characteristics—Everdur will meet all welding requirements of the A.S.M.E. Code for unfired pressure vessels (paragraphs U-20 and U-69), based on the above minimum physical properties.

DOMESTIC WATER HEATERS

In the past decade the greatly increased use of brass and copper pipe for water lines is ample indication of the general recognition that rust is undesirable from every standpoint—convenience, upkeep and ultimate economy. In view of this it is only natural that the availability of Everdur has led to a rapidly growing use of non-rust tanks in the home.

In 1930 one of the largest manufacturers of gas-fired automatic storage heaters adopted welded Everdur tanks for a special model. Since that time the majority of leading heater manufacturers, both gas and electric, also oil, have standardized on Everdur for all rustproof tanks—significant evidence of the wide-spread acceptance of Everdur as the ideal non-rusting tank material.

Underfired Water Heaters—Because of immunity to rust, Everdur tanks provide high efficiency and most economical operation for underfired storage water heaters. There can be no accumulation of rust from tank corrosion at the bottom of the vessel to insulate the water from the heating element.

The majority of concerns making heating equipment for large public and private buildings and process plants are familiar with the fabrication of Everdur shells.

TYPICAL TESTS OF EVERDUR TANKS

Large Tanks—Two 10,000-gal. accumulator tanks were made of ½-in. shells and heads of .650 in. and .750 in. in thickness. These tanks were given two tests of 24 hours' duration, each, under a constant hydrostatic pressure of 200 lbs. per sq. in. No sign of leak or distortion could be detected during either test period. The heaters, after being in continuous service for two years, were again successfully tested.

Domestic Tanks—Everdur tank units for domestic heaters have been subjected to even more drastic tests. One manufacturer making an all-welded tank from Everdur plates applied a test consisting of pulsating pressure in the tank from 0 to 150 lbs., 13 times a minute. Five hundred hours of this test are considered the equivalent of 20 years of normal service. Everdur tanks have been held on this test for over 1,000 hours without showing signs of leaks or distortion.

WHERE TO OBTAIN EVERDUR TANKS AND HEATERS

Large Everdur Storage Heaters—Obtainable from most leading manufacturers of such equipment—several of whom have catalogs in this same section of "Sweet's" File.

Domestic Automatic Heaters with Everdur Storage Tanks—Readily obtainable through usual trade channels, Everdur Metal is the standard material for non-rust tanks with the majority of leading manufacturers of automatic gas, electric and oil burning water heaters.

Domestic Storage Tanks (Range Boilers)—All usual sizes are made of welded Everdur Metal by 13 leading manufacturers. These are available through the plumbing and heating trade.

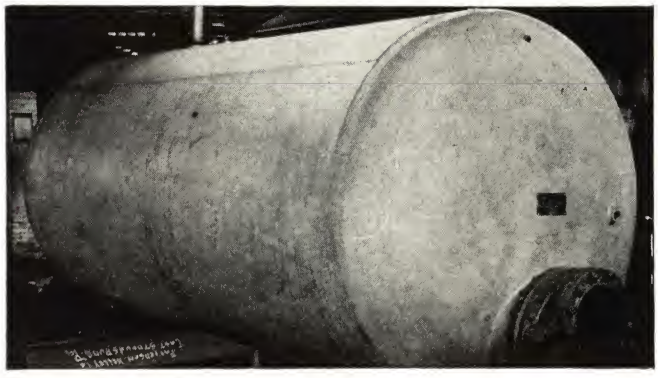
DESCRIPTIVE LITERATURE

ANACONDA Publication AE-10, containing detailed information regarding Everdur Metal for non-rust tanks —including tables of tank sizes and capacities—will be sent upon request.

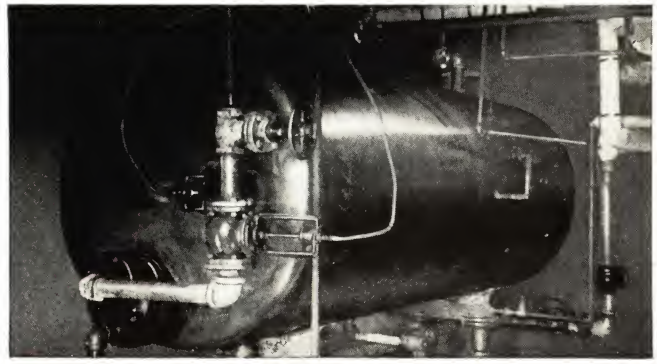
"Everdur" is a trade-mark of The American Brass Company; Reg. U. S. Pat. Off.



Two Everdur Tanks, Each Having a Storage Capacity of 424 Gallons, Built by Coulter Copper and Brass, Ltd., Montreal



Patterson-Kelley Everdur Water Heater Made by the Patterson-Kelley Company, Inc., East Stroudsburg, Pa.



Whitlock Everdur Type K Water Heater Made by the Whitlock Coil Pipe Company, Hartford, Conn.

MEMORANDA

CEMLINE CORPORATION

PITTSBURGH, PA.

P. O. Address and Works: CHESWICK, PA.

STONESTEEL HOT WATER TANKS AND RANGE BOILERS

Licensed under U. S. Pat. 2106828; Pat. in Canada; Other Pat. Pending

Construction

The steel shell of STONESTEEL Tanks is constructed by electric welding. For maximum strength both heads are rounded outward in all sizes, including the range boilers. The thickness of the Hydraulic Stone Lining ranges from 5/16 in. in the smallest tank for residences to ¾ in. in the large storage tanks. STONESTEEL "Hydraulic Stone"* permanently resists the action of the most corrosive waters. STONESTEEL Lining is a very dense slatelike form of hydraulic cement made by CEMLINE CORPORATION for this purpose. It has the same co-efficient of thermal expansion as the steel shell so that repeated temperature changes have no ill effect. Because of the shape of the tank and the method of construction, the lining in STONESTEEL Tanks forms a continuous arch against the steel and will not be injured by any ordinary use or handling.

*We will be glad to send a piece of this lining to architects for inspection. Write to us for sample.

Sizes and Capacities

STONESTEEL Tanks are made in a complete range of sizes from small tanks for residences, frequently called range boilers, to large storage units for public or industrial use. Typical sizes and actual capacities are shown in the table. Intermediate lengths will have proportional capacities and can be conveniently furnished.

Guarantee

A written guarantee by the CEMLINE CORPORATION against defects and against corrosion and rusty water is furnished to the owner on request for each STONESTEEL Hot Water Tank. This covers a period of twenty years for the range boilers and ten years for the industrial tanks.

Users

The users of STONESTEEL Tanks include prominent educational institutions, industrial plants, governmental agencies, hospitals, and stores in many parts of the country. Among those who have more than one STONESTEEL Tank are:

Aluminum Company of America
Bell Telephone Company
County of Allegheny—Pennsylvania
Board of Public Education—Pittsburgh
Carnegie-Illinois Steel Company
City of Pittsburgh
S. S. Kresge Company
G. C. Murphy Company
New York Life Insurance Company
Prudential Life Insurance Company
State of Pennsylvania
State of West Virginia
U. S. Veterans' Administration
U. S. War Department
Westinghouse Air Brake Company
Y.M.C.A. in Various Cities

Cost

The cost of STONESTEEL Tanks in the residential sizes is roughly twice that of galvanized tanks and about one-half that of copper alloy tanks. In the larger size storage tanks, STONESTEEL Tanks cost generally less than a galvanized tank and very much less than copper alloy tanks. Thus, a STONESTEEL Tank is preferable to a metal tank both because of its superior service and for reasons of economy.

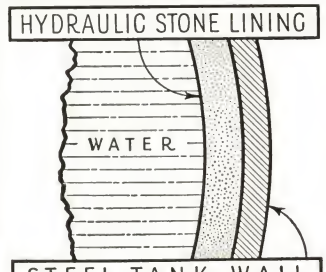
Sales

STONESTEEL Hot Water Tanks are sold by the leading plumbing distributors and are readily available in most localities along with other quality plumbing goods.

225J

STONESTEEL

A STONESTEEL Tank is a strong steel shell lined with a substantial thickness of hydraulic stone. The rusting and corrosion common to metal tanks are prevented because corrosive waters touch only the STONESTEEL Lining. STONESTEEL Tanks, which we made commercially available five years ago, are the result of our many previous years of test and experience. They are accepted as the ideal hot water storage tank for corrosive waters. The diagram below shows the construction of the STONESTEEL Tank wall.



STONESTEEL RANGE BOILERS
Vertical and Horizontal

Diameter, in.	Length, in.	Capacity, gal.
12	60	24
14	60	33
16	60	45
18	62	60
20	68	75
24	64	100
30	64	150

STONESTEEL STORAGE TANKS

Diameter, in.	Length, ft.	Capacity, gal.
24	6	110
24	7	130
24	8	150
30	6	170
30	7	200
30	8	230
30	10	290
36	6	280
36	7	330
36	8	380
36	10	480
36	12	580
42	7	440
42	8	510
42	10	650
42	12	790
42	14	930
42	15	1000
48	8	660
48	10	850
48	12	1040
48	16	1420
48	20	1800
60	12	1555
60	14	1860
60	16	2165
60	20	2775
60	24	3385

Shipment of STONESTEEL Tanks tapped to sketch can usually be made in from one week to ten days after receipt of order. Residential sizes are shipped from stock.

To Specify

Hot Water Storage Tank shall be "STONESTEEL," manufactured by CEMLINE CORPORATION, Pittsburgh, Pa., and shall be——inches diameter by——inches over-all length.

Additional Requirements If Desired:

FOR OTHER THAN 300-LB. TEST PRESSURE TANK:
Tank shall be suitable for.....pounds working pressure and shall be tested by manufacturer at .....pounds hydrostatic pressure.

FOR MANHOLE:
Tank shall have 11 x 15-in. manhole.

FOR WELDED SILICON BRONZE CONNECTIONS IF LARGER THAN 100-GAL. SIZE:
All pipe connections shall be of solid silicon bronze welded into the tank shell.

FOR INTERNAL STEAM HEATING ELEMENT:
STONESTEEL Tank shall be equipped with steam heating element capable of heating.....gallons of water per hour from ....to....F. with steam at .....pounds pressure.

Stonesteel Hot Water Tanks for Residences

For modern residences, STONESTEEL Hot Water Tanks are preferable to ordinary metal tanks primarily because STONESTEEL Tanks cannot corrode. Thus rusty or copper stained water is prevented and a permanent clean pure hot water source is assured.

Both heads are welded over the shells and are made convex as in modern high pressure industrial tanks. This feature not only permits the tanks to withstand greater pressure, but also offers the advantage of a completely rounded interior permitting proper drainage, which is desirable in sections where the water carries much sediment.

The appearance of STONESTEEL Tanks is sturdy and attractive. The outside finish is baked gray enamel blending with the most modern basement.

The connections in STONESTEEL Tanks are of solid silicon bronze welded into the tank. These connections cannot come loose and leak, and are completely resistant to the most corrosive waters.

Gas and Electric Automatic Water Heaters

Automatic water heater units having STONESTEEL Tanks, jacketed and insulated, with gas heaters or electric elements thermostatically controlled, are available from several water heater manufacturers. In addition to their respective merits, these units are assured of clean water and long life by using STONESTEEL Tanks. The STONESTEEL Tanks in these units are guaranteed by CEMLINE CORPORATIO:

Stonesteel Storage Tanks

For apartments, hospitals, public buildings, schools, etc., STONESTEEL Hot Water Storage Tanks, usually arranged for horizontal installation, are widely used because they are economical in first cost and give permanent trouble-free service. STONESTEEL Hydraulic Stone Lining prevents corrosion and rusty or copper stained water. STONESTEEL Storage Tanks for commercial or public use are furnished with a written guarantee to the owner for ten years covering defects and rust or corrosion. Representative sizes are given in the table. We are also able to apply STONESTEEL Lining to tanks already in service and this has proved to be a very effective and cost saving procedure where tanks are corroding.

Stonesteel Storage Heaters

STONESTEEL Tanks with interior steam heating coils make highly efficient heaters. When required we equip STONESTEEL Tanks with well designed and constructed steam heating elements, made by manufacturers specializing in this field. We also apply STONESTEEL Lining to complete storage heaters made by storage heater companies and sent to our plant for lining.

WHITEHEAD METAL PRODUCTS COMPANY, INC.

Manufacturers of Monel Tanks and Heaters

MAIN SALES OFFICE
303 West 10th Street, NEW YORK, N. Y.
BRANCHES AND REPRESENTATIVES IN ALL PRINCIPAL CITIES
For Other Offices, see our catalog on Kitchen Sinks and Cabinets

WHITEHEAD MONEL RANGE BOILERS AND HOT WATER STORAGE SYSTEMS

Products

WHITEHEAD MONEL RANGE BOILERS; HOT WATER STORAGE TANKS; AUTOMATIC GAS STORAGE SYSTEMS with MONEL TANKS; INSULATED MONEL BOILERS.

For our catalog on Kitchen Sinks and Cabinets, see File Index.

Availability

All Whitehead Range Boilers and other items are distributed through reputable plumbing supply jobbers and regular plumbing supply sources.

Large stocks carried in principal cities.

SOLID MONEL TANKS PERMANENTLY ELIMINATE RUST OR CORROSION

Monel, already familiar to architects, is a solid alloy of approximately two-thirds nickel and one-third copper. It is a solid metal clear through with no coating to chip, crack or wear off and is silvery white in color. Monel has the strength of mild steel and will not rust. Its resistance to corrosion has made it the standard material for use in chemical and food plants where corrosion-resistance and purity of product are essential.

The adoption of Monel for construction of solid tank shells means that rust or corrosion of any type is completely and permanently eliminated. Chemicals which are often found in local water supplies, have no injurious effect on Monel.

Whitehead Monel Range Boilers are individually tested, hydrostatically, to the test pressure shown, which is over twice the pressure to which the tank will ever be subjected in actual use. All tanks are made to the Massachusetts Standards, which provide that working pressures shall not exceed 42½ per cent of the stamped test pressure.

Construction is of solid thick Monel throughout with top and bottom heavily reinforced. These tanks are carefully designed to prevent collapse from vacuum should the water main be drained without notice. All boilers up to 60 gallons fitted with three internal Monel rings of special design.

Tanks are all-welded on our patented welding machine especially developed by Whitehead Engineers for this work. This insures maximum strength and rigidity. Outlet spuds to our own construction, each spud carefully silver soldered to the shell, and tapped vertical New Style unless otherwise specified.

Extra or special tappings to order.



Whitehead Monel Range Boiler
*Reg. Trade-Mark

Monel Range Boilers

Whitehead Range Boilers have a high polish silvery finish, attractive and easily kept bright and shiny. This high polish has proven to be important as a natural insulator to retard loss of heat.

Whitehead Monel Range Boilers are made in the following standard types: New Style or Hi-low, Old Style or Low Tap, Universal or Thermostat Tap and Horizontal Tap.

Insulated Range Boilers

Whitehead Insulated Range Boilers are standard Monel boilers heavily insulated with 1½" of granulated cork, covered by a heavy enameled metal jacket to prevent all possible radiation loss. Standard finish is gray. Also furnished in colors to match perfectly all nationally advertised oil burners.

Whitehead Insulated Boilers are available in both horizontal and vertical types.



Whitehead Monel Insulated Range Boiler

Sizes and Weights

Constructed in 3 weights, the 200 lb. (85 lb. w.p.), the 250 lb. (106 lb. w.p.), and 350 lb. (149 lb. w.p.) same test pressures.

SIZES AND DIMENSIONS MONEL RANGE BOILERS

Cap., gal.	Diam., in.	Length, in.*
25	12	51
30	12	61
40	14	61
50	16	61
60	18	61
80	20	61
100	22	64

*Does not include stand.

SIZES AND DIMENSIONS MONEL INSULATED BOILERS

Cap., gal.	Diam., in.	Over-all height, in.*
30	15	73½
40	17	73½
50	19	73½
60	21	73½
80	23	73½
100	25	76

*For Horizontal Type deduct 12 in.

Twenty-Year Guarantee

The Whitehead Monel Range Boiler, as well as the Monel tanks in the insulated boiler and automatic storage heaters, carries the manufacturer's written twenty-year guarantee against rust and corrosion.



Whitehead Automatic Storage Heater—Side Arm Type

WHITEHEAD AUTOMATIC STORAGE WATER HEATERS

Side Arm Type

The Whitehead Side Arm type storage water heater has a Monel tank which carries the twenty-year guarantee. It is also equipped with snap action thermostat, safety pilot, heavy copper heating coil, heavy insulation with heavy outside shell. This heater is available in eight sizes in 300 lbs. test pressure tank.

DIMENSIONS OF SIDE ARM TYPE

Cap., gal.	20	25	30	40	50	60	80	100
Diameter, in.	15	17	17	19	21	23	23	26
Height, in.	55	61½	61	61	61	61	74	76½
Gas consumption, B.t.u. per hr.	22,000	23,000	25,000	27,000	40,000	40,000	40,000	40,000
Length of heating coil	14′ 6″	17′ 6″	20′	22′	36′	36′	36′	36′
Recovery cap., gal. per hour	30.8	32.2	35	37.8	56	56	56	56

Underfired Fast Recovery

This system also has a Monel tank with the twenty-year guarantee. It is available in four sizes in 300 lbs. hydrostatic test pressure tank. The underfired type is likewise equipped with snap action thermostat, safety pilot, heavy insulation and heavy outside jacket.

DIMENSIONS OF UNDERFIRED FAST RECOVERY TYPE

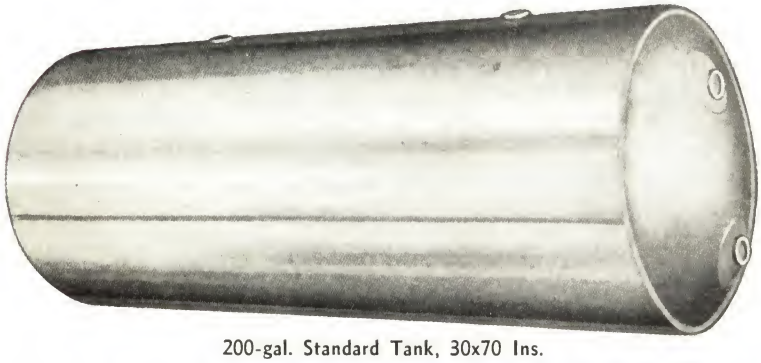
Cap., gal.	20	30	40	50
Diameter, in.	17	19	21	23
Height, in.	58	65	65	65
Gas consumption, B.t.u. per hr.	20,000	25,000	30,000	40,000
Recovery cap., gal. per hour	28.0	35.0	42.0	56.0



Whitehead Automatic Storage Gas Heater—Underfired Type

WHITEHEAD LARGE MONEL STORAGE TANKS

These tanks are available in 200 lbs., 250 lbs. and 350 lbs. test pressures and are guaranteed for 20 years.



200-gal. Standard Tank, 30x70 Ins.

DIMENSIONS OF LARGE WHITEHEAD STORAGE TANKS

Designated cap., gal.	Actual cap., gal.	Size, in.
125	123	24x60
150	146	24x72
180	196	30x60
200	226	30x70
250	270	30x84
300	306	30x96
300 alt.	306	36x72
350	392	36x84
400	445	36x96
450	498	36x108
500	550	36x120
500	550	42x84



500-gal. Special Tank, 30x150 Ins.

Tanks constructed to specifications other than shown above, prices on application.

W. E. CALDWELL CO.

INCORPORATED

Manufacturers of Tanks and Tank Towers

2290 Brook Street, LOUISVILLE, KY.

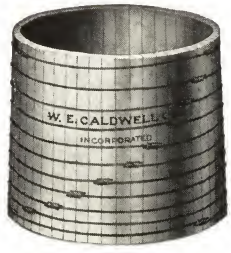
Products

WOOD, STEEL and GALVANIZED TANKS, any shape or size, for any purpose; TUBULAR, ANGLE or CHANNEL COLUMN STEEL and WOOD TOWERS.

Also manufacturers of Railroad Water Stations; Tank Agitators; Steel Standpipes; Tanners' Drums; Power Transmission Machinery which includes: Friction Clutches, Friction Clutch Cut-off Couplings, Cast Iron Pulleys, Shaft Hangers, Safety Set Shaft Collars.

THE TANK WITH A REPUTATION
Caldwell TANKS AND TOWERS
TRADE-MARK

Cypress Tanks



This company specializes in cypress, as it is the best wood for tanks for most purposes. It has great durability with minimum shrinking and swelling, and gives no taste or coloring.

For some acids, yellow pine is recommended. Poplar, white pine, cedar and fir are also used.

Made round, elliptical and rectangular.

Specifications—Lumber to be thoroughly dry, without loose or unsound knots, splits, shakes, pecks, wormholes or other defects; all heart on inside; sound sap on outside, and then not to exceed one-half of the thickness of stave.

Thickness—2 in. for 10,000 gal. or less; 2½ in. up to 20,000 gal.; 3 in. for larger sizes. Finished thicknesses to be ¼ in. less than above.

Standard Inside Diameters of Round Tank—Every 6 in. from 3 to 9 ft.; every foot to 16 ft.; and every 2 ft. above 16 ft.

Standard Inside Depths of Round Tanks—

1 ft. 5 in.	4 ft.	6 ft. 5 in.	15 ft. 4 in.
2 ft.	4 ft. 5 in.	7 ft. 5 in.	17 ft. 4 in.
2 ft. 5 in.	5 ft.	9 ft. 5 in.	19 ft. 4 in.
3 ft.	5 ft. 5 in.	11 ft. 5 in.	21 ft. 4 in.
3 ft. 5 in.	6 ft.	13 ft. 5 in.	23 ft. 4 in.

Finish—Staves to be dressed both sides with edges machine jointed to proper bevel. Bottom to be dressed on top side only with edges machine joined and square and well doweled.

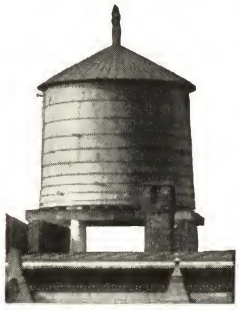
Hoops—Round hoops to be of wrought iron (not steel) with malleable iron draw lugs; sizes and spacing to give a factor of safety of 4 to 1 or greater if required.

We also manufacture rectangular tanks of all dimensions and capacities.

Our Research Department will be glad to go into any special problem with you.

Tank Covers—Standard wood covers are supported by trusses and rafters and covered with 1-in. sheathing and Ruberoid roofing.

Flat wood covers are also furnished for frost protection when specified.



Tank and Foundation, Colonial Hotel, York, Pa.

Tank Foundations

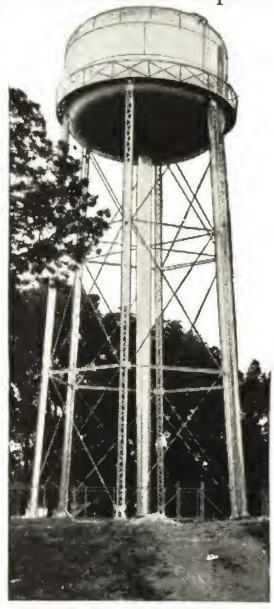
Realizing to what an extent the success of the tank depends on its foundation, we have made a careful study of tank foundations and have developed a series of standard designs which are not only of the proper strength but also use the minimum of material.

Steel Tanks

We make all types of steel tanks for above or below ground storage of water, oils, gasoline, alcohol and certain chemicals for industrial plants. They are furnished in all-riveted, all-welded and riveted and welded construction according to type. Tanks up to 10½-ft. diameter can be shipped set up.

Elevated Steel Tanks

We manufacture and erect both hemispherical bottom and elliptical bottom elevated steel tanks in capacities from 5000 to 500,000 gal. or more and towers in heights to 200 ft. or above for municipal water supply, fire protection, industrial and domestic service.



150,000-gal. Tank, 85 Ft. High

Elevated Wood Tanks

We make three types of steel towers for wood tanks—angle column, tubular column and laced channel column. We recommend the angle type for small sizes and the laced channel type for the larger sizes.

Standard—*Tubular*—Every 12 ft. from 15 ft. to 100 ft.

Angle—Every 10 ft. from 12 ft. up.

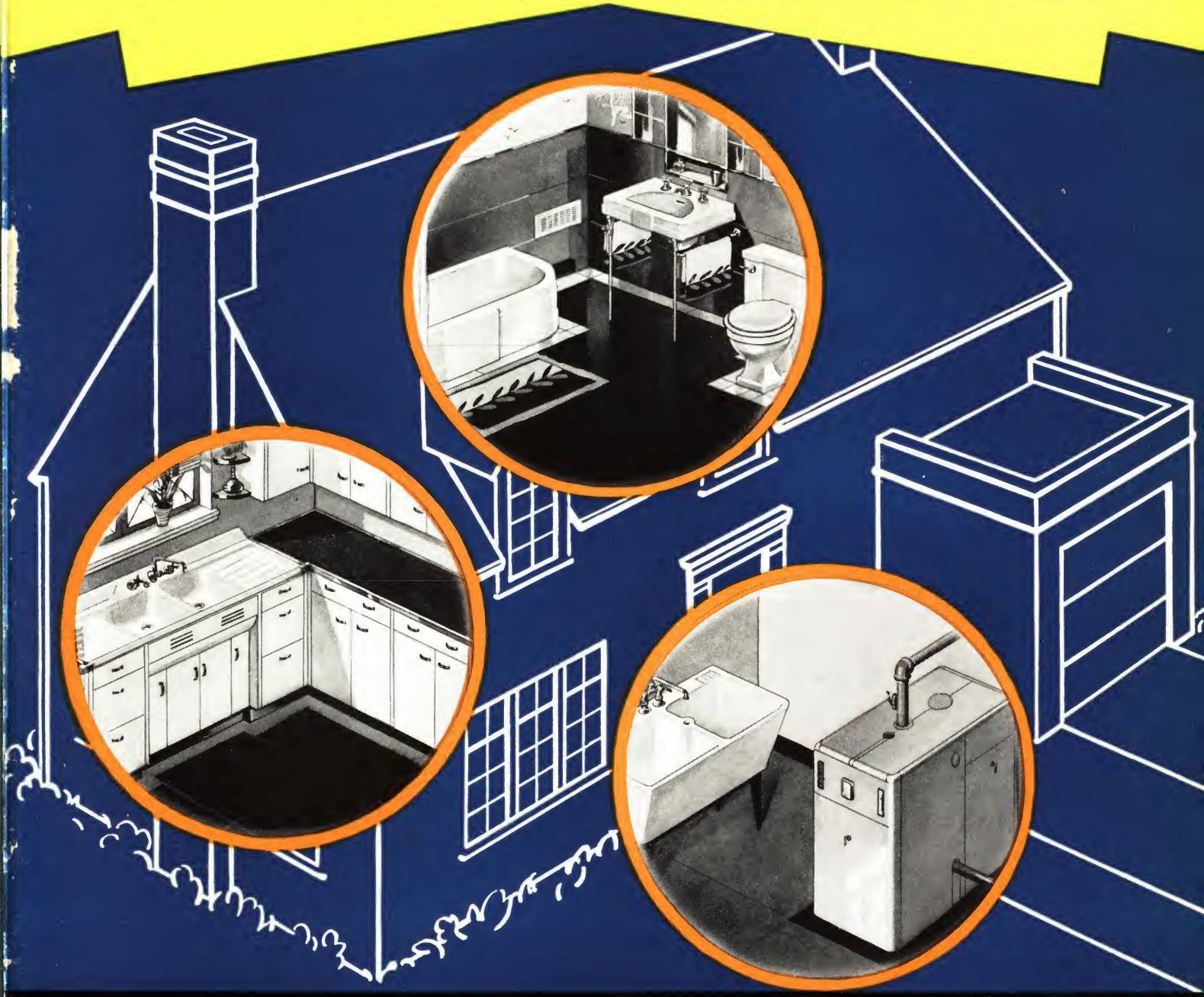
Latticed—Every 5 ft. from 20 ft. up.

DIMENSIONS AND CAPACITIES OF STANDARD TOWER TANKS

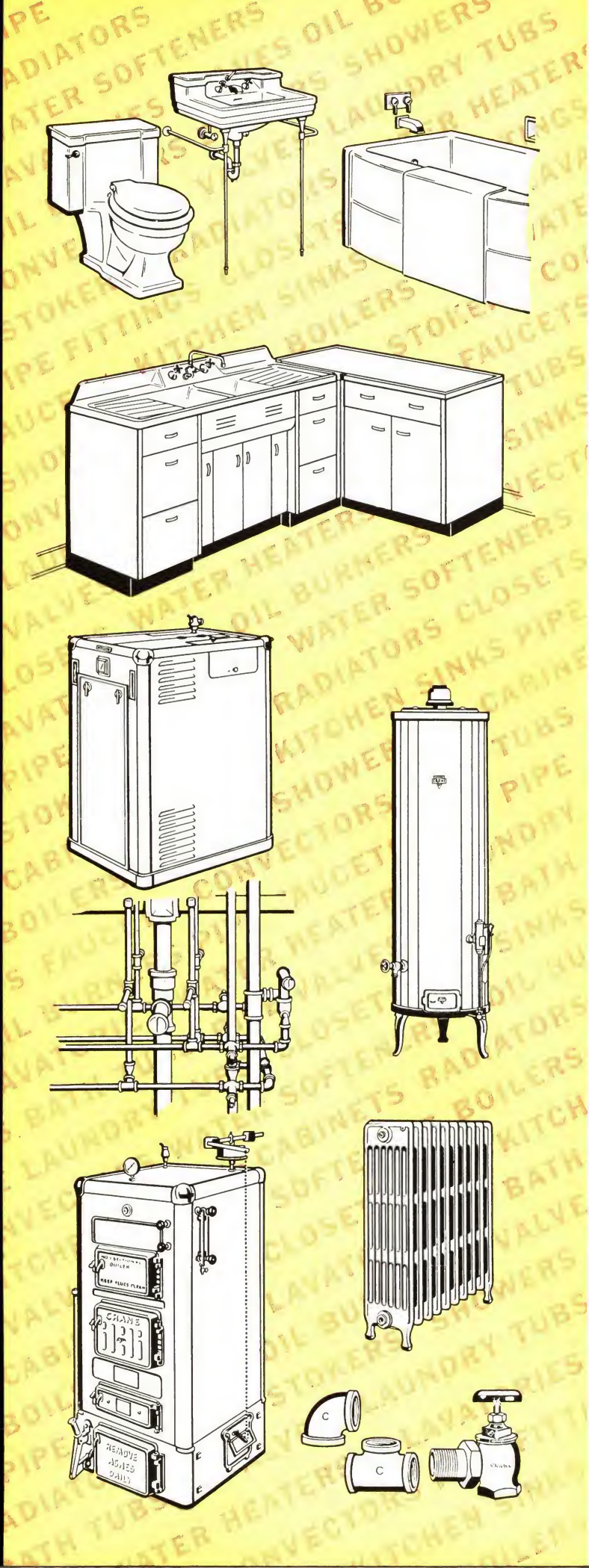
Class towers	Capacity, gal.	Standard wood tanks: Diameter ft.	in.	Depth ft.	in.	Standard steel or galvanized tanks: Diameter ft.	in.	Depth ft.	in.
O tubular	1,000	6	6	4	5	6	0	5	0
or CC angle	1,500	6	6	6	5	6	6	6	6
A tubular	2,800	8	0	7	5				
or FF angle	3,000	8	0	8	5	8	0	8	0
B tubular	5,000	10	0	9	5				
or HH angle	6,000	10	0	11	5	10	0	10	0
C tubular	10,000	12	6	11	5	12	0	12	0
or JJ angle	12,000	12	6	13	5				
D tubular	15,000	14	0	13	5	14	0	14	0
or KK angle or LD latticed	17,000	14	0	15	5				
E tubular	20,000	16	0	13	5	16	0	14	0
or LL angle or LE latticed	22,000	16	0	15	5				
ES tubular or NN angle or LES latticed	25,000	16	0	17	4	16	0	18	0
F tubular	30,000	18	0	15	4	18	0	16	0
or PP angle or LF latticed	33,000	18	0	17	4				
FS tubular or LFS latticed	35,000	18	0	19	4	18	0	20	0
G tubular	36,000	19	6	17	4				
or LG latticed	40,000	19	6	19	4	20	0	18	0
LH latticed	50,000	22	0	17	4	22	0	18	0
	55,000	22	0	19	4	22	0	20	0

Hemispherical bottom steel tanks and towers are regularly made in capacities from 5,000 gal. up. Any of the above towers can be made to suit special conditions.

EXTENDING YOUR
ARCHITECTURAL SERVICE
INTO
BATHROOM · KITCHEN · BASEMENT



CRANE



The Relation of Planning to

Bathroom .. Kitchen Basement

THE planning of a house requires many types of specialized knowledge, which the architect acquires only by years of study and experience. The modern conception of the house as a "machine for living" has led to a practical combination of the aesthetic and the economical in home planning—a high degree of ingenuity has been exercised, making possible practical, simple, yet charmingly modern homes—even in the low-cost field.

In keeping with this trend toward functionalism, the bathroom, the kitchen, the basement, too, have taken on a new importance for the architect. These service areas are particularly challenging in the design of smaller homes when of necessity they must be compact, inexpensive, efficient, and at the same time permanently attractive.

Recognizing this opportunity to help architects in this increasingly specialized field of planning, Crane Co. has developed services in step with its complete and modern product.

Many architects have come to rely upon their Crane representative and local Crane Branch for help in the solution of technical problems relating to these areas—a service which is always gladly rendered.

Architects recognize that the Crane line is all-inclusive, with fixtures designed for every home regardless of price range.

Architects, too, recognize that the name "Crane" on plumbing and heating equipment is a subtle testimonial to their good judgment, that it brings the client a definite evidence of quality recommendation.

Today, the Crane Planner, supplementing Crane display rooms, catalogs and product literature, offers a wealth of suggestions for the architect seeking ideas for the solution of any specific problem in kitchen, bathroom, laundry or heating plant. A brief insight into this service is offered in the following pages.

THE PRODUCERS' COUNCIL INCORPORATED

Suggestions on Planning

THE BATHROOM



IN PLANNING a bathroom, three separate phases should be taken into consideration: 1. The arrangement of fixtures that will make for greatest convenience combined with economy in piping. 2. The architectural details which will make the room interesting and livable as well as practical. 3. The color harmony of the room.

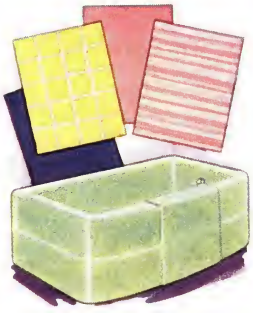
Investigation shows that the basic arrangement of fixtures in any bathroom will fall into one of six plans. These basic plans are shown at the right. Further information on this, together with examples of the basic types, is given in the Crane Planner available for consultation at any Crane Display Room.

In the matter of architectural detail, of course, the architect alone is competent to suggest those refinements that do so much to add interest and still can be provided within a fixed budget.



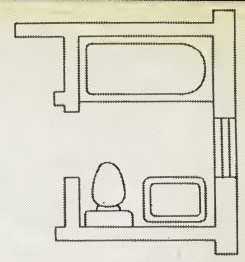
On the following pages are illustrated and described three typical bathrooms reproduced from the Crane Planner. These were designed by an architect—built and photographed in color. They may offer interesting examples of the application of planning technique to specific cases. They are intended only as suggestions, for it is obviously impossible to even attempt any such thing as a "stock bathroom plan." Of necessity, every bathroom must be planned by the architect to meet the requirements imposed on it.

The approach to color harmony in the bathroom is slightly different from that in other rooms of the house. Crane bathroom fixtures are available in beautiful colors, mostly pastel in shade. The color of the fixtures practically determines the basic color plan for the room because of the size and permanence of these units. Walls, floors and accessories are keyed into this basic fixture color. Suggestions on how this may be accomplished are shown on the following pages, but are more fully illustrated and described in the Crane Planner.

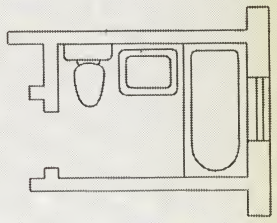


Basic Floor Layout

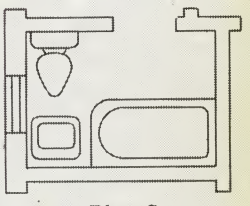
As mentioned above, practical bathroom layouts fall into six basic arrangements. The size of the space available, of necessity, governs to some extent the arrangement, and the architecture of the house is also a contributing factor. The most inexpensive arrangement from the standpoint of piping is illustrated in Plan B. Here all the fixtures are placed so that supply and waste lines are in one wall. In low-priced housing, many architects have found this a practical method of shaving dollars off costs. All the basic arrangements are subject to different treatments determined by the size of the room as well as the cost of the home.



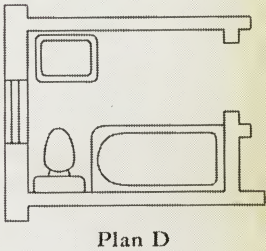
Plan A



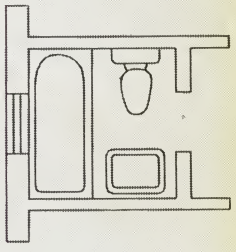
Plan B



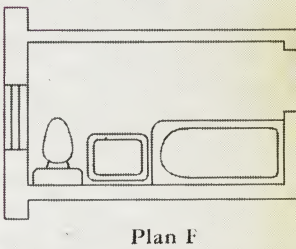
Plan C



Plan D



Plan E



Plan F



To Help You With Your Bathroom

When you are planning bathrooms you will find a storehouse full of ideas in the Crane Planner. This Planner has been designed to offer to the architect practical, usable ideas on bathrooms for the modest home as well as for the larger one.

All the basic types of bathrooms were actually built and photographed in color. These photographs, together with many variations of the same bathrooms in architectural renderings, are reproduced in the Planner in their actual colors. Complete specifications of all materials used in these rooms are given, together with the manufacturer's name and color or pattern number, making the whole service a valuable aid in planning. The Planner contains ideas and suggestions that will be of assistance to you.



A Handsome Room of Neuvogue Design

THE BASIC color harmony for this bathroom was set by the citrus yellow fixtures. Walls and floor are treated in strong but pure colors; and the whole room is brightly lighted by means of a large window—unusual in treatment but extremely practical.

Walls are of micarta, in crimson and deep Antwerp blue, and the floor is of unglazed ceramic tile. Lighting, too, reflects the modern note, being indirect, concealed behind aluminum panels in the ceiling. The fixtures shown are Crane *Neuvogue,* designed to meet today's taste and with a practical beauty that is the last word in functionalism.

Recessing the closet into the alcove with the tub permits a semi-privacy, as the curtain may be drawn in front of the closet. This room has been designed to make it appropriate for massage, sun lamp treatment and exercise. This bathroom, planned for the finer home, represents modern thinking in the solution of today's home problems. Other *Neuvogue* fixtures will be found on pages 1-C, 1-D, 16-2, 16-3, 16-4, 16-5 and 39-1 of the Crane Architects Catalog.

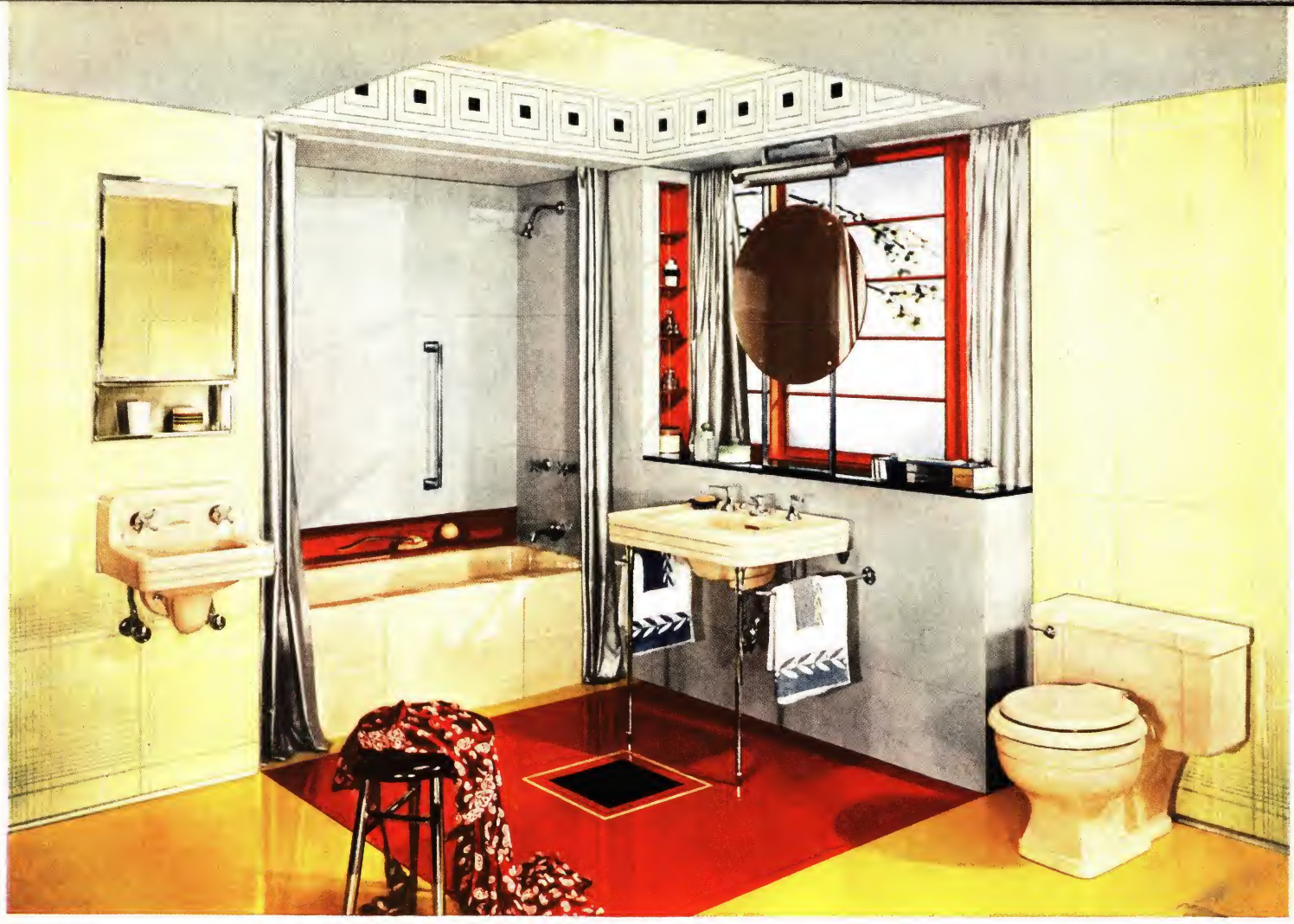
SPECIFICATIONS

Neuvogue Shower—The modern development of the shower stall for the finer home. One set of valves controls the shower head; a separate set of valves, the side spray. Rubberceptor shower stall floor is used. Shower door is of plate glass.

Siwelclo Closet (C10384)—A close-coupled closet of beautiful design with correct posture, low, hygienic curved seat. Full siphon jet efficient action, quiet in operation.

Neuvogue Bathtub (C3240-LV33)—The modern Crane *Neuvogue,* beautiful in design with wide, comfortable seat. Nearly vertical sides and flat bottom assure a more luxurious bath with sufficient water and less danger from slipping.

Neuvogue Lavatory (C128)—A modern, handsome lavatory with large semi-oval basin and plenty of slab area. Supply and waste fittings are unified in a single control panel, conveniently at hand, yet out of the way. Lavatory is supported by flat bar frame, chromium-plated. Towel bars are an added convenience.



A Modern Arrangement for the Better Home

THIS charming bathroom with its warm colors is particularly suited to a room with northern exposure. The fixtures are Crane sun tan, the walls yellow and gray, while the floor is red, black and yellow.

A combination of wallpaper and Carrara structural glass is used on the walls, making possible a change in the color scheme of the room at some future time if desired without excessive cost. The glass walls are extremely practical and they add a touch of luxury to the room. The bathtub is recessed and is provided with a shower. The lighting is indirect, concealed in the interesting raised ceiling over the center of the room.

A mirror placed over the window gives ideal illumination either for shaving or for making up. The dental lavatory is an added sanitary convenience. Additional information on these Crane fixtures will be found on pages 5-2, 16-2, 16-3, 16-4, 16-5, 1-1, 1-2, 39-2A, in the Crane Architects Catalog.

SPECIFICATIONS

Corwith Dental Lavatory (C1213)—A new touch in bathroom design that the more fastidious will appreciate. A separate dental lavatory of vitreous china with a shelf back for toothbrush and toothpaste.

Neuvogue Bathtub (C3240-RC93)—The recessed *Neuvogue* bathtub shown above is America's most modern conception of bathtub design. The paneled front forms a convenient seat for foot bathing or while dressing. The flat bottom means added safety, and the sloping back provides a comfortable rest while bathing. May be had with or without shower as shown above.

Corwith Lavatory (C131-L11)—This beautiful *Corwith* lavatory is made of gleaming vitreous china with chromium-plated fittings. Mixing faucet gives tempered water. Supported by chromium-plated tubular legs, and towel bars are an added convenience.

Manor Closet (C10490)—The one-piece *Manor* closet is of compact design and has a quiet whirlpool action. The low-height seat gives greater comfort, and the greater compactness overall means added beauty.





A Pleasant Bathroom for the Smaller Home

A COMPACT yet pleasing room for the smaller home. The fixtures are conveniently arranged for the confined space. The fixture color is pale jade. Walls are of yellow scored board tile with red in the scoring and pink paint on the side wall. The floors are blue and orange linoleum.

Extremely compact in arrangement, with no space wasted, this room gives a pleasing feeling of spaciousness with no sense of crowding. Every convenience is provided that the modern home owner could wish.

Glass brick and metal shelves in the lavatory recess give distinction and the diffused light through the brick does away with the necessity of drapes. This room demonstrates how inexpensive material can produce bathrooms of charm. The overhead lighting is indirect, concealed behind the ceiling. Heat is furnished by means of convection radiation. Additional information on these Crane fixtures will be found on pages 40-3, 2-1, 17-3 and 17-4 of the Crane Architects Catalog.

SPECIFICATIONS

Merit Closet (C11000)—A close-coupled closet of modern design with interesting paneled front. Has self-draining jet—quiet whirlpool action. A medium priced closet that will fit in the finest surroundings.

Corwith Compeer Lavatory (C172)—An interesting lavatory of vitreous china with integral mixing spout and chromium-plated fittings on Comfort Angle Panel. Convenient shelf back gives ample room for tumbler or small bottles. Supported by chromium-plated tubular legs with convenient towel bars.

Coronova Bathtub (C3306-LC93)—The newest of bathtubs—low in height, only 16 inches from floor to rim with a flatter bottom for added safety. Nearly vertical sides means ample water for the bath. Interesting panel front design with flat rim gives added convenience as a seat for foot bathing and while dressing.



CHARMING *Powder Room*



Cromwell Lavatory (C641) — An ideal lavatory for the downstairs toilet or powder room. A real space saver. Smartly designed of vitreous china, its gleaming surfaces are easy to clean—easy to keep clean. Rectangular basin. Valves are on individual angle panels and waste is operated by a lever through the back.

Manor Closet (C10490) — A one-piece closet of compact design with quiet whirlpool action. Self-draining jet. Low-height seat gives added comfort. May be set away from wall to assure easy cleaning.

THE powder room, or half-bathroom, represents a much appreciated addition to any home. Occupying but little space, it doubles the sanitary facilities of the home and is considerably less expensive than a complete bathroom. A recent architectural innovation which has much of the practical to recommend it is the one and a half bath. Occupying little if any more room than the single bath it is in reality two small rooms—one containing a bathtub and lavatory, the other a closet and lavatory. By means of this simple arrangement, a home may have practically double sanitary facilities at little more expense and at practically no sacrifice in floor space. Where a house has more than one story, a downstairs lavatory is almost a necessity if comfort and convenience are to be considered. This can be either extremely simple and placed under the stairs or in some similar space; or it can be more in the nature of a guest room as shown above. Additional information on these illustrated Crane fixtures will be found on pages 2-1, and 39-2A of the Crane Architects Catalog.

Planning the Kitchen

THE kitchen is no longer just a room designed for work. True, the step-saving efficiency of the modern kitchen is a basic requirement, but architects have found that women expect much more from kitchens than simply a place in which to work.

For example, Mrs. Smith wants a modern breakfast bar in her kitchen; while Mrs. Brown, who does a lot of entertaining, finds her kitchen just the place for a midnight snack. Mrs. Jones needs a convenient place to iron, and Mrs. Blake wants provision for a sewing machine in the kitchen, and so it goes.

Basically, however, every kitchen plan will comprise the three major work areas in their logical order and around these areas the kitchen will be planned.



FIRST

The Storage Area

This area includes the refrigerator and cabinets for storing food. Naturally, the number of cabinets depends upon the size of the kitchen and its general layout. The storage area is located close to the receiving door. Groceries delivered here can thus be stored immediately without the necessity of carrying them across the kitchen. A generous counter area is also desirable in the storage area, and is provided by the tops of the storage cabinets. The continuous counter provided in the modern kitchen connects all the work areas. It gives so much room for food preparation that the crowded kitchen table is a thing of the past; and the luxury of lots of space both for storage and work area not only means greater convenience but actually represents a saving in time as well.



SECOND

The Preparation Area

This area includes the sink, cabinets, where pans and other utensils may be stored, and sufficient counter space for food preparation. Of primary importance in this area, of course, is the sink. This may be white or colored, and may have one or two compartments. Because of the desirability of ease in cleaning, the sink should preferably be made of highly vitrified porcelain enamel on cast iron. If the kitchen is small, the compact little *Homemaker* sink with its single compartment and single drainboard will give the maximum in convenience for the space required. In a larger kitchen, however, either the *Sunnyday* with its two drainboards or the *Kitchen Queen* with two compartments is to be preferred.

The complete Crane line of sinks includes all types and is shown on pages 67-1 to 70-4 in the Crane Architects Catalog.



THIRD

The Serving Area

Like the former two areas, this third one should have ample counter and cabinet space; but in addition, it contains the stove where the food next moves in a steady march from receiving area to table. It is desirable to locate this third area as closely to the dining room as possible, as this will save many unnecessary steps.

In color treatment and architectural treatment, of course, the kitchen offers as wide a field for imagination as any other room in the house. A few suggested ideas are shown in the following pages. The kitchens shown were planned by an architect—built and photographed in color. They are reproduced from the Crane Planner, available for consultation at any Crane Display Room.

THE U-TYPE KITCHEN

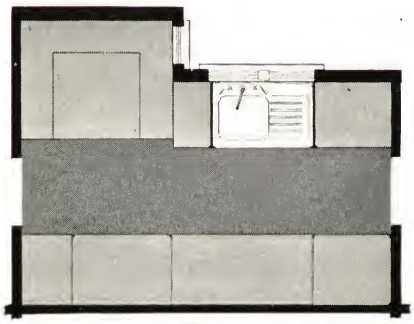


KITCHEN planning seems to fall into magical threes, for just as there are three working areas in the kitchen, so there are three basic type kitchens. These are the U, L and corridor types, illustrated and described here and on the following pages.

The U-type kitchen, like all basic types, may b nall and simple in design, or it may be as elaborate as the one illustrated above. The refrigerator is at the left of the receiving door, followed by the storage cabinets and sink. The stove and serving area are at the right. This kitchen is provided with a dining alcove, ideal for the quick lunch or the impromptu midnight snack. A planning desk is provided, complete with telephone and radio. Nowhere are cabinets and storage space so necessary as in the kitchen. Each area should be well provided with sufficient cabinets to store the many things nee ` make kitchen tasks easier.

Besides food storage cabinets for necessary utensils, pots and pans, utility cabinets are provided which may be seen at the right of the planning desk. These are designed to hold mops, brooms and dusters. Tall cabinets are also available with shelves for linen storage. The sink illustrated is the *Kitchen Queen,* a full 72 inches wide with two drainboards and two deep compartments—one of the many beautiful sinks described in the Crane Architects Catalog on pages 67-1 to 70-4.

THE CORRIDOR TYPE KITCHEN



AN extremely simple kitchen layout—one particularly suited for the small home or apartment is the corridor type. Here, a corridor runs the length of the room, one door adjoining the storage area, the other leading into the dining room. On either side of the corridor, the three working areas are placed. As will be seen in the illustration above, the receiving area and the cooking area are on the right of the room. The sink and the preparation area are on the left. A breakfast nook may be provided as illustrated, if desired. Again the modern demand for more storage space is answered; and while this kitchen is extremely compact and efficient, both walls are lined with cabinets, giving plenty of room in each of the three areas. One particularly notable achievement in the kitchen of today is the ample space for work provided by the cabinet tops—no more crowded table in the center of the kitchen.

The sink shown in this corridor-type kitchen is the *Homemaker,* particularly adapted to the small kitchen. It has a single compartment and a single drainboard and is provided with the Crane comfort angle supply panel, containing mixing faucet and vegetable spray. The sink is in Crane sun tan, with cabinets in yellow—one of the many sinks described in the Crane Architects Catalog on pages 67-1 to 70-4.

THE L-TYPE KITCHEN



THIRD in the list of basic kitchen layouts is the L-type kitchen, where the working areas are laid out along two arms of a right angle. In the kitchen illustrated above, the receiving area is at the far end of the L containing a refrigerator and continuous counter top connected with the preparation area identified by the sink below the window on additional cabinets. The counter then makes a right angle turn and the stove is placed at the end of the L beside the door leading into the dining room. In this kitchen, as in the other two shown, an ever popular breakfast nook is provided; and the whole kitchen is done in a simple, yet effective, color harmony. Like all of today's kitchens, a place is provided for everything; and the complete absence of exposed shelving and corners for dirt and dust to lurk not only makes for greater sanitation, but greater ease in cleaning as well.

Windows above sink not only give more light where it is needed most, but also make the housewife's work more interesting. Today, they are practically a "must" in every kitchen plan.

The sink is the Crane *Sunnyday,* designed for modern, continuous counter-installation. It has a large compartment and two drainboards, giving full 60 inches of wet surface, every part of which may be reached by the retractable spray. This sink, together with others, is shown in the Crane Architectural Catalog, pages 67-1 to 70-4.

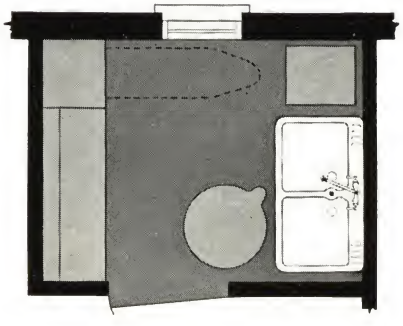
PLANNING THE LAUNDRY

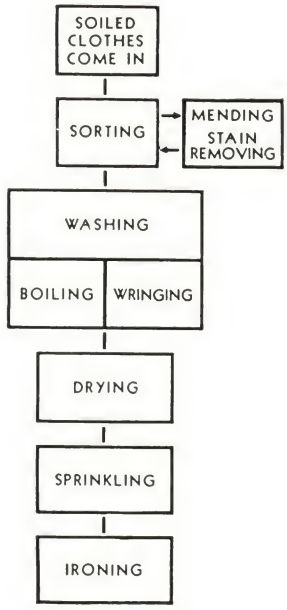
THE laundry is, after all, a room designed for utility. The first demand of the laundry, therefore, is that the floor layout be efficient and practical. The chart at the right indicates the steps necessary in the process of washing and ironing, and it is desirable that the laundry be laid out in such a fashion that these steps follow each other in logical, simple order.

It must be remembered in any laundry that the tubs comprise the major laundry equipment, and for that reason they should be well designed, well made and above all, easy to clean. The Crane laundry tubs shown above are made of Everbrite, a material that is strong, snowy white in appearance, and whose smooth, gleaming surface may be cleaned instantly with a damp cloth.

A special book, "Crane Home Laundry Guide," has been prepared to assist in the planning of the laundry, a copy of which will be sent on request. Crane laundry tubs are illustrated and described on pages 72-1 to 74-1 of the Crane Architects Catalog. Be sure to consult this catalog for the latest designs in laundry tubs.

At the right is shown a simple layout for an effective modern laundry reproduced in the Crane Laundry Guide.





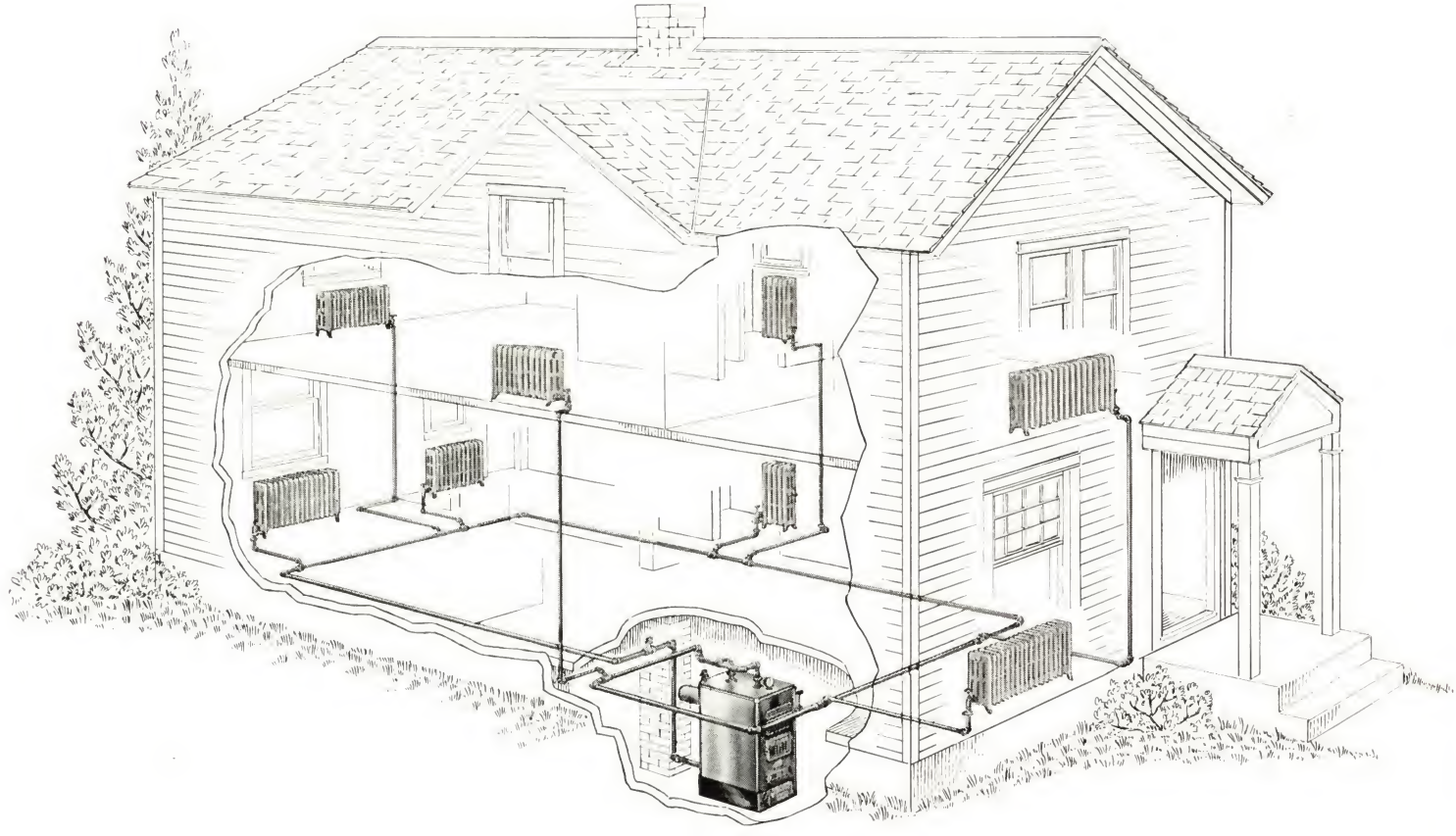
SAVING STEPS IN THE LAUNDRY

MODERN HEATING PLANNING

WITHIN the last few years there has been a vast improvement in home heating. Today, boilers are more compact, convenient and handsome. Radiators have been slenderized to the point where they actually add to room appearance or they may be completely concealed in the walls if desired.

Besides offering home owners all these improvements, the Crane line is complete in every respect, containing boilers to burn any fuel—coal, oil or gas—in sizes to suit every home, radiators and convectors, controls, valves and fittings, oil burners and stokers and appurtenances for steam or hot water systems.

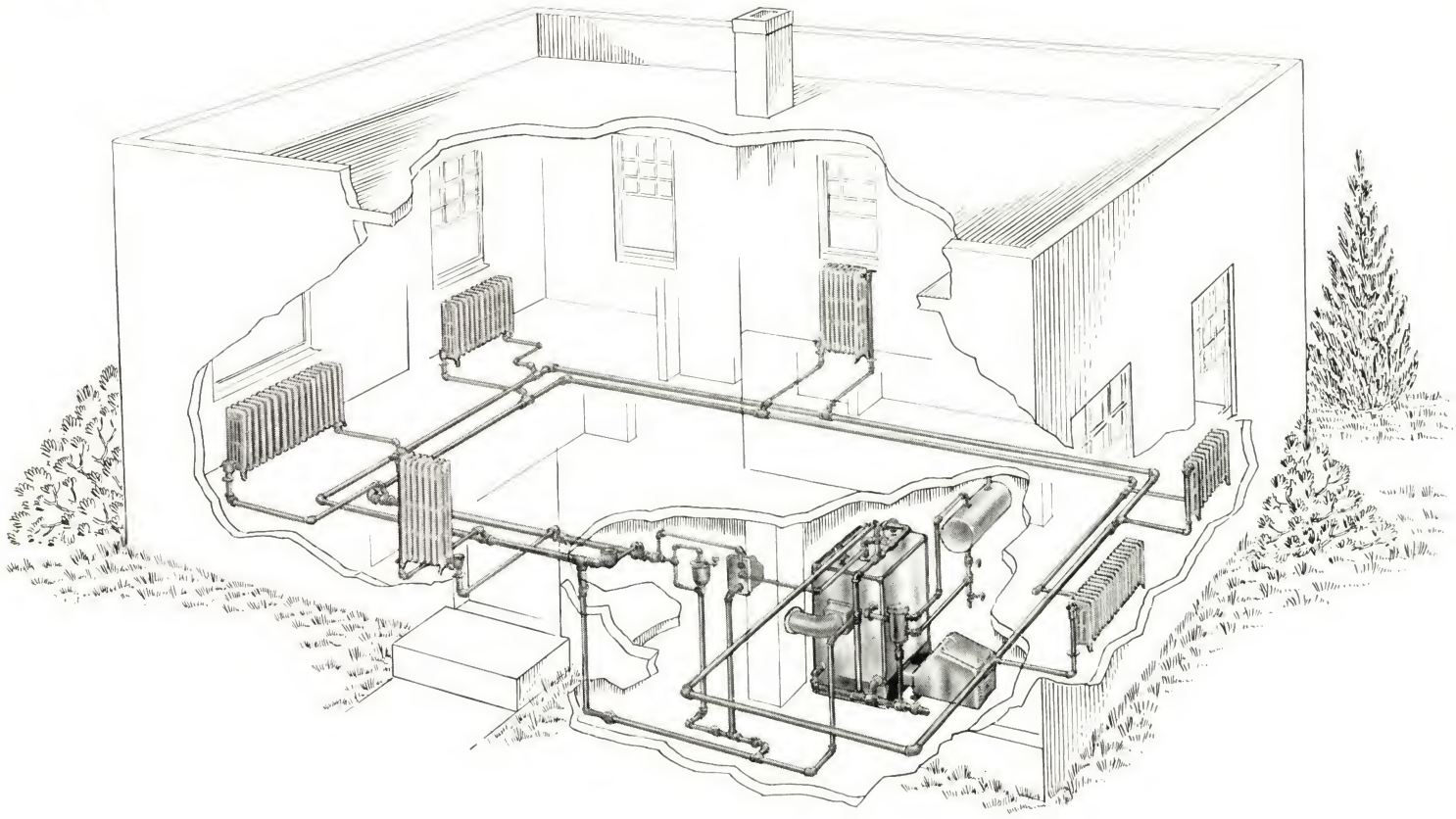
The advantages of having a completely unified system with each part designed for the efficiency of the whole system are obvious. The Crane heating systems shown on the following pages offer the architect the advantages not only of a unified system but of a single responsibility as well.



THE SINGLE-MAIN STEAM SYSTEM

UNDOUBTEDLY the least expensive heating system is represented in the installation shown above. This single-main steam heating system is particularly suited to small dwellings with basement, where first cost is a primary consideration. The one main serves as a steam supply, and as a condensation return. Radiators are vented into the room. In operating cost, this system is not as economical as a vapor system, or a one-main hot water system, but it will provide satisfactory heating and assure years of service. The high temperature of steam also makes possible the use of smaller radiators, which again reduces first cost. Crane radiators are shown throughout the house.

A Crane No. 1 Sectional Boiler is shown, adaptable to conversion to an automatic system later if desired.



VAPOR HEATING SYSTEM

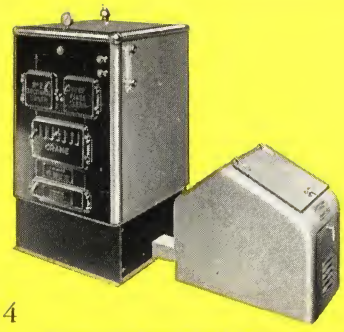
For larger buildings, vapor heating has many distinct advantages. It assures rapid distribution of heat and the high temperature of the steam permits the use of smaller radiators.

For home use, these advantages do not apply in as great a measure, although some homes prefer a vapor heating system because it affords a finer degree of control than a single-main system and is also more economical in operation.

A vapor system also uses smaller pipe sizes than a single-main system, and it operates on lower pressures.

In this type of system, condensation is returned from the radiators by a separate return pipe and there is no venting into the rooms. A vapor system can also be relied upon to heat more rapidly than a single-main system.

Because of the additional piping, the installation is naturally more complicated and more expensive. In the illustration shown, a Crane Sectional Boiler is illustrated, together with a stoker, and attachment for supplying domestic hot water all year around. This system can be had for oil or gas firing if desired.



Crane Stoker-Fired Boilers

Crane Radiators

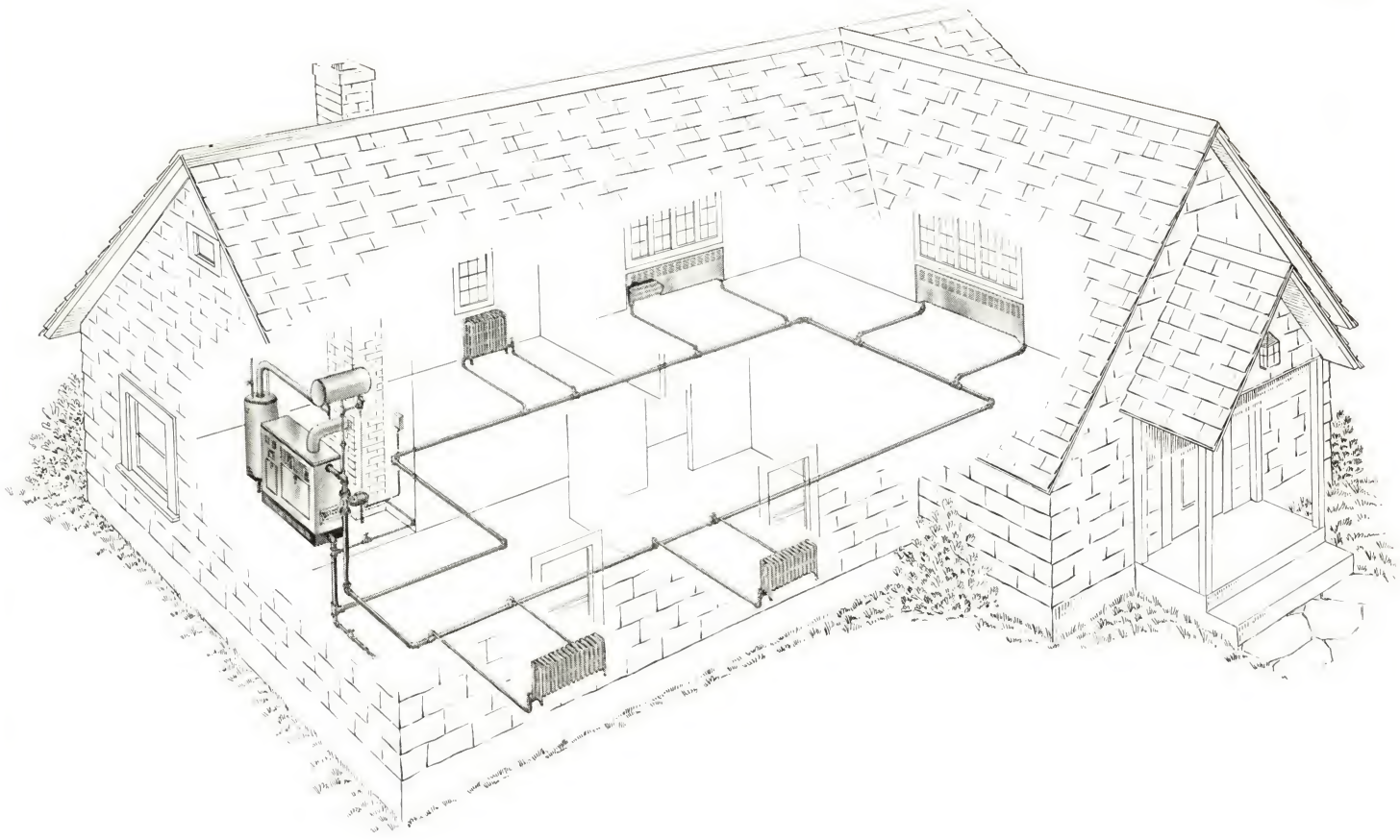


Crane Automatic Heating Controls





Crane Valves and Fittings



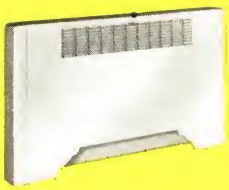
SINGLE-MAIN HOT WATER SYSTEM

WITH the recent advances made in forced hot-water circulation, using high temperature water, the *Monoflo* or (single-main) hot water system has rapidly become very popular. This system is extremely simple to design as shown in the illustration above, and is also comparatively inexpensive to install. The water is circulated by a pump, assuring quick, even heating in houses with or without basement. Because of the forced circulation, smaller pipe sizes can be used, making the installation more compact and attractive in appearance.

In the illustration above, convectors are installed in the living room and dining alcove and radiators in the rest of the house. The boiler is gas-fired and is placed in a utility room, which also contains the hot water heater for the domestic water supply. This same single-main hot water system can be used equally well with coal-fired or oil-fired boilers.

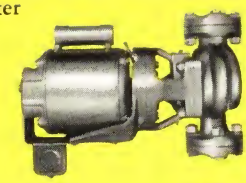
Crane Basmor Gas-Fired Boilers

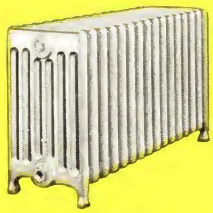




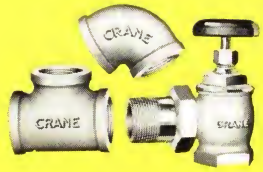
Crane Convectors

Crane Hot Water Circulators





Crane Radiators

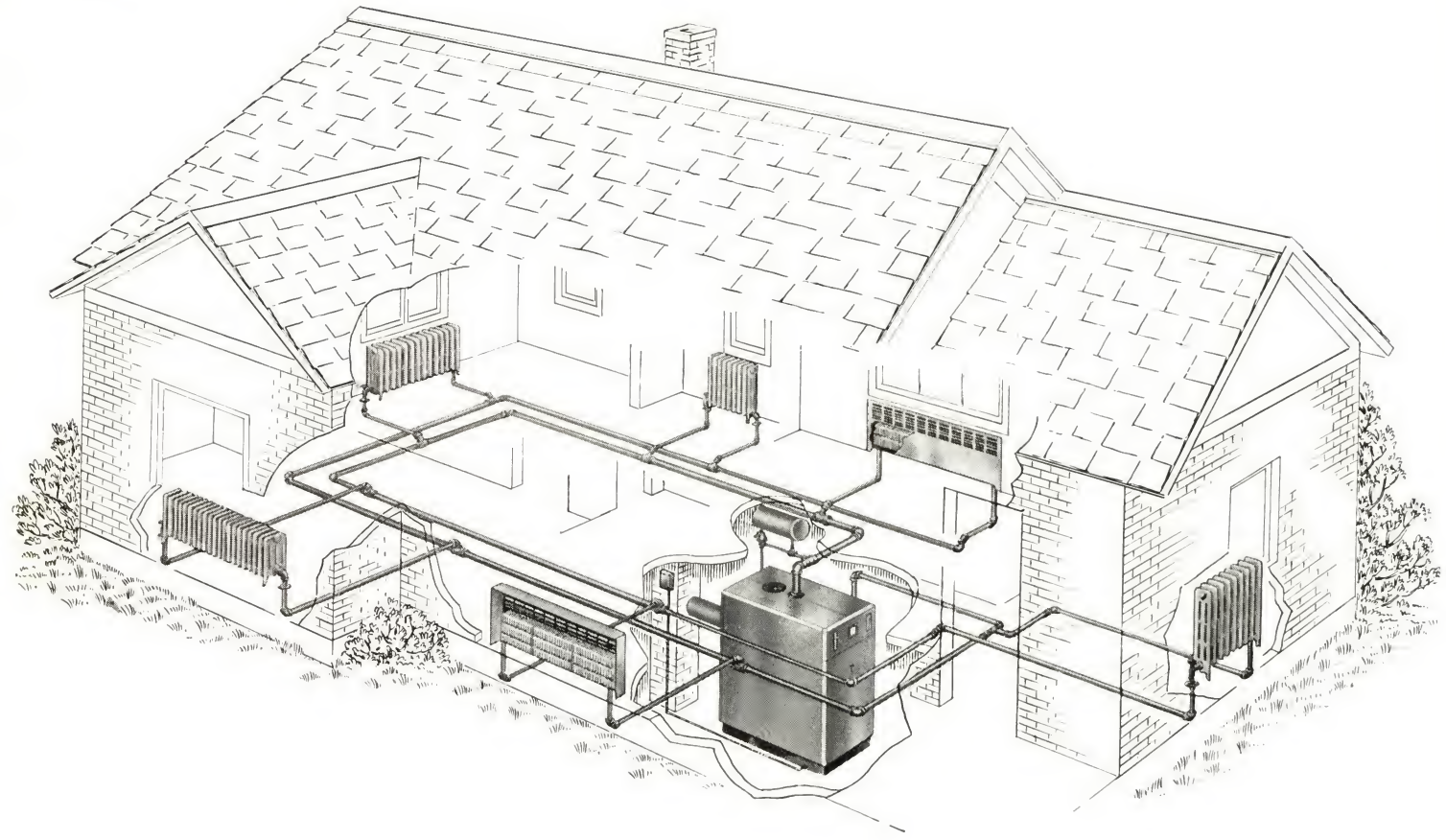


Crane Valves and Fittings



Crane Automatic Heating Controls

15



TWO-MAIN FORCED HOT WATER SYSTEM

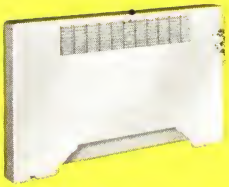
FOR quick, even heating, a hot water system is preferred by many home owners. The system shown above is a two-main forced hot water system, using high temperature water, a pump is used to assure rapid heating of the whole house. The installation of such a system is equally adaptable to a home with or without a basement. This type system like the single-main hot water or Monoflo system affords the advantages of smaller size pipes and radiators.

In the home illustrated above, the boiler is the Crane Fin-Type designed for the economical burning of oil. The boiler is placed in the basement and the whole system is automatic.

Concealed convectors are used in the living and dining rooms and radiators throughout the balance of the house. The two-main forced hot water system may also be used with a coal-burning boiler or gas-fired boiler if desired.

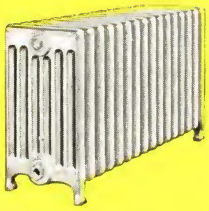


Crane Fin-Type Oil-Burning Boilers

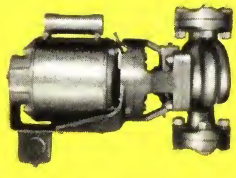


Crane Convectors

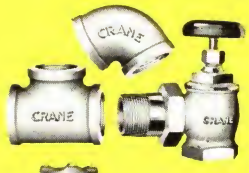
Crane Radiators



Crane Hot Water Circulators



Crane Valves and Fittings



Crane Automatic Heating Controls



SANITARY EQUIPMENT FOR HOSPITALS

THE requirements of hospitals in the design of sanitary equipment are so specialized that only years of experience can assure equipment satisfactory to suit these exacting needs. Architects specializing in hospital planning recognize the completeness as well as the efficiency of the Crane line.



Hydrotherapeutic Equipment in a Modern Hospital

Crane hospital plumbing equipment is preferred because it meets specialized needs exactly—and completely. The comfort of the patient is given careful thought in the design. The convenience of the hospital staff in using the equipment is fully considered . . . and hand in hand with such convenience goes the certainty of aseptic safety.

Crane hospital plumbing equipment possess the latest and most improved features. Years of Crane research, in collaboration with surgeons and scientists, has resulted in equipment that is better for the hospital because it is better fitted to its function.

This is testified to by the Seal of Approval given Crane equipment by the American College of Surgeons.



SANITARY FACILITIES IN SCHOOLS

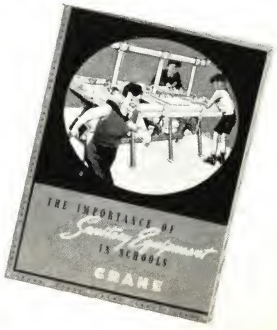
HOW many lavatories should be installed in a modern grade school? How high should they be from the floor? How far apart? What type of closet is best suited to the requirements of a high school? Where shall drinking fountains be placed and are pedestal or wall types to be preferred?



Crane Sanitary Equipment in a Grade School

The complete line of Crane plumbing includes equipment specially designed to meet the usage that is to be expected in schools. This equipment is available in a wide range of prices as well as designs.

School planning brings to the architect a multitude of serious problems relating to the installation of adequate plumbing and heating equipment. To assist the architect in the planning of the important sanitary facilities, Crane Co. has prepared a book, "The Importance of Sanitary Equipment in Schools," a copy of which will be sent to any architect on request. This book gives valuable information on selecting plumbing equipment for schools. You will find it a valuable aid in planning school modernizing or new school construction. In addition, every Crane branch has available additional information which will be gladly placed at your disposal.





PLANNING FOR INDUSTRIAL NEEDS

INDUSTRY today has become acutely aware of the important part played by sanitary facilities in employees' relations. Clean, modern toilet facilities, adequate, convenient lavatories, ample drinking fountains—all contribute materially to employee satisfaction. Adequate, modern sanitary facilities also have an important effect on production.

In the complete Crane line of plumbing equipment you will find drinking fountains, lavatories, closets and urinals specially designed for the type of service demanded by industry. These are shown in the Crane Architectural Catalog and are also described in a special industrial plumbing booklet, which also contains information of interest to any architect planning industrial buildings. Ask the Crane salesman for a copy or write direct. It should be in your files.



PLUMBING FOR HOTELS AND INSTITUTIONS

Hotels and institutions have special problems in sanitary equipment that can only be solved by equipment specially designed to meet their needs. Plumbing used in this market must be exceptionally durable and able to stand rough usage—it must be easy to operate, foolproof and simple to keep in service.

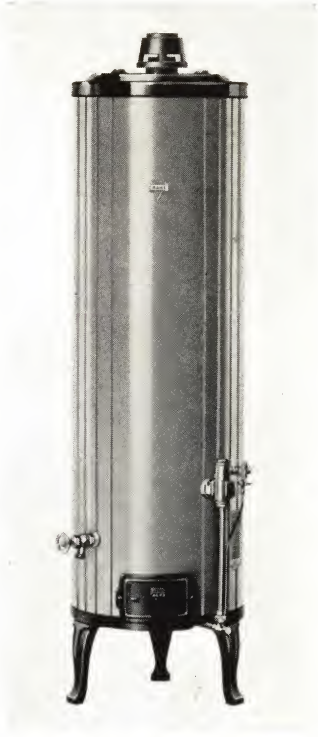
The complete Crane line contains plumbing equipment designed to meet the rigid needs of this field. If you are interested in the planning of hotels or institutions, be sure to consult the Crane salesman for his recommendations on equipment best designed to meet your particular problem.



Crane Electric Water Heater

GAS AND ELECTRIC WATER HEATERS

IN THE homes you plan be sure that ample provision is made for lots of hot water—available any time day or night. Steaming hot water helps in dishwashing, aids in the laundry, encourages the habit of cleanliness with the children. An abundant supply saves the annoyance of finding the water running cold just when it is needed most. And when sickness strikes, having hot water available, even in the dead of night is a blessing. A hot shower instantly ready is a luxury made possible with a Crane Water Heater. Crane water heaters are made in a wide variety of sizes from the large system for a hospital or hotel to the small, inexpensive heater for the low-cost home. But regardless of size or price they are all well built and designed for maximum efficiency. Available for either gas or electricity. For the maximum comfort and convenience of your clients be sure to refer to pages 137-A to 146-I in the Crane Architects Catalog when planning the water system.



Crane Gas Water Heater

CRANE PUMPS



Crane K-250 Shallow Well Pump



Crane D-6 Deep Well Pumping Head

CRANE pumps are sturdily built in sizes and types to meet every service condition. For shallow wells, lakes or other sources where depth is of 22 feet or less the Crane Shallow Well Pump is recommended. For lifting water from depths as low as 500 feet, the Crane Deep Well Pumps should be used.

A complete Crane System includes pump, motor, pneumatic storage tank, automatic pressure gauge, relief valve and all necessary fittings—a complete packaged unit.

Crane Pumps are new in design and possess high efficiency in performance. All working parts are easily accessible and the capacitor motors are powerful, quiet and cannot cause radio interference. They have a built-in switch which protects against danger of overloads.

Silent V-type flexible belt transmits full power from motor to pump.

Shallow Well pumps may be had in sizes to pump 250, 400, 500, 800 and 1,000 gallons per hour.

Deep Well Pumps may be had in a range of capacities from 170 to 1,800 gallons per hour.

See pages 199-1 to 202-2 in your Crane Architects Catalog.

WATER CONDITIONING

NO matter what its source—municipal, private well, river, lake, spring or cistern—several things may be wrong with your client's water supply. It may be discolored, it may have a disagreeable taste or odor, it may be hard, corrosive or actually dirty. In TODAY'S home, people have automatic heat—they have conditioned air—but the problem of water and its quality is equally important.

A few facts worth considering are really astonishing. The water used by the average home owner shortens the life of clothes, increases the cost of heating, harms the complexion and even makes vegetables tough and less appetizing.

We will make water analyses without obligation and recommendations will be cheerfully given. Without definite knowledge of water supply, your client may needlessly pay for that mistake for years.

Many architects make it a point to have the water supply checked when they plan a home and recommend the installation of a Crane Warlo Water Conditioner to meet those particular needs. For further information consult the Crane Architects Catalog pages 199-1 to 199-3.



Crane Warlo Water Softener

YOU ARE INVITED TO USE THESE CRANE DISPLAY ROOMS

and take advantage of the many services of value to you in getting ideas and in helping your clients in the selection of fixtures, materials and color harmonies.

ALABAMA

BIRMINGHAM.....2 So. Twentieth St.
MOBILE.....300 N. Royal St.
MONTGOMERY (Teague Hardware Co.).....132 Commerce St.
TUSCALOOSA (Cole Supply Co., Ltd.).....520-22 22nd Ave.

ARIZONA

PHOENIX.....233 S. First Ave.
TUCSON.....35 Toole Ave.

ARKANSAS

FT. SMITH.....521 S. Ninth St.
LITTLE ROCK.....515 E. Second St.

CALIFORNIA

FRESNO (Barrett Hicks Wholesale Supply Co.).....1027 Broadway St.
HOLLYWOOD...950 N. Highland Ave.
LONG BEACH....824 W. Anaheim St.
LOS ANGELES.....321 E. Third St.
OAKLAND.....346 Ninth St.
PASADENA.....321 South Broadway
SACRAMENTO.....1227 Front St.
SALINAS (Standard Supply Co.)
SAN BERNARDINO..110 South "E" St.
SAN DIEGO.....1138 India St.
SAN FRANCISCO.....301 Brannan St.
SANTA ANA.....919 Poinsettia St.
SANTA BARBARA.....136 State St.

COLORADO

DENVER (Crane-O'Fallon Co.).....1631 Fifteenth St.
GRAND JUNCTION (Crane-O'Fallon Co.).....601 Pitkin Ave.
PUEBLO (Crane-O'Fallon Co.).....216 W. Third St.

CONNECTICUT

BRIDGEPORT.....302 John St.
HARTFORD.....710 Windsor St.
NEW HAVEN.....365 Orchard St.

DELAWARE

WILMINGTON (Desco Corporation).....211 Shipley St.

DISTRICT OF COLUMBIA

WASHINGTON..1018 Connecticut Ave.

FLORIDA

JACKSONVILLE.....1007 W. Bay St.
MIAMI.....85 N. W. Tenth St.
MIAMI BEACH.....1030 Lincoln Road
PANAMA CITY (Panama Machine & Supply Co.)
ST. PETERSBURG (Moon Supply Co., Inc.).....2000 S. Second Ave.
TAMPA.....1405 Twiggs St.
WEST PALM BEACH..601 Lantana Ave.

GEORGIA

ATLANTA.....Washington St. Viaduct
AUGUSTA (H. C. Tennent Supply Co.).....1251 Broad St.
COLUMBUS (Columbus Iron Works).....901 Front St.
MACON.....500 Broadway
SAVANNAH.....14 W. Broad St.

IDAHO

BOISE.....415 S. Eighth St.
POCATELLO.....756 S. First Ave.

ILLINOIS

AURORA.....544 S. Lake St.
CHICAGO.....836 S. Michigan Ave.
EVANSTON.....1224 Emerson St.
JACKSONVILLE (Jacksonville Supply Co. Inc.).....607-611 E. State St.
PEORIA (Connor Co.).....205-211 S. Water St.
ROCKFORD.....800 S. Main St.
SPRINGFIELD.....921 E. Monroe St.
WAUKEGAN.....1219 Glen Rock Ave.

INDIANA

EAST CHICAGO.....1004 Chicago Ave.
EVANSVILLE.....118 S. E. Eighth St.
INDIANAPOLIS.....333 W. Market St.
MUNCIE.....610 S. Jefferson St.
SOUTH BEND.....1616 S. Franklin St.
TERRE HAUTE.....209 Ninth St.

IOWA

DAVENPORT.....217 E. Second St.
DES MOINES (L. H. Kurtz Co.).....312-314 Walnut St.
DUBUQUE (Kretschmer-Tredway Co.).....9th & Washington Sts.
MASON CITY.....19 Eighth St., S. E.
SIOUX CITY....6th and Nebraska Sts.

KANSAS

LEAVENWORTH (Tholen Bros. Supply Co.).....304-312 Shawnee St.
WICHITA.....624 E. First St.

KENTUCKY

ASHLAND (Ben Williamson & Co., Inc.).....1539 Greenup St.
LEXINGTON.....544 W. Main St.
LEXINGTON (Brock-McVey Co., Inc.).....Shreve & Vine Sts.
LOUISVILLE (Laib & Co.).....754 S. First St.
PADUCAH (Henry A. Petter Supply Co.).....117-119 S. First St.

LOUISIANA

BATON ROUGE (Levingston Supply Co.).....1449 Florida St.
NEW ORLEANS.....146 Baronne St.
SHREVEPORT.....1320 Winston St.

MAINE

PORTLAND.....70 St. John St.

MARYLAND

BALTIMORE.....17 W. Franklin St.
CUMBERLAND (Tri State Mine & Mill Supply Co.).310 Commerce St.

MASSACHUSETTS

BOSTON.48 W. First St., South Boston
PITTSFIELD (Pittsfield Mill & Plbg. Supply Co.).....81 Clapp Ave.
SPRINGFIELD.....60 Cypress St.
WORCESTER.....45 Green St.

MEXICO

MONTERREY, NUEVO LEON (Instalaciones Sanitarias, S. A.)

MICHIGAN

DETROIT.....4498 Cass Ave.
FLINT.....155 Lewis St.
GRAND RAPIDS.....56 Grandville Ave., S. W.
JACKSON.....409 Hupp Ave.
KALAMAZOO (Bond Supply Co.).....249 N. Rose St.
MUSKEGON (J. J. Howden Co.).....370-374 W. Western Ave.

MINNESOTA

DULUTH.....102 Lake Ave., S.
MANKATO.....510 S. Pike St.
MINNEAPOLIS.....400 Third Ave., N.
MINNEAPOLIS (Goodin Co.).....707 N. Third Ave.
ST. PAUL.....356 Broadway

MISSISSIPPI

HATTIESBURG (P. S. Supply Co.).....404-406 E. Pine St.
JACKSON.....176 N. Gallatin St.
MERIDIAN (General Supply & Machine Co.).....208 19th Ave.

MISSOURI

KANSAS CITY.....1532 Grand Ave.
KIRKSVILLE (Kirksville Plumbing Supply Co.)...406 W. Harrison St.
ST. LOUIS.....30 S. Sixteenth St.

MONTANA

BILLINGS..30th St. and First Ave., S.
GREAT FALLS.....Great Northern Ry. Yards

NEBRASKA

GRAND ISLAND.....115 E. Front St.
LINCOLN.....317 S. Ninth St.
OMAHA.....309 S. Nineteenth St.

NEVADA

RENO.....401 E. Fourth St.

NEW HAMPSHIRE

LACONIA (Laconia Plbg. & Htg. Supply Co.)....79 New Salem St.

NEW JERSEY

ATLANTIC CITY (National Exhibit Rooms).....2401 Boardwalk
CAMDEN.....134 Federal St.
NEWARK.....90 South St.
TRENTON.....50 Escher St.

NEW MEXICO

ALBUQUERQUE (Crane-O'Fallon Co.).....612 N. First St.

NEW YORK

ALBANY.....North Broadway
BINGHAMTON.....21 Washington St.
BUFFALO.....201 Church St.
HEMPSTEAD.....209 Main St.
NEW YORK.....279 Madison Ave.
ROCHESTER.....200 South Ave.
SYRACUSE.....760 W. Genesee St.
UTICA.....326 Broad St.
WHITE PLAINS.....41 Hamilton Ae.

NORTH CAROLINA

ASHEVILLE.....34 Battery Park Pl.
CHARLOTTE....1307 W. Morehead St.
GREENSBORO.....205 Lyndon St.
WILMINGTON (Longley Plbg. Supply Co.).....206-208 S. Front St.

NORTH DAKOTA

FARGO.....636 Northern Pacific Ave.

OHIO

CANTON....210 Piedmont Ave., S. E.
CINCINNATI.....824 Broadway
CLEVELAND.....6215 Carnegie Ave.
COLUMBUS.....67 N. Front St.
LIMA.....207 S. Central Ave.
TOLEDO (Federal Pipe & Supply Co.)..Shepard, Jackson & 11th Sts.

OKLAHOMA

MUSKOGEE.....302 Commercial St.
OKLAHOMA CITY....705 W. Main St.
TULSA.....623 E. Third St.

OREGON

PORTLAND.....1103 S. W. Alder St.
PORTLAND (Peerless-Pacific Co.).....308-14 Front Ave., S. W.

PENNSYLVANIA

ALLENTOWN (Hertz Supply Co.).....1210-1214 Turner St.
CHESTER (Desco Corporation).....2nd & Welsh Sts.
ERIE (Erie Concrete & Steel Supply Co.).....1301 Cranberry St.
NEW CASTLE (Lawrence Supply Co.).....19 W. Lawrence St.
PHILADELPHIA.....1301 Locust St.
PITTSBURGH.....Gulf Building
PITTSBURGH (Malone Plumbing Supply Co.)..21st and Wharton Sts.
READING.....212 S. Eighth St.
UNIONTOWN (S. E. Williams Supply Co.).....72 E. Main St.
WILLIAMSPORT (Hoff Wilkinson Co.).....434 Court St.
WILKES-BARRE (Luzerne Lackawanna Sup. Co.).20 N. Pennsylvania Ave.
YORK (Careva Company, Inc.).....545 E. Princess St.

RHODE ISLAND

Providence.....245 W. Exchange St.

SOUTH CAROLINA

CHARLESTON (C. D. Franke Co., Inc.).....170-172 Meeting St.
GREENVILLE.....223 W. McBee Ave.

SOUTH DAKOTA

ABERDEEN...324 Railroad Ave., S. E.
SIOUX FALLS.....326 E. Eighth St.

TENNESSEE

CHATTANOOGA.....1317 Chestnut St.
KINGSPORT (Dobyns-Taylor Hardware Co.).....116-120 Broad St.
KNOXVILLE.....523 W. Jackson Ave.
MEMPHIS.....254 Court Ave.
NASHVILLE.....532 Eighth Ave., S.

TEXAS

AMARILLO (Morrison Supply Co.)
AUSTIN (Donnelly-White Co.).....309 Lavaca St.
BEAUMONT.....820 Fannin St.
CORPUS CHRISTI....1212 Gavilan St.
DALLAS.....814 Young St.
DENISON (Chris Waltz).....201-203 W. Woodard St.
EL PASO (Crane-O'Fallon Co.).....1609 Texas St.
FT. WORTH (Morrison Supply Co.)
HARLINGEN.....201 West "C" St.
HOUSTON.....2205 McKinney Ave.
SAN ANTONIO...1200 E. Houston St.
SWEETWATER (Morrison Supply Co.)
WICHITA FALLS (Morrison Supply Co.)

UTAH

OGDEN..Twentieth St. and Wall Ave.
SALT LAKE CITY...307 W. Second St.

VIRGINIA

NORFOLK.....2 E. Twenty-second St.
RICHMOND.....1223 W. Broad St.

WASHINGTON

SEATTLE.....419 Second Ave., S.
SPOKANE.....126 S. Post St.
TACOMA.....1209 South "A" St.

WEST VIRGINIA

BECKLEY (Raleigh Hardware Co.)
BLUEFIELD (Superior Sterling Co.).....200 Bluefield Ave.
CHARLESTON.....502 Broad St.
FAIRMONT (Fairmont Supply Co.).....10th St. and Beltline Siding
HUNTINGTON (Emmons-Hawkins Hardware Co.).....1028-1032 Third Ave.
WHEELING (Wheeling Machine Products Co.).....20th and Main Sts.

WISCONSIN

MADISON.....641 Williamson St.
MILWAUKEE....225 W. Capitol Drive
OSHKOSH.....37 Market St.

WYOMING

CASPER (Crane-O'Fallon Co.).....802 East "C" St.

CRANE CO., 836 S. MICHIGAN AVE., CHICAGO, ILL.

W. A. CASE AND SON MFG. CO.

33 Main Street, BUFFALO, N. Y.



No. 55-T/N

T/N ONE-PIECE WATER CLOSET

The first and finest one-piece water closet.

Made of the best twice-fired vitreous china in white and in a wide variety of colors.

Designed to meet the most recent trend in plumbing fixtures.

No elevated tank and not attached to wall. Can be installed in corners, under stairs or windows.

Simplified fittings assuring positive quiet performance. Special regulating stop, designed for either angle or straight supply, permitting volume regulation of water under all pressures.

Non-overflow.

Powerful, but quiet, centrifugal flushing action and strong cleansing rim flush.

Large bowl opening and water area.

Shelf type cover, locked on.

All exposed metal chromium plated.

Perfectly sanitary. Safeguarded to prevent any possible contamination of water supply.

Complete with sheet covered special seat, china bolt caps and closet screws in one crate.

The T/N furnished in the following seat styles:

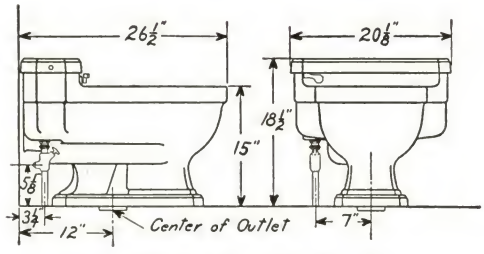
55A—With closed front seat with cover.

60A—With open front seat with cover.

65A—With open front seat less cover, and with check hinge.

80A—With hard rubber seat, open front less cover, and with check hinge.

85A—With hard rubber seat, open front with cover.



Roughing-in Dimensions No. 55

90A—With hard rubber seat, closed front with cover.

Note—Can be roughed at 12 in. or greater from wall to center of outlet. In roughing further than 12 in. from wall, change supply measurement accordingly.

We recommend 14-in. roughing, which gives more space behind fixture for cleaning purposes.

Vitreous china measurements subject to a variation plus or minus ¼ in.

DeLuxe Water Saver Closet



No. 1200—Regular Bowl
No. 1210—Elongated Bowl

Camel Water Saver Closet



No. 1300

Camel Water Saver Closet



No. 1325 (Model 2)

Tanks on Water Saver closets are not attached to wall, permitting any roughing-in 12 in. or over.

Tank fastened directly to shelf of bowl by means of a simple patented connection, affording unusual ease and economy of installation. Thoroughly efficient and cleansing flushing action at low water consumption.



No. 1600

Trojan elongated pattern Syphon Jet Flush Valve Closet Combination (bowl passes 2½" ball). Furnished with Open Front Rubber Seat with Check Hinge. Chrome plated flush valve.



No. 1650

Trojan elongated pattern Reverse Trap Flush Valve Closet Combination. Furnished with Open Front Rubber Seat with Check Hinge, Chrome plated flush valve.



No. 2100

Syphon Jet Wall Hung elongated Closet 1½" top spud, chair carrier support, flush valve and open front hard rubber seat.

No. 2105—Same specification, bowl with near spud and concealed flush valve.



No. 2300

Vitreous china straight front Urinal Stall with integral flush spreader, flush valve and universal strainer.



No. 2310

Vitreous china Urinal Stall with integral extended shields with integral flush spreader, flush valve and universal strainer.



No. 2325

Vitreous China Wall Hung Washout Urinal with integral extended shields, integral flushing rim, integral strainer, integral trap with cleanout, wall bolts and wall hangers.



No. 400—Aqua-Chrome

Vitreous china lavatory, equipped with chrome finish Art design adjustable legs and knee brackets with special locking device.

Size	Basin
20"x18"	15¾"x10¾"
24"x20"	16¾"x12¼"
27"x22"	18½"x13½"

No. 410—Same specifications as No. 400, except equipped with chrome finish towel bars.



No. 430-C—Aqua-Chrome

Vitreous china lavatory, equipped with special Art design chrome finish combination supply and pop-up waste fitting (4" centers), adjustable Art design chrome finish metal legs, and knee brackets with special locking device and Art design chrome finish towel bars.

Size	Basin
24"x20"	16¾"x12¼"
27"x22"	18½"x13½"



No. 500 Westbrook

Vitreous china lavatory and pedestal, equipped with chrome finish knee brackets with special locking device.

Size	Basin
24"x20"	16¾"x12¼"
27"x22"	18½"x13½"

No. 510—Same specifications as No. 500, except equipped with chrome finish towel bars.

All lavatories in 400, 500, 600 and 700 series have Square Basin, Hooded Overflow, and Anti-splash Rim. Furnished with either square corners or cut-off corners.

Designate cut-off corners by suffix "C" furnished in sizes 24" x 20" and 27" x 22" only.

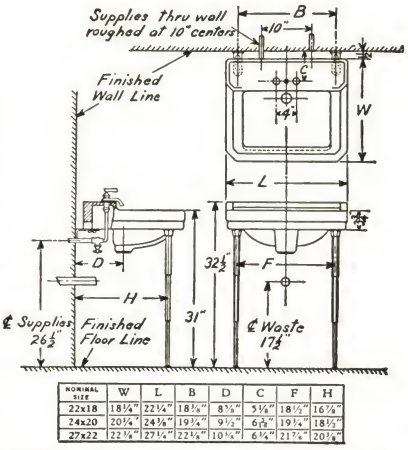


No. 800—Winston

Vitreous china lavatory with integral shelf, equipped with special chrome finish Art design combination supply and pop-up waste fitting (4″ centers), chrome finish Art design adjustable legs and knee brackets with special locking device.

Concealed Front Overflow

Anti-splash Rim	Square Basin
Size 22″x18″	Basin 15½″x10¾″
24″x20″	17½″x11¾″
27″x22″	18½″x13″



NOMINAL SIZE	W	L	B	D	C	F	H
22x18	18¼″	22¼″	18⅛″	8⅛″	5¼″	18½″	16⅞″
24x20	20¼″	24⅛″	19¼″	9½″	6⅞″	19¼″	18½″
27x22	22⅛″	27¼″	22⅛″	10¼″	6¼″	21⅞″	20⅞″

Roughing-in Dimensions for No. 800 and 805 Winston Lavatories

Vitreous chinaware measurements subject to a plus or minus ¼″ variation



No. 805—Winston

Vitreous china lavatory with integral shelf, equipped with special chrome finish Art design combination supply and pop-up waste fitting (4″ centers), chrome finish Art design adjustable legs and knee brackets with special locking device and Art design chrome finish towel bars.

Concealed Front Overflow

Anti-splash Rim	Square Basin
Size 22″x18″	Basin 15½″x10¾″
24″x20″	17½″x11¾″
27″x22″	18½″x13″



No. 620-C—Wyngate

Vitreous china lavatory, equipped with special Art design chrome finish combination supply and pop-up waste fitting (4″ centers), adjustable concealed hangers with chrome finish brackets with special locking device.

Hooded Overflow

Anti-splash Rim	Square Basin
Size 24″x20″	Basin 16¾″x12¼″
27″x22″	18½″x13½″

No. 630-C—Same specifications as 620-C, except equipped with chrome finish towel bars.



No. 841—Winsted

Vitreous china lavatory with integral shelf, equipped with special chrome finish Art design combination supply and pop-up waste fitting (4″ centers) supported on special concealed wall hanger and chrome finish towel bars.

Concealed Front Overflow

Anti-splash Rim	Square Basin
Size 22″x18″	Basin 15½″x10¾″

No. 840—Same specifications as No. 841, except less chrome finish towel bars.



No. 912—Avon

Vitreous china lavatory with back and concealed wall hanger. Equipped with special chrome finish Art design combination supply and pop-up waste fitting (4″ centers). Concealed Front Overflow

Anti-splash Rim	
Size 19″x16″	20″x18″
Square Basin 16″x9½″	15″x10½″
Back 5″	6″

No. 915—Same specifications as No. 912, except equipped with Art design supply fitting with bead chain and rubber stopper.



No. 720—Windsor

Vitreous china lavatory and china leg, equipped with special Art design chrome finish combination supply and pop-up waste fitting (4″ centers) and chrome finish knee brackets with special locking device.

Hooded Overflow

Anti-splash Rim	Square Basin
Size 20″x18″	Basin 15¾″x10¾″
24″x20″	16¾″x12¼″
27″x22″	18½″x13½″



No. 900—Avon

Vitreous china lavatory with back and concealed wall hanger.

Concealed Front Overflow

Anti-splash Rim	
Size 19″x16″	20″x18″
Square Basin 16″x9½″	15″x10½″
Back 5″	6″



No. 925—Cosmette

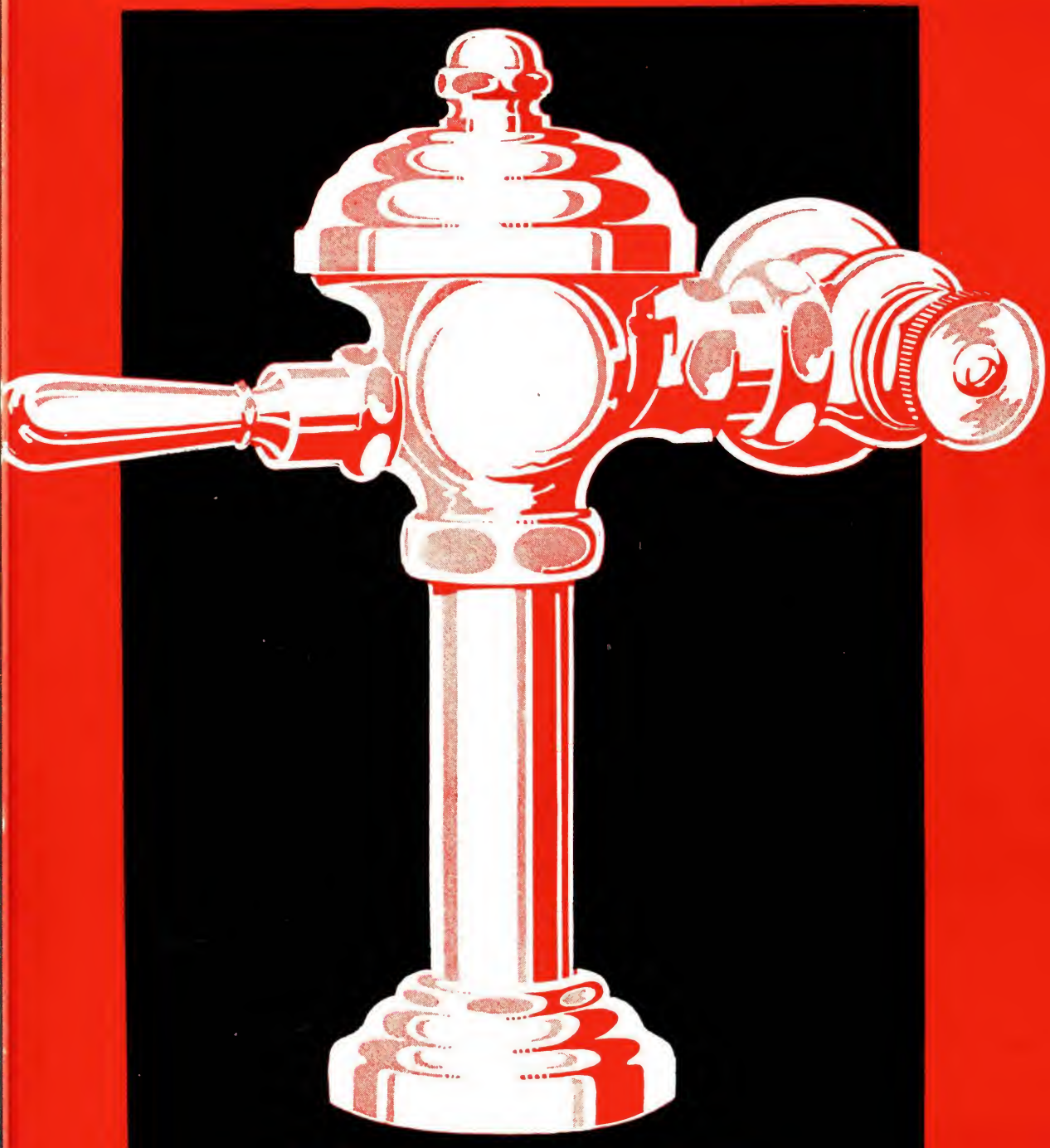
Vitreous china lavatory with integral shelf, equipped with special chrome finish Art design combination supply and pop-up waste fitting (4″ centers), supported on concealed wall hanger. Concealed Front Overflow. Anti-splash Rim

Size 20″x13½″ Basin 13¾″x8½″

No. 930—Same specifications as No. 925, except equipped with chrome finish towel bars.

No. 935—Art design fitting with bead chain and rubber stopper.

MEMORANDA



Watrous

FLUSH VALVES

made solely by THE IMPERIAL BRASS MFG. CO. CHICAGO

THE IMPERIAL BRASS MANUFACTURING CO.

1200 WEST HARRISON ST., CHICAGO, ILLINOIS

Watrous FLUSH VALVES

BACKGROUND. Experience approximating half a century in the manufacture of brass and bronze devices of all kinds contribute to the outstanding perfection of Watrous Flush Valves. Watrous Valves were among the pioneers in the flush valve field and have held a leading place in the industry since their introduction over 30 years ago.

ADVANTAGES TO OWNER. Watrous Flush Valves are conspicuous for their water economy, reliability of service and low maintenance cost. These advantages are the direct result of certain basic, patented features which are described on the opposite page. These features mean lower water bills and minimum maintenance needs for Watrous owners.

COMPLETE, UP-TO-THE-MINUTE LINE. Today's Watrous Flush Valves—as evidenced by the pages of this catalog—represent a new high in this type of equipment. With beauty of design, efficiency of operation and adaptations for every requirement, these valves are universally accepted for the most exacting service and can be used on plumbing fixtures of any manufacture.

ARCHITECTURAL SERVICE. Imperial sales engineers are located in all principal cities and work in close cooperation with architects, plumbing wholesalers and plumbing contractor-dealers. It is their purpose to aid owner, architect and contractor in working out specific applications and in specifying the type of sanitary equipment best suited to their individual requirements.

Architects are invited to call upon us for helpful suggestions on any unusual problems either through any of the representatives listed on the back cover of this catalog or by writing direct to our main office.

A Few Typical Watrous Installations

Watrous Flush Valves have been installed in many of the best known apartment, hotel and office buildings all over the world. A partial list of installations is shown below.

FISHER BUILDING,
Detroit, Mich.
LA SALLE-WACKER BLDG.,
Chicago, Ill.
MORRISON HOTEL,
Chicago, Ill.
CHICAGO DAILY NEWS BLDG.,
Chicago, Ill.
SOUTHWESTERN BELL TELEPHONE BLDG.,
St. Louis, Mo.
PARK PLAZA APT. HOTEL,
St. Louis, Mo.
HEYBURN BLDG.,
Louisville, Ky.
ELKS' CLUB BUILDING,
Memphis, Tenn.
BELL TELEPHONE BLDG.,
Dallas, Texas
MARK HOPKINS HOTEL,
San Francisco, Calif.
EASTERN-COLUMBIA BLDG.,
Los Angeles, Calif.
THE TEXAS COMPANY BLDG.,
Los Angeles, Calif.
HOTEL BANKHEAD,
Birmingham, Ala.
AMERICAN INSURANCE UNION TOWER,
Columbus, Ohio
WILLIAM TAYLOR HOTEL,
San Francisco, Calif.
MASONIC TEMPLE,
St. Louis, Mo.
STEUBEN CLUB,
Chicago, Ill.
MISSOURI PACIFIC BLDG.,
St. Louis, Mo.
GENESEE VALLEY TRUST BLDG.,
Rochester, N. Y.
PLYMOUTH HOTEL,
New York, N. Y.
STATE HOSPITAL,
Coxsackie, N. Y.
HOTEL, SANITARIUM & DRINK HALL,
Saratoga Springs, N. Y.
STATE SCHOOL,
Albion, N. Y.
ROCKLAND STATE HOSPITAL,
Orangeburg, N. Y.
STATE HOSPITAL,
Gowanda, N. Y.
STATE PRISON,
Attica, N. Y.
AMBASSADOR BUILDING,
St. Louis, Mo.
LA SALLE APARTMENTS,
Birmingham, Ala.
THE ARENA,
St. Louis, Mo.
THE CHICAGO STADIUM,
Chicago, Ill.
BENDIX BUILDING,
Los Angeles, Calif.
SIANI TEMPLE,
Los Angeles, Calif.
1700 WALNUT STREET BLDG.,
Philadelphia, Penna.
BARLUM TOWER,
Detroit, Mich.
WESTCHESTER APARTMENTS,
Washington, D. C.
ALBANY COUNTY JAIL,
Albany, N. Y.
CONTINENTAL LIFE INSURANCE CO.,
St. Louis, Mo.
TATTNALL COUNTY JAIL,
Reidsville, Ga.
GENERAL MOTORS PLANT,
Los Angeles, Calif.
TEXTILE CENTER BUILDING,
Seattle, Wash.
DYAS BUILDING,
Hollywood, Calif.
BISMARCK HOTEL,
Chicago, Ill.
LOYOLA UNIVERSITY BLDG.,
Chicago, Ill.
WYANDOTTE SCHOOL
Kansas City, Kan.
BUS TERMINAL AND HOTEL,
Kansas City, Mo.

Watrous FLUSH VALVES

MAJESTIC FLUSH VALVE



A valve of the time-proven diaphragm type, for use on all makes of fixtures. Provides uniform flush and refill at all pressures between 5 and 100 lbs. Remarkably silent in operation. Unsurpassed for water economy, simplified installation, and low maintenance cost because of the following special engineering features:

WATROUS WATER SAVER ADJUSTMENT. Enables valve to be regulated to MINIMUM water requirements of fixture on which it is installed by a SLIGHT TURN OF A SCREW (no need to take valve apart or even shut off the water). This is very important because different fixtures have widely different water requirements, and only with an ADJUSTABLE valve can MAXIMUM water economy be obtained.

SELF-CLEANSING BY-PASS. By-pass is thoroughly cleansed at each operation of the valve. This protects against lengthening of the flushing time and assures trouble-free performance.

FULL WATERWAY. A diaphragm area 25% greater than the average enables this valve to operate successfully even on low pressures. Delivers all available water and has "punch" necessary to cleanse fixture thoroughly.

EASE of OPERATION. A slight pressure on the handle in any direction insures quick, thorough flushing.

Made of the finest materials throughout. Body is high grade bronze, heavily nickel or chromium plated.

IMPERIAL FLUSH VALVE



A valve of the piston type, scientifically designed and ruggedly built to give lasting, reliable, economical service. Operates efficiently on all makes of fixtures at all pressures between 5 and 100 lbs. Remarkably silent in operation.

Offers same Watrous Water Saver Adjustment, Self-cleansing By-pass and Ease of Operation as Majestic Valve.

FULL TRAVEL OF PISTON. A special feature of this valve is the full travel of the piston. This assures a full waterway which will give the proper rate of flow to flush thoroughly the most exacting fixtures and is particularly desirable on low pressures. The full travel also guards against scoring of cylinder walls and cup leathers through scaling, reducing service requirements to a minimum.

NON-HOLD-OPEN FEATURE. As standard equipment this valve contains the Non-hold-open Feature which assures that only a single flush takes place regardless of how long the handle is held—a decided factor in saving water.

Made of the finest materials throughout. Body is high grade bronze, heavily nickel or chromium plated.

JEWEL FLUSH VALVE



This valve is also of the piston type and is designed to combine efficient, enduring service with lowest possible cost. Can be used on any plumbing fixture requiring flushing service. Remarkably silent in operation.

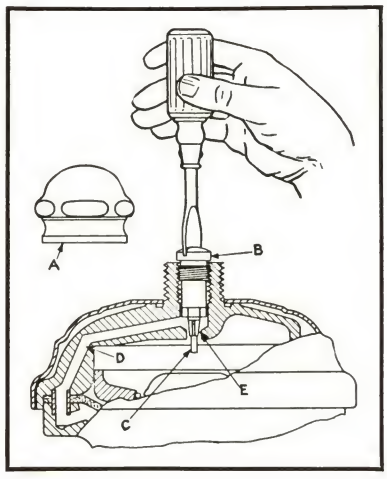
Valve embodies special Watrous Water Saver Adjustment which enables it to be set to the minimum water requirements of the fixture on which it is installed. Features Full Travel of Piston similar to that described above for IMPERIAL Valve.

DOUBLE BY-PASS CHANNEL. This valve has a Double By-pass Channel which is cleansed every time the valve is flushed, thus guarding against lengthening of the flushing time.

Valve will provide uniform delivery of water from the highest to the lowest pressures—5 lbs. to 100 lbs.—an important protection against water waste. A slight pressure on the handle in any direction insures a quick thorough flushing.

Constructed of quality materials throughout; body is high grade bronze nickel or chromium plated.

USE OF Watrous WATER SAVER ADJUSTMENT

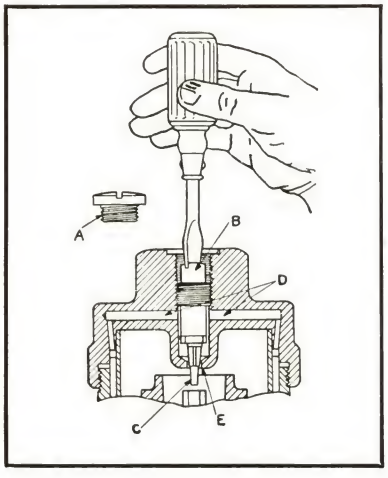


MAJESTIC

This sectional view clearly illustrates the function and use of the Watrous Water Saver Adjustment and also the Self-cleansing By-pass Feature of the MAJESTIC Flush Valve. Note that the adjustment of the length of flush is accomplished easily and accurately by the turn of a screw without taking the valve apart.

METHOD OF ADJUSTMENT is to remove nut "A" exposing adjusting screw "B." Screwing "B" in or out reduces or increases the opening between plunger "C" and the seat "E," thus increasing or decreasing the length of flush to the exact water requirements of the fixture on which the valve is installed.

SELF-CLEANSING FEATURE. Note that plunger "C" is raised up off seat "E" by the diaphragm operating unit each time the valve is flushed, making the by-pass self-cleansing. Also note the port "D" is many times larger than the average by-pass port. These features eliminate clogging and provide positive protection against lengthening of the flushing time.

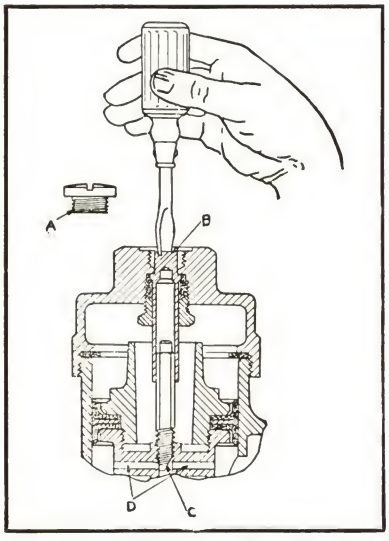


IMPERIAL

The view at the left illustrates the Watrous Water Saver Adjustment and the Self-cleansing Feature embodied in the IMPERIAL Flush Valve. These features are identical to those found on the MAJESTIC Valve. By means of the water saver adjustment, the length of flush can be easily regulated to the MINIMUM water requirements of any fixture without shutting off the water or taking the valve apart.

METHOD OF ADJUSTMENT is to remove cap nut "A" exposing adjusting screw "B" which, when screwed in or out reduces or increases the opening between plunger "C" and the seat "E," thus accurately controlling the length of flush.

SELF-CLEANSING FEATURE. Note that plunger "C" is raised up off of seat "E" by the piston unit each time the valve is flushed, thus making the by-pass self-cleansing. Note also that port "D" is many times larger than the average by-pass port. These features eliminate clogging and provide positive protection against lengthening of the flushing time.



JEWEL

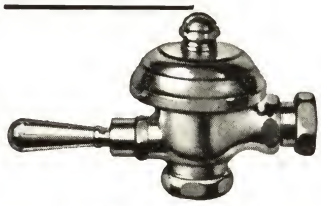
The sectional view at the left illustrates the Watrous Water Saver Adjustment and the Double By-pass Channel of the Jewel Flush Valve. By means of the adjustment feature, the length of flush can be set accurately to the exact requirements of the fixture on which it is installed.

METHOD OF ADJUSTMENT is simple. To lengthen the flush all that is necessary is to remove cap nut "A" and screw in adjusting screw "B." Screwing out adjusting screw "B" shortens the flush. This adjustment assures that the valve will give maximum water economy with any fixture.

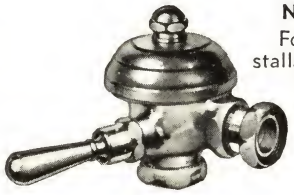
LARGE, DOUBLE BY-PASS CHANNEL. The double by-pass channel "D" is of good size and is thoroughly cleansed by the water stream each time the valve is flushed, thus assuring against clogging by scale or foreign matter in the water.

TYPE VARIATIONS OF Watrous FLUSH VALVES

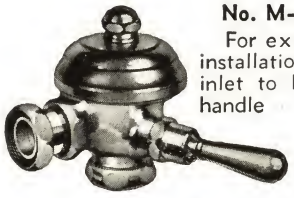
MAJESTIC



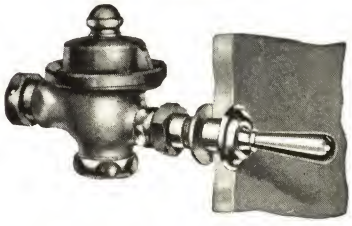
No. M-525
For exposed installation with inlet opposite handle



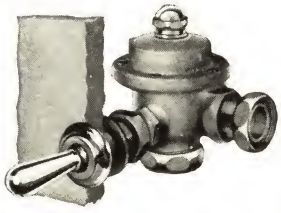
No. M-526
For exposed installation with inlet to right of handle



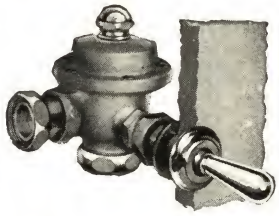
No. M-527
For exposed installation with inlet to left of handle



No. M-528 for concealed installation with inlet opposite handle

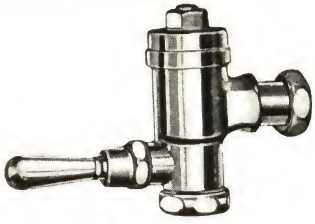


No. M-529 for concealed installation with inlet to right of handle

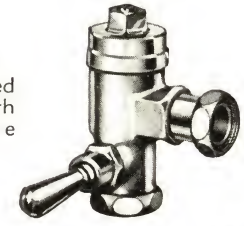


No. M-530 for concealed installation with inlet to left of handle

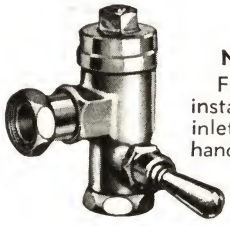
IMPERIAL



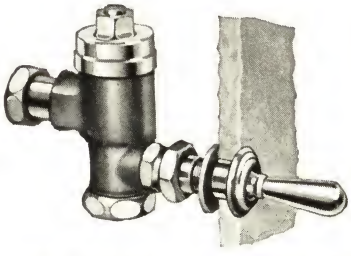
No. M-625
For exposed installation with inlet opposite handle



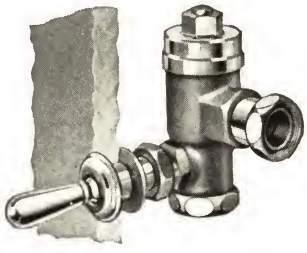
No. M-626
For exposed installation with with inlet to right of handle



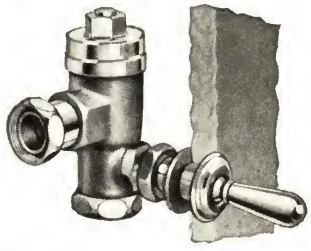
No. M-627
For exposed installation with inlet to left of handle



No. M-628 for concealed installation with inlet opposite handle

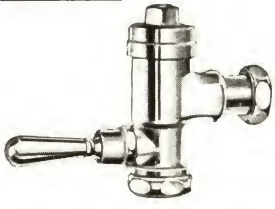


No. M-629 for concealed installation with inlet to right of handle



No. M-630 for concealed installation with inlet to left of handle

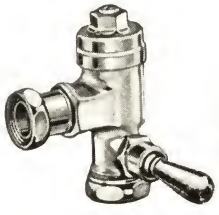
JEWEL



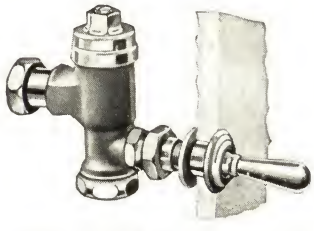
No. M-925
For exposed installation with inlet opposite handle



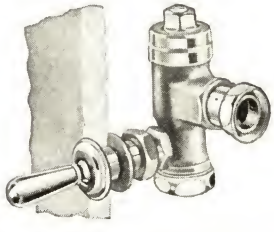
No. M-926
For exposed installation with inlet to right of handle



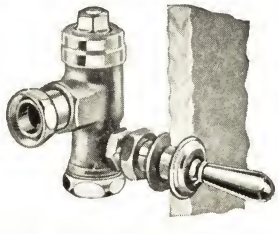
No. M-927
For exposed installation with inlet to left of handle



No. M-928 for concealed installation with inlet opposite handle

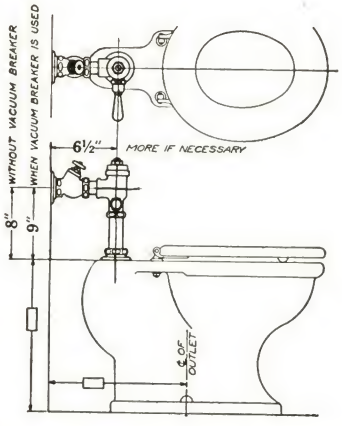


No. M-929 for concealed installation with inlet to right of handle



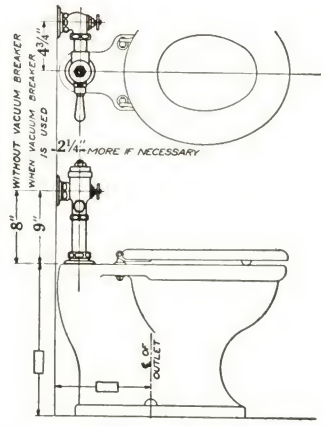
No. M-930 for concealed installation with inlet to left of handle

Watrous FLUSH VALVE COMBINATIONS



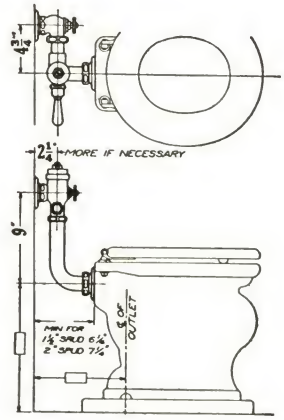
MAJESTIC Combination No. M-531
IMPERIAL Combination No. M-631
JEWEL Combination No. M-931

Above combination consists of: Nickel Plated Flush Valve, with inlet to left of metal handle, 1" wheel handle straight shut-off, wall flange, straight flush connection, spud nut and flange for 1½" top spud floor bowl.



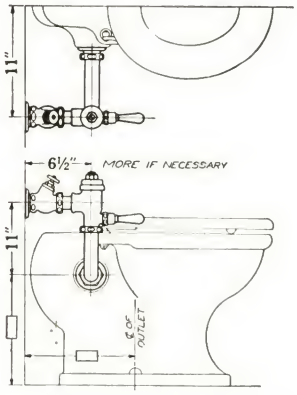
MAJESTIC Combination No. M-532
IMPERIAL Combination No. M-632
JEWEL Combination No. M-932

Above combination consists of: Nickel Plated Flush Valve, with inlet opposite metal handle, 1" wheel handle angle shut-off, wall flange, straight flush connection, spud nut and flange for 1½" top spud floor bowl.



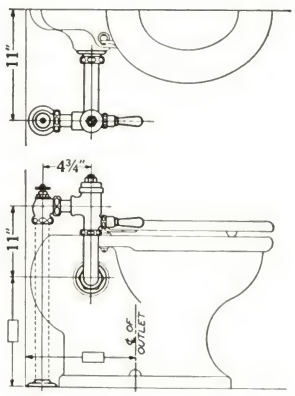
MAJESTIC Combination No. M-533
IMPERIAL Combination No. M-633
JEWEL Combination No. M-933

Above combination consists of: Nickel Plated Flush Valve, with inlet opposite metal handle, 1" wheel handle angle shut-off, wall flange, elbow flush connection, spud nut and flange for 1½" rear spud floor bowl.



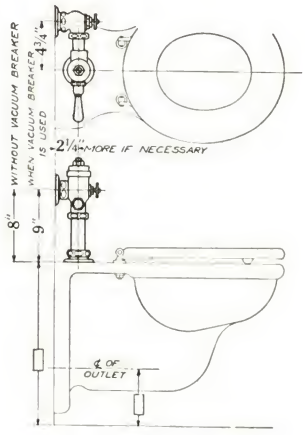
MAJESTIC Combination No. M-534
IMPERIAL Combination No. M-634
JEWEL Combination No. M-934

Above combination consists of: Nickel Plated Flush Valve, with inlet opposite metal handle, 1" wheel handle straight shut-off, wall flange, elbow flush connection, spud nut and flange for 1½" side spud floor bowl.



MAJESTIC Combination No. M-535
IMPERIAL Combination No. M-635
JEWEL Combination No. M-935

Above combination consists of: Nickel Plated Flush Valve, with inlet opposite metal handle, 1" wheel handle angle shut-off, floor flange, elbow flush connection, spud nut and flange for 1½" side spud floor bowl.



MAJESTIC Combination No. M-537
IMPERIAL Combination No. M-637
JEWEL Combination No. M-937

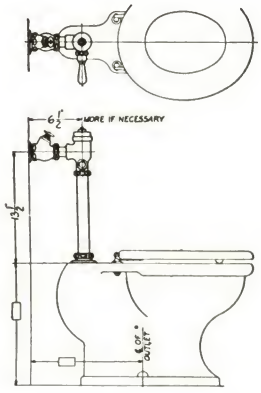
Above combination consists of: Nickel Plated Flush Valve, with inlet opposite metal handle, 1" loose-key angle shut-off, wall flange, straight flush connection, spud nut and flange for 1½" top spud wall bowl.

FOR CHROMIUM PLATE—When chromium plate finish is desired, add the letters "CP" to combination number.

VARIATIONS

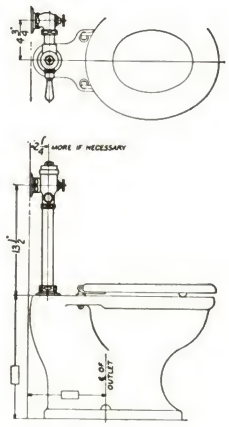
W	With Bumper for seat with cover	Extra, See Price Sheet
A	With M-22 Twin bar bumper for open front seat less cover	Extra, See Price Sheet
T	With M-16 Long wall bumper for closed front seat with or without cover	Extra, See Price Sheet
R	With 2" x 1½" spud reducer	Extra, See Price Sheet
O	Metal handle now standard equipment	No Extra
U	With loose key instead of wheel handle shut-off	No Extra
S	With 1¼" flush connection instead of 1½"	No Extra

Watrous FLUSH VALVE COMBINATIONS



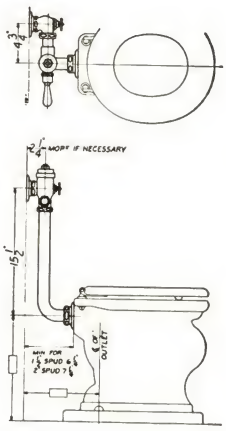
MAJESTIC Combination No. M-550
IMPERIAL Combination No. M-650
JEWEL Combination No. M-950

Above combination consists of: Nickel Plated Flush Valve, with inlet to left of metal handle, 1" wheel handle straight shut-off, wall flange, straight flush connection, spud nut and flange for 1½" top spud floor bowl.



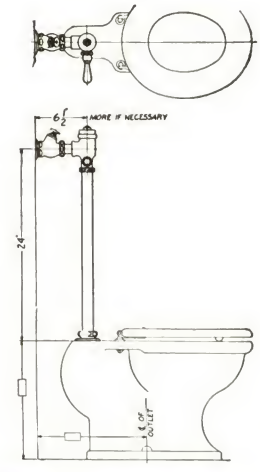
MAJESTIC Combination No. M-552
IMPERIAL Combination No. M-652
JEWEL Combination No. M-952

Above combination consists of: Nickel Plated Flush Valve, with inlet opposite metal handle, 1" wheel handle angle shut-off, wall flange, straight flush connection, spud nut and flange for 1½" top spud floor bowl.



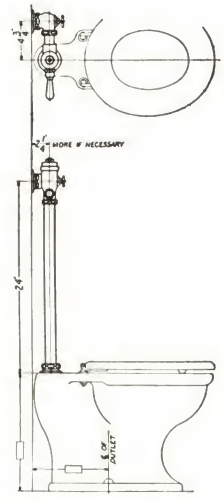
MAJESTIC Combination No. M-556
IMPERIAL Combination No. M-656
JEWEL Combination No. M-956

Above combination consists of: Nickel Plated Flush Valve, with inlet opposite metal handle, 1" wheel handle angle shut-off, wall flange, elbow flush connection, spud nut and flange for 1½" rear spud floor bowl.



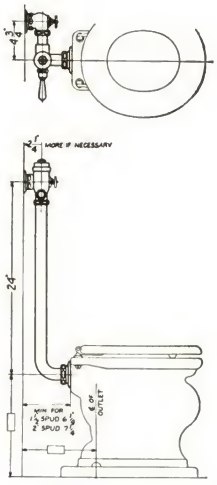
MAJESTIC Combination No. M-551
IMPERIAL Combination No. M-651
JEWEL Combination No. M-951

Above combination consists of: Nickel Plated Flush Valve, with inlet to left of metal handle, 1" wheel handle straight shut-off, wall flange, straight flush connection, spud nut and flange for 1½" top spud floor bowl.



MAJESTIC Combination No. M-553
IMPERIAL Combination No. M-653
JEWEL Combination No. M-953

Above combination consists of: Nickel Plated Flush Valve, with inlet opposite metal handle, 1" wheel handle angle shut-off, wall flange, straight flush connection, spud nut and flange for 1½" top spud floor bowl.



MAJESTIC Combination No. M-557
IMPERIAL Combination No. M-657
JEWEL Combination No. M-957

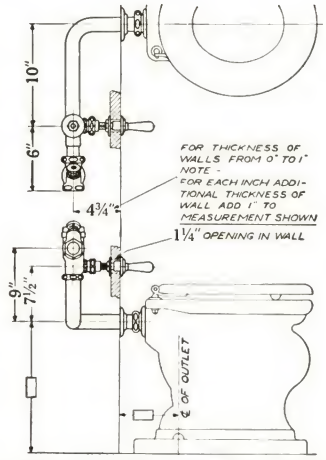
Above combination consists of: Nickel Plated Flush Valve, with inlet opposite metal handle, 1" wheel handle angle shut-off, wall flange, elbow flush connection, spud nut and flange for 1½" rear spud floor bowl.

FOR CHROMIUM PLATE—When chromium plate finish is desired, add the letters "CP" to combination number.

VARIATIONS

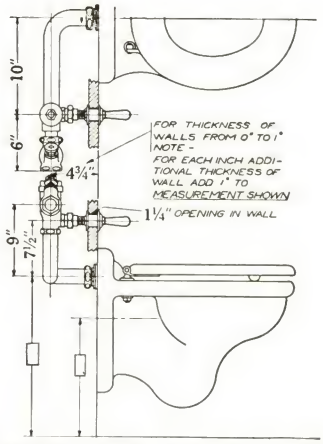
W	With Bumper for seat with cover	Extra, See Price Sheet
A	With M-22 Twin bar bumper for open front seat less cover	Extra, See Price Sheet
T	With M-16 Long wall bumper for closed front seat with or without cover	Extra, See Price Sheet
R	With 2" x 1½" spud reducer	Extra, See Price Sheet
O	Metal handle now standard equipment	No Extra
U	With loose key instead of wheel handle shut-off	No Extra
S	With 1¼" flush connection instead of 1½"	No Extra

Watrous FLUSH VALVE COMBINATIONS



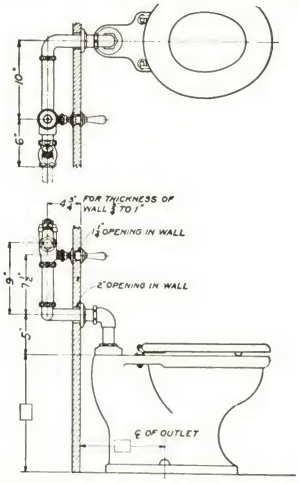
MAJESTIC Combination { **Left Inlet No. M-536** / **Right Inlet No. M-536½** }
IMPERIAL Combination { **Left Inlet No. M-636** / **Right Inlet No. M-636½** }
JEWEL Combination { **Left Inlet No. M-936** / **Right Inlet No. M-936½** }

Above combination consists of: Rough Flush Valve, inlet to left (or to right) of metal handle* (see note), rough 1" wheel handle straight shut-off, double elbow flush connection, wall flange, spud nut and flange, for 1½" rear spud floor bowl.



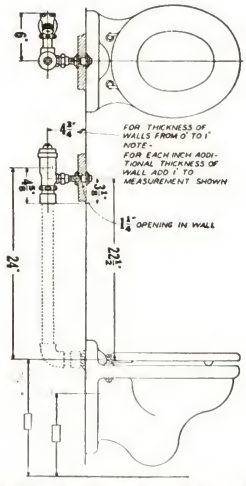
MAJESTIC Combination { **Left Inlet No. M-539** / **Right Inlet No. M-539½** }
IMPERIAL Combination { **Left Inlet No. M-639** / **Right Inlet No. M-639½** }
JEWEL Combination { **Left Inlet No. M-939** / **Right Inlet No. M-939½** }

Above combination consists of: Rough Flush Valve, inlet to left (or to right) of metal handle* (see note), rough 1" wheel handle straight shut-off, double elbow flush connection, spud nut, for 1½" rear spud wall bowl.



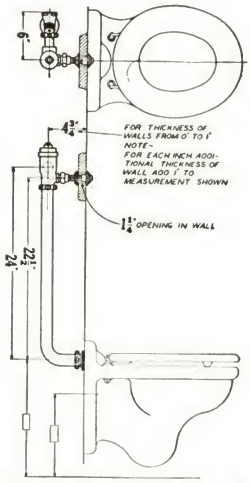
MAJESTIC Combination { **Left Inlet No. M-562** / **Right Inlet No. M-562½** }
IMPERIAL Combination { **Left Inlet No. M-662** / **Right Inlet No. M-662½** }
JEWEL Combination { **Left Inlet No. M-962** / **Right Inlet No. M-962½** }

Above combination consists of: Rough Flush Valve, inlet to left (or to right) of metal handle* (see note), rough 1" wheel handle straight shut-off, wall flange, triple elbow flush connection with exposed portions nickel plated, spud nut and flange, for 1½" top spud bowl.



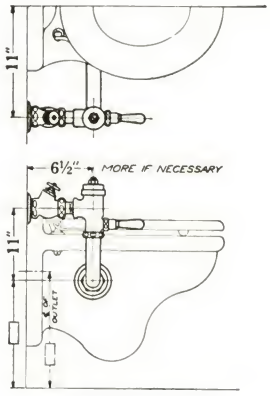
MAJESTIC Combination { **Right Inlet No. M-547** / **Left Inlet No. M-547½** }
IMPERIAL Combination { **Right Inlet No. M-647** / **Left Inlet No. M-647½** }
JEWEL Combination { **Right Inlet No. M-947** / **Left Inlet No. M-947½** }

Above combination consists of: Rough Flush Valve, with inlet to right (or to left) of push button,* rough 1" wheel handle straight shut-off, 1¼" female I.P. union outlet (no flush connection). For rear spud wall or floor bowls.



MAJESTIC Combination { **Right Inlet No. M-548** / **Left Inlet No. M-548½** }
IMPERIAL Combination { **Right Inlet No. M-648** / **Left Inlet No. M-648½** }
JEWEL Combination { **Right Inlet No. M-948** / **Left Inlet No. M-948½** }

Above combination consists of: Rough Flush Valve, with inlet to right (or to left) of push button* (see note), rough 1" wheel handle straight shut-off, rough elbow flush connection and spud nut, for 1½" rear spud wall or floor bowl.



MAJESTIC Combination No. M-538
IMPERIAL Combination No. M-638
JEWEL Combination No. M-938

Above combination consists of: Nickel Plated Flush Valve, with inlet opposite metal handle, 1" loose-key straight shut-off, wall flange, elbow flush connection, spud nut and flange, for 1½" side spud wall bowl.

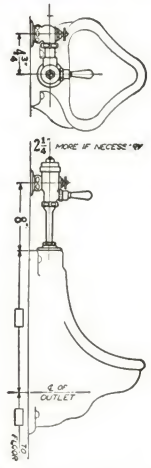
FOR CHROMIUM PLATE—When chromium plate finish is desired, add the letters "CP" to combination number.

VARIATIONS

W	With Bumper for seat with cover	Extra, See Price Sheet
A	With M-22 Twin bar bumper for open front seat less cover	Extra, See Price Sheet
T	With M-16 Long wall bumper for closed front seat with or without cover	Extra, See Price Sheet
R	With 2"x1½" spud reducer	Extra, See Price Sheet
O	Metal handle now standard equipment	No Extra
U	With loose key instead of wheel handle shut-off	No Extra
S	With 1¼" Flush connection instead of 1½"	No Extra

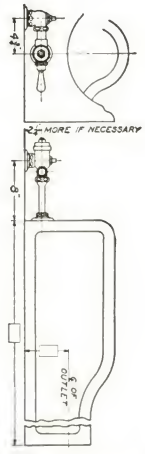
***NOTE**—For Concealed Valves: Be sure and state wall thickness. The measurement from center of inlet to center of handle for MAJESTIC (Diaphragm Type) is $\frac{7}{16}$". On IMPERIAL and JEWEL (Piston Types) it is 1½". All three otherwise are the same. (Detailed print furnished on request.)

Watrous FLUSH VALVE COMBINATIONS



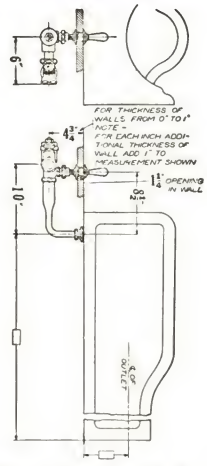
MAJESTIC Combination No. M-542
IMPERIAL Combination No. M-642
JEWEL Combination No. M-942

Above combination consists of: Nickel Plated Flush Valve, with inlet to right of metal handle, ¾" loose-key angle shut-off, wall flange, straight flush connection, spud nut and flange, for ¾" top spud wall hung urinal.



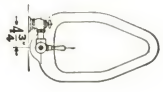
MAJESTIC Combination No. M-549
IMPERIAL Combination No. M-649
JEWEL Combination No. M-949

Above combination consists of: Nickel Plated Flush Valve, with inlet opposite metal handle, ¾" loose-key angle shut-off, wall flange, straight flush connection, spud nut and flange, for ¾" top spud stall urinal.



MAJESTIC Combination { **Left Inlet No. M-541** / **Right Inlet No. M-541½**
IMPERIAL Combination { **Left Inlet No. M-641** / **Right Inlet No. M-641½**
JEWEL Combination { **Left Inlet No. M-941** / **Right Inlet No. M-941½**

Above combination consists of: Rough Flush Valve, with inlet to left (or to right) of metal handle* (see note), rough ¾" wheel handle straight shut-off, elbow flush connection, spud nut, for ¾" rear spud stall urinal.

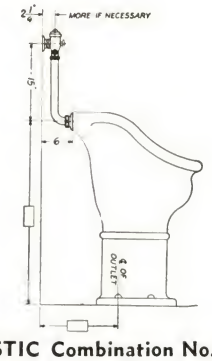




MAJESTIC Combination No. M-543
IMPERIAL Combination No. M-643
JEWEL Combination No. M-943

Above combination consists of: Nickel Plated Flush Valve, with inlet to right of metal handle, 1" loose-key angle shut-off, wall flange, straight flush connection, spud nut and flange, for 1½" top spud pedestal urinal.

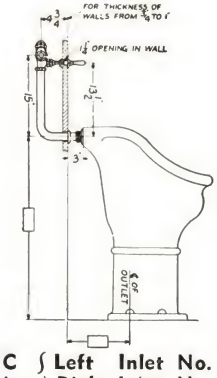




MAJESTIC Combination No. M-559
IMPERIAL Combination No. M-659
JEWEL Combination No. M-959

Above combination consists of: Nickel Plated Flush Valve, with inlet opposite metal handle, 1" loose-key angle shut-off, wall flange, elbow flush connection, spud nut and flange, for 1½" rear spud pedestal urinal.





MAJESTIC Combination { **Left Inlet No. M-560** / **Right Inlet No. M-560½**
IMPERIAL Combination { **Left Inlet No. M-660** / **Right Inlet No. M-660½**
JEWEL Combination { **Left Inlet No. M-960** / **Right Inlet No. M-960½**

Above combination consists of: Rough Flush Valve, with inlet to left (or to right) of metal handle* (see note) rough 1" wheel handle straight shut-off, elbow flush connection, wall flange, spud nut and flange, for 1½" rear spud pedestal urinal.

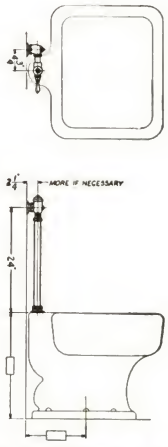
FOR CHROMIUM PLATE—When chromium plate finish is desired, add the letters "CP" to combination number.

VARIATIONS

W	With solid metal push button instead of metal lever handle	No Extra
A	With ½" Shut-off instead of ¾"	No Extra
T	With 1" Flush connection instead of ¾"	No Extra
R	With ½" Flush connection instead of ¾"	No Extra
O	Metal handle now standard equipment	No Extra
U	With loose key instead of wheel handle shut-off	No Extra
S	With 1¼" Flush connection instead of 1½"	No Extra

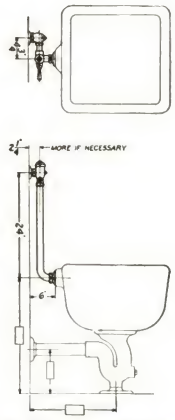
***NOTE**—For Concealed Valves: Be sure and state wall thickness. The measurement from center of inlet to center of handle for MAJESTIC (Diaphragm Type) is $1\frac{7}{16}$". On IMPERIAL and JEWEL (Piston Types) it is 1½". All three otherwise are the same. (Detailed print furnished on request.)

Watrous FLUSH VALVE COMBINATIONS



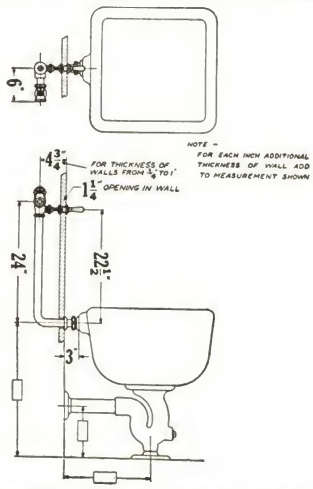
MAJESTIC Combination No. M-555
IMPERIAL Combination No. M-655
JEWEL Combination No. M-955

Above combination consists of: Nickel Plated Flush Valve, with inlet opposite metal handle, 1" loose-key angle shut-off, wall flange, straight flush connection, spud nut and flange, for 1½" top spud slop sink.



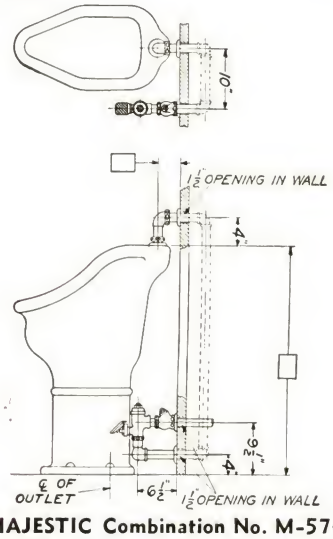
MAJESTIC Combination No. M-558
IMPERIAL Combination No. M-658
JEWEL Combination No. M-958

Above combination consists of: Nickel Plated Flush Valve, with inlet opposite metal handle, 1" loose-key angle shut-off, wall flange, elbow flush connection, spud nut and flange, for 1½" rear spud slop sink.



MAJESTIC Combination { **Left Inlet No. M-545** / **Right Inlet No. M-545½**
IMPERIAL Combination { **Left Inlet No. M-645** / **Right Inlet No. M-645½**
JEWEL Combination { **Left Inlet No. M-945** / **Right Inlet No. M-945½**

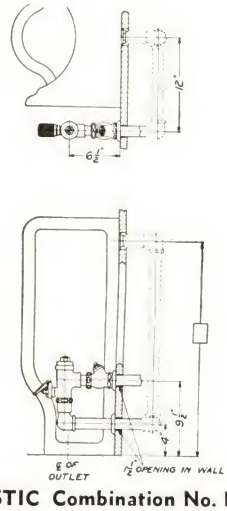
Above combination consists of: Rough Flush Valve, inlet to left (or to right) of metal handle* (see note No. 2), rough 1" wheel handle straight shut-off, elbow flush connection, wall flange, spud nut and flange for 1½" rear spud slop sink.



MAJESTIC Combination No. M-576
IMPERIAL Combination No. M-676

Above combination consists of: Nickel Plated Foot Pedal Flush Valve, with inlet opposite pedal, 1" loose-key straight shut-off, female I.P. union outlet, wall flanges, elbow flush connection from wall to spud, iron pipe casing from valve to wall, spud nut and flange, for 1½" top spud pedestal urinal.

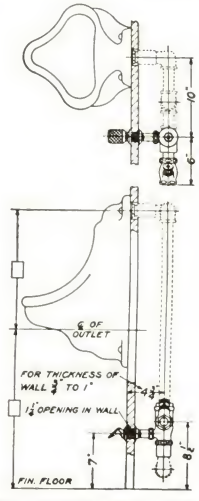
NOTE: *No concealed piping furnished.*



MAJESTIC Combination No. M-577
IMPERIAL Combination No. M-677

Above combination consists of: Nickel Plated Foot Pedal Flush Valve, with inlet opposite pedal, ¾" loose-key straight shut-off, female I.P. union outlet, wall flanges, iron pipe casing from valve to wall, for ¾" rear spud stall urinal.

NOTE: *No concealed piping furnished.*



MAJESTIC Combination No. M-578
IMPERIAL Combination No. M-678

Above combination consists of: Rough Foot Pedal Flush Valve, with inlet to right of pedal (see note No. 2), rough ¾" wheel handle straight (or angle if required) shut-off, female I.P. union outlet, (no flush connection furnished) for ¾" rear spud wall hung urinal.

NOTE: *No concealed piping furnished.*

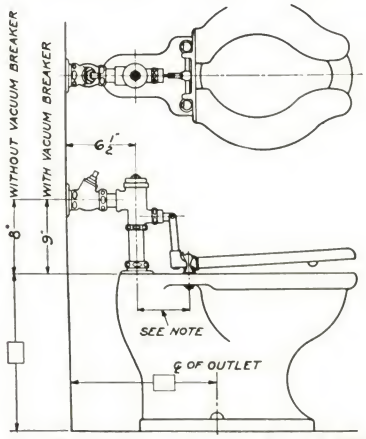
FOR CHROMIUM PLATE—When chromium plate finish is desired, add the letters "CP" to combination number.

VARIATIONS

W	With solid metal push button instead of metal lever handle	No Extra
A	With ½" Shut-off instead of ¾"	No Extra
T	With 1" Flush connection instead of ¾"	No Extra
R	With ½" Flush connection instead of ¾"	No Extra
O	Metal handle now standard equipment	No Extra
U	With loose key instead of wheel handle shut-off	No Extra
S	With 1¼" Flush connection instead of 1½"	No Extra

***NOTE No. 2**—For Concealed Valves: Be sure and state wall thickness. The measurement from center of inlet to center of handle for MAJESTIC (Diaphragm Type) is $\frac{7}{16}$". On IMPERIAL and JEWEL (Piston Types) it is 1½". All three otherwise are the same. (Detailed print furnished on request.)

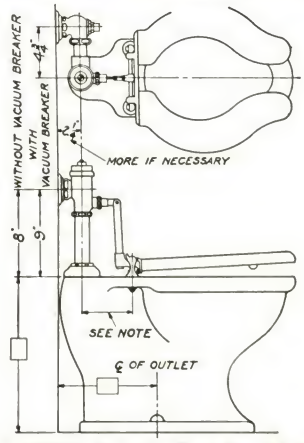
Watrous SEAT ACTION FLUSH VALVE COMBINATIONS



MAJESTIC Combination No. M-581
IMPERIAL Combination No. M-681

Above combination consists of: Nickel Plated Seat Operated Flush Valve, with inlet to rear, 1" loose-key straight shut-off, wall flange, spud nut and flange, straight flush connection for 1½" top spud bowl, adjustable bar check hinge and open front and back composition seat for regular round front bowl.

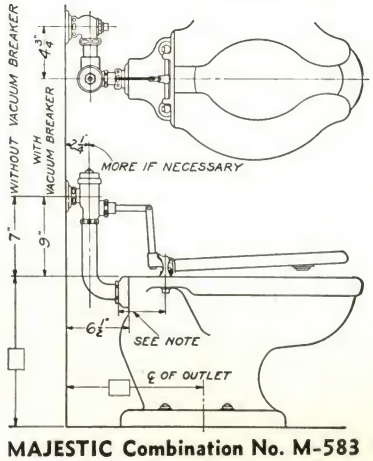
NOTE: *Be sure to specify distance from center of spud to center of post holes.*



MAJESTIC Combination No. M-582
IMPERIAL Combination No. M-682

Above combination consists of: Nickel Plated Seat Operated Flush Valve, with inlet to right, 1" loose-key angle shut-off, wall flange, spud nut and flange, straight flush connection for 1½" top spud bowl, adjustable bar check hinge and open front and back composition seat for regular round front bowl.

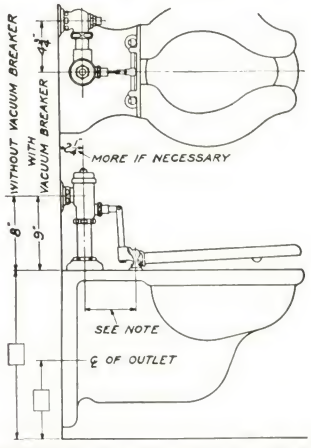
NOTE: *Be sure to specify distance from center of spud to center of post holes.*



MAJESTIC Combination No. M-583
IMPERIAL Combination No. M-683

Above combination consists of: Nickel Plated Seat Operated Flush Valve, with inlet to right, 1" loose-key angle shut-off, wall flange, spud nut and flange, elbow flush connection for 1½" rear spud bowl, adjustable bar check hinge and open front and back composition seat for regular round front bowl.

NOTE: *Be sure to specify distance from face of spud to center of post holes.*

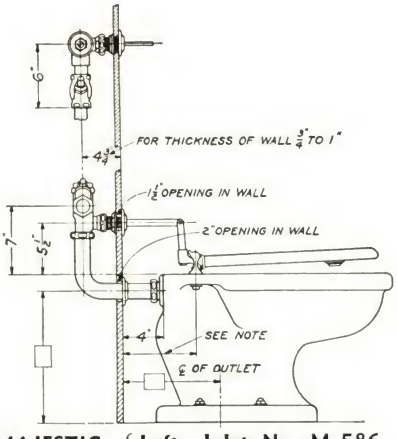


MAJESTIC Combination No. M-587

IMPERIAL Combination No. M-687

Above combination consists of: Nickel Plated Seat Operated Flush Valve, with inlet to right, 1" loose-key angle shut-off, wall flange, spud nut and flange, straight flush connection for 1½" top spud wall bowl, adjustable bar check hinge and open front and back composition seat for regular round front bowl.

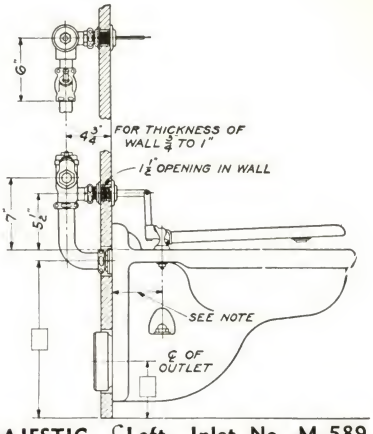
NOTE: *Be sure to specify distance from center of spud to center of post holes.*



MAJESTIC Combination { **Left Inlet No. M-586** / **Right Inlet No. M-586½**
IMPERIAL Combination { **Left Inlet No. M-686** / **Right Inlet No. M-686½**

Above combination consists of: Rough Flush Valve, with inlet to left (or to right), (see note No. 2), rough 1" wheel handle straight shut-off, wall flange, spud nut and flange, elbow flush connection for 1½" rear spud floor bowl, adjustable bar check hinge and open front and back composition seat for regular round front bowl.

NOTE: *Be sure to specify distance from finished wall to center of post holes.*



MAJESTIC Combination { **Left Inlet No. M-589** / **Right Inlet No. M-589½**
IMPERIAL Combination { **Left Inlet No. M-689** / **Right Inlet No. M-689½**

Above combination consists of: Rough Flush Valve, with inlet to left (or to right), (see note No. 2), rough 1" wheel handle straight shut-off, spud nut, elbow flush connection for 1½" rear spud wall bowl, adjustable bar check hinge and open front and back composition seat for regular round front bowl.

NOTE: *Be sure to specify distance from finished wall to center of post holes.*

FOR CHROMIUM PLATE—When chromium plate finish is desired, add the letters "CP" to combination number.

VARIATIONS

W	With open front and back seat for extended lip bowl	No Extra
A	With open front and back seat for elongated bowl	No Extra
T	With open front and closed back seat for regular round bowl	No Extra
R	With 2" x 1½" spud reducer	Extra, See Price Sheet
O	With 2" x 1¼ spud reducer	Extra, See Price Sheet
U	With loose-key instead of wheel handle shut-off	No Extra
S	With 1¼" flush connection instead of 1½"	No Extra

*NOTE No. 2—For Concealed Valves: Be sure and state wall thickness. The measurement from center of inlet to center of handle for MAJESTIC (Diaphragm Type) is $\frac{7}{16}$". On IMPERIAL (Piston Type) it is 1½". Otherwise both are the same. (Detailed print furnished on request.)

IMPERIAL VACUUM BREAKER

Provides Positive Protection Against Back-Syphonage



Imperial M-1111 Vacuum Breaker



The above illustration shows the Imperial M-1111 Vacuum Breaker installed with the Watrous Imperial Flush Valve. This vacuum breaker is equally adaptable for installation with the Watrous Majestic and Watrous Jewel Flush Valves, as well as all other makes of flush valves—on old or new installations.

The Imperial Vacuum Breaker, illustrated at left, incorporates features which makes it outstanding in prevention of back-syphonage. These features include:

FULL AREA

The Imperial Vacuum Breaker provides a full 1 in. atmospheric opening into the flush connection between the flush valve and the fixture, definitely preventing the forming of any vacuum, the cause of back-syphonage.

DEPENDABLE

Construction throughout of the highest grade materials, brass and bronze, with vital parts of monel metal, makes vacuum breaker immune to corrosion or sticking and assures operation each time the valve is actuated. Atmospheric openings are specially protected against stoppage or malicious tampering.

SILENT

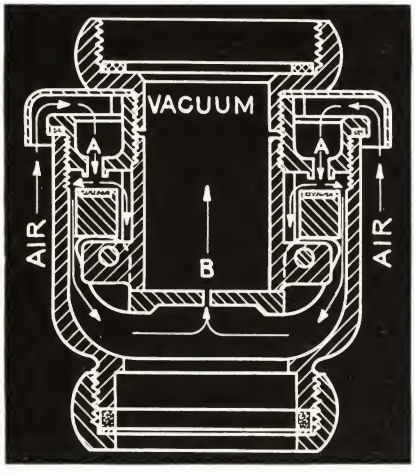
The atmospheric openings are closed each time the valve flushes, thus assuring against any leakage or spitting and eliminating all objectionable water and air noises.

UNRESTRICTED

With a large, full opening, the Imperial Vacuum Breaker assures unrestricted flow of water when the valve is flushing, providing a full volume of water to the fixture even under low water pressure conditions.

PLEASING DESIGN

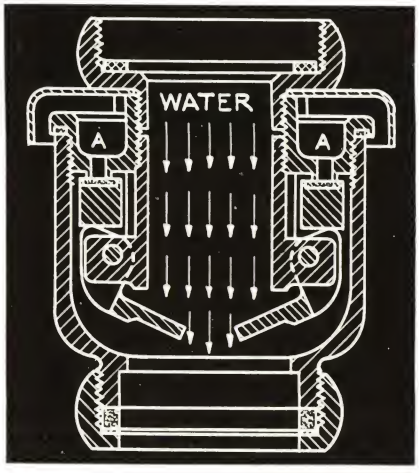
The Imperial Vacuum Breaker, attached to the outlet of the flush valve, forms a compact and symmetrical design eliminating the usual protrusions or bulges of the average type of vacuum breaker and harmonizing with the combination as a whole.



The sectional views to the left and right show the operation of the Imperial M-1111 Vacuum Breaker.

The illustration to the left shows it in the protective position, with the flush valve closed, allowing free entry of the air through the atmospheric openings.

The illustration to the right shows it in the operating or flushing position, with the atmospheric openings closed and water flowing through to the fixture.



Watrous CLOSET SEAT BUMPERS

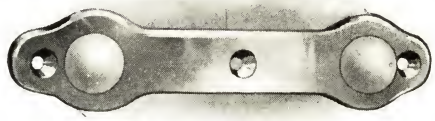
Furnished in Nickel Plated or Chromium Plated Finish



No. M-13 Seat Bumper
For attaching to top of MAJESTIC Flush Valve.



No. M-15 Seat Bumper (Short)
Length 1¼". Toggle Bolt can be furnished instead of Wood Screw at slight additional cost.



No. M-22 Twin Bar Bumper
Center to center of bumpers, 5¼".



No. M-243 Seat Bumper
For attaching to top of IMPERIAL and JEWEL Flush Valves.



No. M-38 Seat Bumper
For attaching to Angle Shut-off. Hole in rubber permits use of Loose Key without removing bumper.



No. M-16 Seat Bumper (Long)
Length, 4". Toggle Bolt can be furnished instead of Wood Screw at slight additional cost.

SYPHON PREVENTING SHUT-OFFS

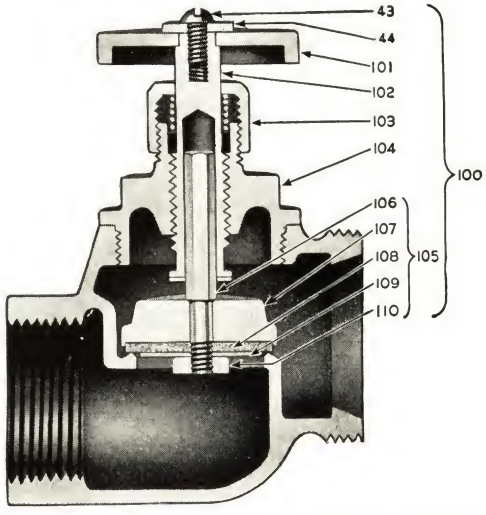
For Majestic, Imperial and Jewel Flush Valves

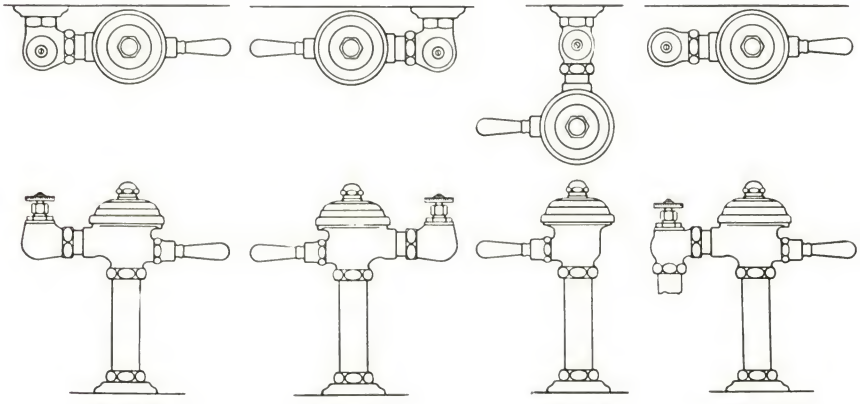
These Shut-offs are so arranged that they remain in a closed position at all times except when the flush valve is operating. If a vacuum occurs in the supply line the Shut-off does not permit water to be drawn through the valve from the bowl or other fixture and remains in a closed position until pressure is restored in the line and the flush valve is operated again.

Special care should be taken in ordering the correct angle type Shut-offs, as the three different types are not interchangeable. From the illustrations at the bottom of the page it can be noted that the three angle types are for installation as follows: M-616 for installation where supply is to left of flush valve; M-617 for installation where supply is to right of flush valve; M-619 for installation where supply is from floor. The straight type is installed in the regular way.

Care should also be taken when installing this type of Shut-off so that the operating mechanism is in an upright position to assure proper operation of unit.

They are furnished in the following variations: 1" Iron Pipe Size Inlet; Rough, Nickel Plate or Chromium Plate Finish; Wheel Handle or Loose Key.





M-616 Left Inlet — **M-617 Right Inlet** — **M-618 Straight** — **M-619 Floor Supply**

Repair part numbers for M-616, M-617, M-618 and M-619 Watrous Syphon Preventor Shut-Off Valves.

No.	Description	List
43	Handle Screw	$0.04
44	Brass Handle Washer	.04
100	Shut-Off Stem Assembly Complete	2.40
101	Wheel Handle	.20
102	Shut-Off Stem Only	.40
103	Packing Nut	.18
104	Bonnet	.50
105	Seat Assembly	.52
106	Stem	.20
107	Weight	.20
108	Seat Washer	.04
109	Brass Washer	.04
110	Nut	.04

THE IMPERIAL BRASS MFG. CO.

1200 W. Harrison Street
CHICAGO, ILLINOIS

●

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CLEVELAND, OHIO—Alfred W. Avery, 1200 W. Ninth St., Room 204
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SALT LAKE CITY, UTAH—Rex W. Williams, 409 Dooly Bldg.
SAN FRANCISCO, CALIF.—Eric Roberts, 320 Market St.
WASHINGTON, D. C.—R. H. Stacy, 1673 Columbia Rd., N. W.

SLOAN
FLUSH VALVES

CATALOG 39

SLOAN VALVE COMPANY
CHICAGO, ILL., U.S.A.

THE ROYAL FLUSH VALVE



The *improved* ROYAL Flush Valve is the outstanding diaphragm flush valve, as it includes every feature that has made ROYAL Valves famous for a third of a century, plus the added simplicity of Segment Diaphragms.

The *improved* ROYAL is operated by a slight movement of the handle in any direction, which causes a complete flush and refill to suit any fixture, regardless of whether the handle is held or released.

The *improved* ROYAL has a large, free waterway and operates efficiently at all pressures between 5 and 100 pounds on plumbing fixtures of any manufacture. However, wall hung and blow-out closets usually require 10 to 15 lbs. or more. (See Flush Valve Piping Data.)

The *improved* ROYAL has a metal segment diaphragm which automatically compensates for wear due to hard use or abuse.

The *improved* ROYAL by-pass is of Monel Metal and is built into the Segment Diaphragm, eliminating dowel pins, by-pass tube and by-pass channel in the cover of the valve.

The *improved* ROYAL is furnished with or without vacuum breaker, as ordered. (Shown above with vacuum breaker.)

ROYAL *Quiet-Flush* VALVE

Quiet-Flush Equipment, the Sloan silencing unit that eliminates flush valve noises completely, is furnished with ROYAL Flush Valves, at slight additional cost, when so ordered. *Quiet-Flush* Equipment may also be applied simply and easily to ROYAL Flush Valves already installed.

THE STAR FLUSH VALVE



The STAR is the world's largest selling flush valve and is the outstanding piston type valve for buildings. It has exactly the same interior construction as the NAVAL for ships, which handles the sand and silt of rivers and harbors.

The STAR has a handy screw that easily adjusts the flush to suit the fixture without shutting off the water or disturbing the by-pass. This adjustment controls the main opening through the flush valve and will stay put—whereas a by-pass is difficult to adjust and will not stay put.

The STAR has the exclusive Sloan Xpelor, which prevents clogging, as it expels anything in the by-pass just before the start of each flush. These, and other vital parts, are of Monel Metal, which resists wear and corrosion.

The STAR has the exclusive Sloan valve seat, which is renewable without special tools or grinding.

The STAR has a stable piston which insures dependable operation and the exclusive Sloan anti-friction double cups which prevent scored cylinders and by-passing.

The STAR is furnished with or without vacuum breaker, as ordered. (Shown above with vacuum breaker.)

STAR *Quiet-Flush* VALVE

Quiet-Flush Equipment, the Sloan silencing unit that eliminates flush valve noises completely, is furnished with STAR Flush Valves, at slight additional cost, when so ordered. *Quiet-Flush* Equipment may also be applied simply and easily to STAR Flush Valves already installed.

CROWN AND NAVAL FLUSH VALVES



The CROWN is an outstanding flush valve for buildings of every type, as it is exactly the same in construction as the STAR, the world's largest selling flush valve, except that it has a cast, one-piece cover and a different appearance.



The NAVAL is a flush valve of supreme quality that meets the acid test of sea duty or severe water conditions anywhere, as it handles the bad water in rivers, harbors and the ocean, and withstands the action of corrosive water.

The CROWN has handy screw driver adjustment of the flush to suit the fixture without shutting off the water or disturbing the by-pass. It has the exclusive Sloan Xpelor and vital parts of Monel Metal.

The CROWN has the exclusive Sloan valve seat, which is renewable without special tools or grinding. It has a stable piston and the exclusive Sloan anti-friction double cups.

The NAVAL is exactly the same as the STAR and CROWN except that the NAVAL is cast from special salt-water alloys and contains more Monel Metal parts. Combining all the features of the STAR and CROWN plus corrosion resisting ability, it represents the highest quality available today.

The CROWN and NAVAL are furnished with or without vacuum breaker. (Shown above with vacuum breaker.)

CROWN and NAVAL *Quiet-Flush* VALVES

Quiet-Flush Equipment, the Sloan silencing unit that eliminates flush valve noises completely, is furnished with CROWN and NAVAL Flush Valves, at slight additional cost, when so ordered. *Quiet-Flush* Equipment may also be applied simply and easily to CROWN and NAVAL Flush Valves already installed.

SEAT-OPERATED FLUSH VALVES



Sloan Seat-Operated Royal, Star or Crown Flush Valves give unfailing assurance of flushed fixtures in public washrooms.

In elementary schools, comfort stations, public washrooms, or wherever there is a possibility of fixtures being left unflushed, Sloan Seat-Operated Flush Valves provide a positive means of maintaining cleanliness. The seat-operating mechanism used with Sloan Valves is rugged and durable and has stood the test of a score of years in thousands of installations throughout the world. The widespread use of this type of equipment today is the result of the record of dependability established by Sloan.

Sloan Seat-Operated Flush Valves are furnished either exposed or concealed for top or back spud bowls and are regularly supplied with ebony composition open front and back seats. At a slight additional cost they may be had with *Quiet-Flush* Equipment, the Sloan silencing unit that eliminates flush valve noises completely.

Sloan Seat-Operated Flush Valves are furnished with or without vacuum breaker, as ordered. (Those illustrated are with vacuum breaker.)



Star Seat-Operated Flush Valve



Royal Seat-Operated Flush Valve



Crown Seat-Operated Flush Valve

SLOAN FLOOR VALVES



Sloan Floor Valves have a Solid Nickel Silver floor plate and push button. These are highly polished, extra heavy castings that will withstand wear and abuse. Floor plates are set flush with the floor and have 1/4 in. adjustment to accommodate variations. They are circular, but will be furnished square when so ordered.



1¼ IN. AND 1 IN. SLOAN FLOOR VALVES

The 1¼ in. and 1 in. Sloan Floor Valves have a handy screw that easily adjusts the flush to suit the fixture without shutting off the water. This adjustment controls the main opening through the flush valve and will stay put. These valves have the exclusive Sloan Xpelor, which prevents clogging, as it expels anything in the by-pass just before the start of each flush. These and other vital parts are of Monel Metal, which resists wear and corrosion.

The 1¼ in. Floor Valve is for fixtures that require a large flush, such as water closets.

The 1 in. Floor Valve is for fixtures that require a medium flush, such as urinals.

The working parts of all Sloan Floor Valves are easily removed for inspection. Each valve is furnished with a construction floor plate to protect the valve during building operations.



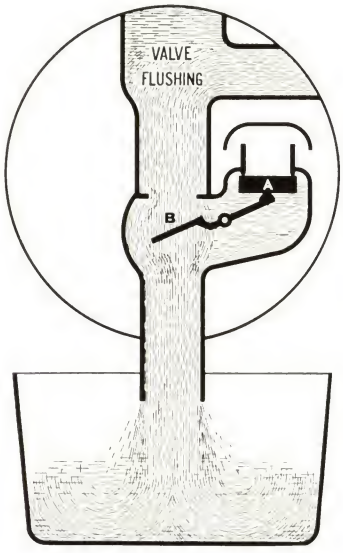
½ IN. SLOAN FLOOR VALVE

The ½ in. Floor Valve, for lavatories supplied with tempered water through a goose-neck spray, saves water and time, improves sanitary conditions and eliminates faucets and waste plugs.

The ½ in. Floor Valve for showers, supplied with tempered water, saves water and time, eliminates individual mixing valves and danger of extreme temperatures.



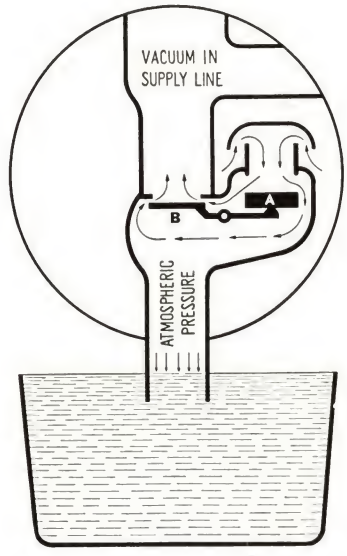
SLOAN VACUUM BREAKER



←——During Flush
Air Valve "A" closed by flow of water on Disc "B".

At All Other Times——→
Air Valve "A" open to atmosphere with full 1-inch area which breaks vacuum and prevents water from rising in flush pipe.

Heavy disc "A" and light disc "B" are on opposite ends of a lever pivoted on a Monel Metal bearing. Thus Air Valve "A" is always open to the atmosphere, except when closed by a flow of water on Disc "B".



The SLOAN Vacuum Breaker has a full 1-inch opening from the atmosphere into the flush connection to the fixture and, although a large volume of air is admitted, the operation is quiet and free from air noises. The opening to the atmosphere is well protected and could not easily be stopped up, even with malicious intent.

The SLOAN Vacuum Breaker cannot corrode or stick, as it has a Monel Metal bearing and parts of Composition M, an alloy used by the U. S. Navy to withstand the action of salt water. The waterway through the vacuum breaker is much larger than through any flush valve; consequently there is no restriction of the flow to the fixture, even though the pressure be low.

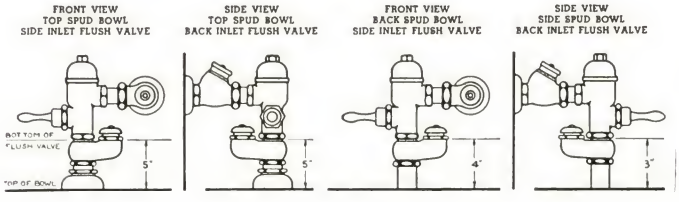
The SLOAN Vacuum Breaker is guaranteed to make ANY flush valve on ANY closet bowl syphon proof, when properly installed above the spill line of the fixture.

The SLOAN Vacuum Breaker is approved for use in every locality in the United States where a preventive of back-syphonage is required. It can be furnished with all SLOAN Flush Valves as illustrated herewith and on the preceding pages. The SLOAN Vacuum Breaker is easily applied to old installations as well as new, and may be used with any make of flush valve. It is regularly furnished with union coupling suitable for most of the flush valves on the market, but will be furnished with special coupling for any valve at no extra charge, on receipt of sample coupling.

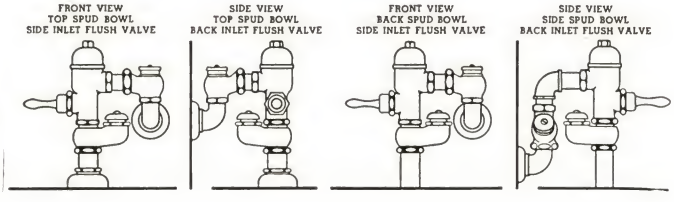


The Sloan V-60-A Vacuum Breaker eliminates all possibility of back-syphonage.

Minimum Requirements for the Installation of V-60-A SLOAN Vacuum Breakers on New or Old Flush Valves



Suggested Manner of Raising Old Flush Valves to Install V-60-A Vacuum Breaker



FLUSH VALVE PIPING DATA

On large, complicated installations the Engineering Department of the SLOAN VALVE COMPANY is always accessible, through the local representative, for consultation and recommendations.

For the average installation pipe sizes may be calculated from the tables and data which follow. To illustrate the method of procedure, the following typical example is calculated from the diagram and tables, using the arbitrary assumptions given below:

(1) The building is an apartment house in which the highest valve is 28 feet above the street water main.

(2) The water pressure in the street main is a minimum of 50 lbs. per square inch.

(3) The size of the tap on the water main is 1 inch.

(4) Neither water meter nor water filter are connected in the water supply line.

NOTE: *Both meters and filters reduce the water pressure. See data which follows adjacent to Table 6.*

(5) The water closets are syphon jet type requiring a minimum of 5 lbs. water pressure at the flush valve. (See Table 3.)

On the diagram below the water supply system is divided into four sections—A, B, C, and D. It will be noted that there are a total of ten flush valves installed. Section A piping must be of sufficient size to provide water pressure for all 10 valves; Section B, 8 valves; Section C, 3 valves; and Section D, 2 valves.

To determine the pipe sizes for Section A, B, C, and D, the essential data should be assembled on a form similar to the one illustrated on the opposite page. For Section A follow this procedure:

(a) There are a total of 10 flush valves served by Section A. Enter this in Column 2.

(b) Referring to Table 1, Column 1 (Apartment Buildings), 10 valves require 60 gallons of water per minute. On account of the laundry supply taken from this section, we arbitrarily increase the requirement to 70 gallons and enter this in Column 3.

(c) In Column 4 we arbitrarily enter 1½ in. as a trial size of pipe until this is finally proven correct, or must be increased or decreased to balance the line.

(d) A 1½ in. pipe carrying 70 gallons of water per minute causes a pressure drop of 20 lbs. per square inch per 100 ft. (See Table 4). Enter this in Column 5.

(e) From the diagram the length of Section A from the street main to the point where the first 2 valves are taken off is 58 ft. To compensate for the resistance of fittings (see table 2), this is increased to 65 feet and entered in Column 6.

(f) From the date entered, the pressure drop can now be calculated and entered in Column 7, as follows:

65 ft. of 1½ in. pipe at 20 lbs. drop per 100 ft. is 13 lbs. per sq. in. (.65x20=13).

(g) The pressure drop for Sections B, C, and D are calculated in the same manner as in (a) to (f) for Section A.

To complete the data, the following must now be inserted at the top of Column 7 of the Calculations Form:

(h) Insert the tap pressure loss at the top of Column 7. The tap size is 1 in. By referring to Table 5, it will be found that the loss of pressure for a flow of 70 gallons per minute is 8.8 lbs. per sq. in. (See Section A data, Column 3.)

(i) The required pressure at the flush valve while flushing for a syphon jet closet is 5 lbs. per sq. in. (See Table 3.)

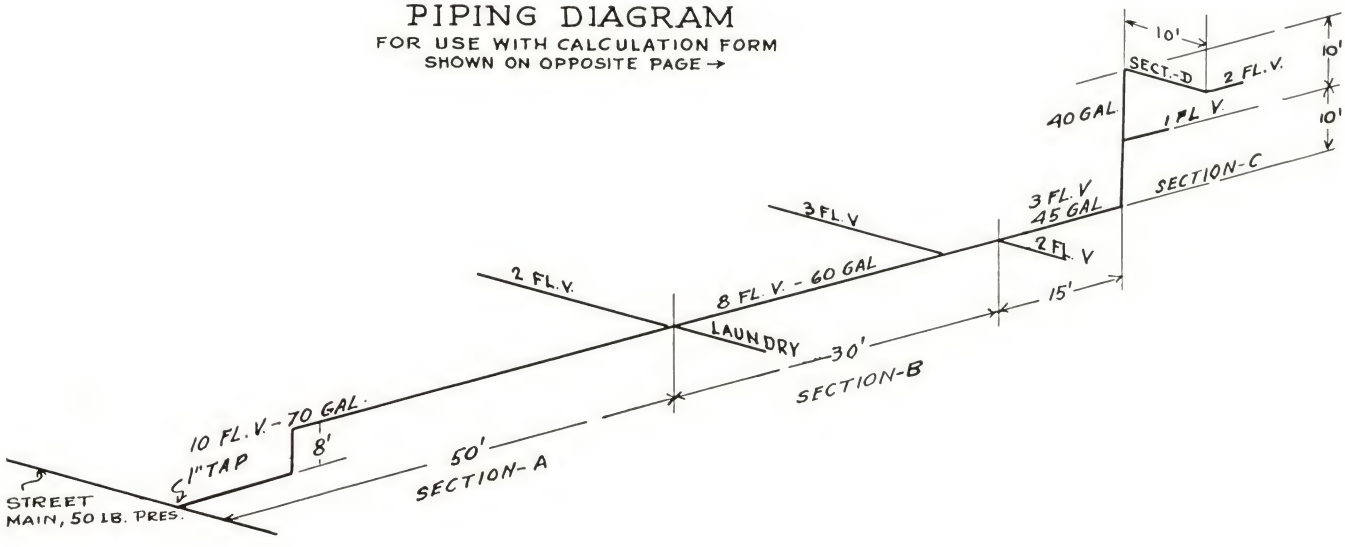
(j) The elevation of the highest flush valve above the level of the street main is 28 feet (see Piping Plan). This entails a static loss of 12.1 lbs. per sq. in. (The static loss per foot of elevation equals .433 lbs. per sq. in. regardless of the size of the pipe.)

(k) The total of all the items in Column 7 is 49.9 lbs. per sq. in. The minimum pressure available in the street main is 50 lbs. per sq. in., and since this is not exceeded the piping sizes calculated are adequate.

The solution given on the Form was obtained upon the second trial. At the first trial Section C was made 1¼ in. This arrangement made the total required pressure in excess of the available pressure of 50 lbs. It should be stated here that the close correspondence found above is somewhat unusual and not at all necessary. On the other hand, while adequate sizes are essential, it is not necessary or advisable to install piping much larger than is actually required.

PIPING DIAGRAM

FOR USE WITH CALCULATION FORM SHOWN ON OPPOSITE PAGE →



FLUSH VALVE PIPING DATA

FORM FOR CALCULATING SIZES

All Items Exclusive of Piping				Column 7
Tap	Size	1 inch	Loss	8.8
Water Meter	Type	No Meter	Loss	....
Filter		No Filter	Loss	....
Closet Bowl	Type	Syphon Jet Required Pressure at Flush Valve while flushing		5.
Elevation of highest Flush Valve above Street Main 28 ft. at .433 lb. Loss				12.1

Piping

Column 1	Column 2	Column 3	Column 4	Column 5	Column 6	Loss of Pressure due to Pipe, Fittings and Other Items in lb. per sq. in.
Section of Piping	Number of Flush Valves Supplied by Section	Gallons per Minute Delivered by Section	Size of Pipe and Fittings in Section	Friction Loss per 100 ft. in Section	Length in Feet of Pipe and Fittings in Section	
A	10	70	1½	20.	65	13.0
B	8	60	1½	14.	35	4.9
C	3	45	1½	8.26	30	2.5
D	2	40	1¼	14.2	25	3.6

Total Required Pressure at Main found by adding all Items in Column 7..... 49.9
Minimum Available Pressure at Main—50.0 lb. per square inch.

TABLE NO. 1—REQUIRED RATE OF FLOW IN GAL. PER MIN. FOR FLUSH VALVES

Total Number of Valves on Line	1 Apartment Buildings	2 Hotels—Guest Rooms with Tubs	3 Office Buildings Hotels—Guests Rooms with Shower Bath	4 Residences	5 City Halls County and State Buildings	6 Industrial Plants Clubs, Y.M.C.A.'s Hotels—Public Rooms Hospitals Restaurants	7 Gymnasiums University Buildings Railroad Stations Public Baths Public Comfort Stations Stadiums, Ball Parks Theatres, Dance Halls	8 Public Schools Hand Operated Flush Valves	9 Public Schools Seat Operated Flush Valves
1	35	35	40	35	35	35	35	35	35
2	40	40	45	40	40	40	50	50	60
3	45	45	50	40	40	50	60	60	80
4	45	45	50	50	50	60	60	70	90
5	50	50	55	60	60	70	70	80	100
6	50	50	60	60	60	70	80	90	120
7	50	50	60	70	70	80	90	100	140
8	60	60	70	70	70	90	100	120	150
9	60	60	70	80	80	100	120	150	160
10	60	60	70	80	80	100	120	150	180
11	70	70	80	90	90	110	120	180	200
12	70	70	80	90	90	120	140	180	200
14	70	70	90		100	120	150	200	200
16	70	70	90		100	140	160	200	225
18	70	70	90		120	140	180	225	250
20	80	80	100		120	150	180	225	275
22	80	80	100		120	160	180	225	275
24	80	80	100		120	160	200	250	300

TABLE NO. 2—FITTINGS AND VALVES—EQUIVALENT LENGTH OR FEET OF PIPE GIVING SAME LOSS IN FRICTION

PART	90 Deg. Elbow	45 Deg. Elbow	Tee-Side Outlet	Gate Valve
Size of Pipe	Equivalent Length in Feet of Pipe			
1″	3	1.5	6	1.5
1¼″	3	1.5	6	1.5
1½″	3.5	1.8	7	1.8
2″	5	2.5	10	2.5
2½″	6	3.	12	3.
3″	7	3.5	14	3.5
3½″	8	4.	16	4.
4″	10	5.	20	5.

TABLE NO. 3—REQUIRED PRESSURE AT FLUSH VALVE

Type of Closet Bowl	Required Pressure at Inlet to Flush Valve while Flushing
	Floor Outlet Bowls
Washdown	5 lb. sq. in.
Syphon Jet	5 lb. sq. in.
Reverse Trap	5 lb. sq. in.
Reverse Trap with Jet	5 lb. sq. in.
Blowout	10 lb. sq. in.
Duo-Jet	10 lb. sq. in.
	Wall-Hung Bowls
Syphon Jet	15 lb. sq. in.
Blowout	20 lb. sq. in.

FLUSH VALVE PIPING DATA

TABLE NO. 4—PRESSURE LOSS OF WATER IN POUNDS PER SQUARE INCH PER 100 FEET OF CLEAN IRON PIPE

Gal. per min.	Size of Pipe								
	¾″	1″	1¼″	1½″	2″	2½″	3″	3½″	4″
10	13.0	3.16	1.10	0.47	0.12	0.04			
20	50.4	12.3	3.75	1.66	0.42	0.14	0.06		
30	110.	27.5	7.70	3.75	0.91	0.30	0.13	0.06	
35		37.8	11.0	5.14	1.26	0.42	0.18	0.09	
40		48.0	14.2	6.52	1.60	0.53	0.23	0.11	0.06
45		61.5	18.1	8.26	2.02	0.67	0.29	0.14	0.08
50		75.0	22.0	10.0	2.44	0.81	0.35	0.17	0.09
55		92.5	26.7	12.0	2.97	0.99	0.43	0.21	0.11
60		110.	31.3	14.0	3.50	1.17	0.50	0.24	0.13
70			42.3	20.0	4.80	1.50	0.68	0.38	0.19
80			55.0	25.0	6.30	2.00	0.88	0.41	0.23
90			69.4	31.5	7.85	2.59	1.06	0.52	0.28
100			85.0	39.0	9.46	3.20	1.31	0.64	0.33
120				56.0	13.8	4.55	1.85	0.90	0.46
140				80.0	18.7	6.16	2.51	1.19	0.61
150				88.0	21.1	7.03	2.86	1.36	0.70
160				100.	24.0	7.98	3.25	1.54	0.79
180					30.0	10.1	4.08	1.93	0.99
200					37.5	12.5	5.02	2.38	1.22
225					47.5	16.1	6.39	3.04	1.55
250					58.5	19.7	7.76	3.70	1.89
275					71.0	23.9	9.48	4.37	2.27
300					85.1	28.1	11.2	5.04	2.66

TABLE NO. 6—LOSS OF PRESSURE THROUGH VARIOUS SIZE METERS LB. PER SQUARE INCH

Gals. per min.	Size of Meter									
	1″		1½″		2″		3″		4″	
	Low	High	Low	High	Low	High	Low	High	Low	High
30	4.4	7.0								
40	7.8	13.0								
50	13.0	20.0	1.1	7.6	.53	4.0				
60	18.0	29.0	1.5	11.0	.76	6.0				
70	24.0		2.1	15.0	1.1	8.0				
80			2.8	22.0	1.4	13.2	.5	2.0		
90			3.5	25.0	1.75	13.2	.63	2.4		
100			4.25		2.2	16.5	.7	3.0	.25	.7
120			6.1		3.2	24.0	.9	4.25		
140			8.4		4.3		1.4	6.0		
150			9.6		5.0		1.5	6.5	.6	2.5
160			11.0		6.0		1.7	7.25		
180			14.0		7.2		2.2	9.25		
200			17.0		9.0		2.75	11.75	1.1	4.4
225					11.2		3.5	15.0		
250					14.0		4.3	18.4	1.6	6.7
275					17.0		5.2	22.0		
300					20.0		6.2	26.5	2.4	10.0

This table gives losses of pressure for the lowest resisting meter and for the highest resisting meter of each size for which figures are at hand.

Tables of resistances for any particular meter can usually be obtained from the manufacturers.

The pressure drop through a meter should never exceed 20 lbs. and it is advisable to keep it well below this amount.

TABLE NO. 5—OUTLETS FROM MAIN—LOSS OF PRESSURE THROUGH TAPS AND TEES, LB. SQ. IN. SIZE OF TAP OR SIDE OUTLET

Gal. per min.	⅝″	¾″	1″	1¼″	1½″	2″	3″
10	1.35	0.64	0.18	0.08			
20	5.38	2.54	0.77	0.31	0.14		
30	12.1	5.72	1.62	0.69	0.33	0.10	
40	21.5	10.2	3.07	1.23	0.58	0.18	
50	33.6	15.9	4.49	1.92	0.91	0.28	
60	48.4	22.9	6.46	2.76	1.31	0.40	
70	65.9	31.1	8.79	3.76	1.78	0.55	0.10
80	86.1	40.7	11.5	4.90	2.32	0.72	0.13
90		51.4	14.5	6.21	2.94	0.91	0.16
100		63.5	17.94	7.67	3.63	1.12	0.21
120		91.4	25.8	11.0	5.23	1.61	0.30
140			35.2	15.0	7.12	2.20	0.41
150			40.4	17.2	8.16	2.52	0.47
160			45.9	19.6	9.30	2.92	0.54
180			58.1	24.8	11.8	3.62	0.68
200			71.8	30.7	14.5	4.48	0.84
225				38.8	18.4	5.67	1.06
250				47.9	22.7	7.00	1.31
275				58.0	27.4	7.70	1.59
300				69.0	32.6	10.1	1.88

NOTES RELATING TO TABLES

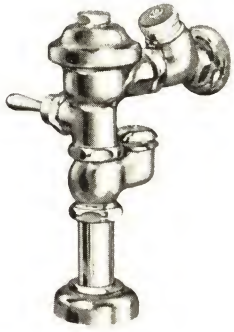
Quantities given in Table No. 1 on the preceding page will ordinarily prove adequate for the fixtures usually installed in connection with Sloan Flush Valves, but they do not provide for the large demands of special apparatus such as shower baths, laundry machinery and the like. Liberal increases should be made whenever such demands exist. On the other hand, it may be permissible occasionally to reduce the quantities somewhat, especially in those groups for which the larger demands are provided for.

Fittings cause a considerable amount of resistance. When it is necessary to work closely, the values given in Table 2 may be used. Usually the rougher method employed in the example worked above is satisfactory.

Water meters are somewhat of a problem owing to the great variation of resistance offered by them to the flow of water. It is always best, when possible, to get information from the maker of the meter which is to be used. Average of the "Low" and "High" values given in Table 6 is usually sufficiently accurate for rough estimates.

If a filter is used on direct supply, 5 lbs. should be entered in Column 7. Manufacturers of filters usually give this as the limit drop since channeling of the filter bed, with resulting unsatisfactory operation, occurs when the drop through the filter exceeds this amount.

PRINCIPAL TYPES OF SLOAN FLUSH VALVES



100

S-100 SERIES

The S-100 Series is for top spud bowls with straight stop ROYAL, STAR, CROWN or NAVAL Flush Valves. Furnished with or without Vacuum Breaker, as ordered.



110

S-110 SERIES

The S-100 Series is for top spud bowls with angle stop ROYAL, STAR, CROWN or NAVAL Flush Valves. The stop may be right or left hand, as desired, by reversing the valve. Furnished with or without Vacuum Breaker, as ordered.



120

S-120 SERIES

The S-120 Series is for back spud bowls with angle stop ROYAL, STAR, CROWN or NAVAL Flush Valves. Furnished with or without Vacuum Breaker, as ordered.



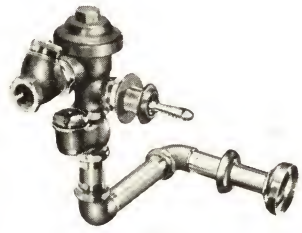
130

S-130 SERIES

The S-130 Series is for side spud bowls with straight stop ROYAL, STAR, CROWN or NAVAL Flush Valves. Furnished with or without Vacuum Breaker, as ordered.

S-140 SERIES

The S-140 Series is for back or top spud bowls with concealed ROYAL, STAR, CROWN or NAVAL Flush Valves. Finished with or without Vacuum Breaker, as ordered.



140

S-150 SERIES

The S-150 Series is for prison type fixtures with concealed ROYAL, STAR, CROWN or NAVAL Flush Valves. Furnished with or without Vacuum Breaker, as ordered.

S-160 SERIES

The S-160 Series is for back or top spud bowls with seat-operated, exposed Flush Valves. See page on Seat-Operated Flush Valves.



152

S-170 SERIES

The S-170 Series is for back or top spud bowls with seat-operated, concealed Flush Valves.

S-180 SERIES

The S-180 Series is for all types of urinals with exposed, hand-operated ROYAL, STAR, CROWN or NAVAL Flush Valves.

S-190 SERIES

The S-190 Series is for all types of urinals with concealed, hand-operated Flush Valves.



185

S-200 SERIES

The S-200 Series is for all fixtures operated by SLOAN Floor Valves. See page on SLOAN Floor Valves.

S-300 SERIES

The S-300 Series is for all fixtures where a pedal-operated ROYAL Flush Valve is desired.



300

SLOAN VALVE COMPANY

MAIN OFFICE AND FACTORY, CHICAGO, ILL., U. S. A.

BRANCHES

Albany, New York
Atlanta, Georgia
Baltimore, Maryland
Boston, Massachusetts
Buffalo, New York
Butte, Montana
Chicago, Illinois
Cincinnati, Ohio
Cleveland, Ohio
Dallas, Texas
Denver, Colorado
Des Moines, Iowa
Detroit, Michigan
El Paso, Texas
Grand Rapids, Michigan
Hartford, Connecticut
Houston, Texas
Indianapolis, Indiana
Kansas City, Kansas
Little Rock, Arkansas
Los Angeles, California
Memphis, Tennessee
Miami, Florida
Milwaukee, Wisconsin
Minneapolis, Minnesota
Nashville, Tennessee
Newark, New Jersey
New Orleans, Louisiana
New York, New York
Oklahoma City, Oklahoma
Philadelphia, Pennsylvania
Phoenix, Arizona
Pittsburgh, Pennsylvania
Richmond, Virginia
Salt Lake City, Utah
San Francisco, California
Seattle, Washington
St. Louis, Missouri
Syracuse, New York
Tuscaloosa, Alabama
Washington, D. C.

FOREIGN

Athens, Greece
Auckland, New Zealand
Bangkok, Siam
Barcelona, Spain
Beyrouth, Syria
Bogota, Colombia
Bombay, India
Brussels, Belgium
Bucharest, Rumania
Buenos Aires, Argentina
Caracas, Venezuela
Copenhagen, Denmark
Dairen, Manchukuo
Geneva, Switzerland
Guatemala City, Guatemala
Guayaquil, Ecuador
Hamilton, Bermuda
Havana, Cuba
Helsingfors, Finland
Hongkong, China
Honolulu, Hawaii
Istanbul, Turkey
Jerusalem, Palestine
Johannesburg, South Africa
Lisboa, Portugal
London, England
Manila, Philippine Islands
Mexico City, Mexico
Milan, Italy
Montevideo, Uruguay
Nairobi, East Africa
Nassau, Bahama Islands
Osaka, Japan
Oslo, Norway
Panama City, Panama
Paris, France
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Santiago, Chile
Shanghai, China
Stockholm, Sweden
Suva, Fiji Islands
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MUELLER, LTD., SARNIA, ONTARIO

Licensed Manufacturers and Distributors for Canada

KOKOMO SANITARY POTTERY CORP.

Manufacturers of Vitreous China Plumbing Fixtures

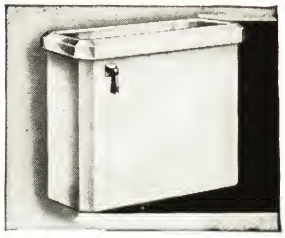
HOME OFFICE AND FACTORY
KOKOMO, INDIANA



Wash Down Bowl

KOKOMO PLUMBING FIXTURES ARE MANUFACTURED BY THE MOST MODERN SUPER-FIRED PROCESS

Complete specifications and descriptive literature on the Kokomo line of fine vitreous china plumbing fixtures will be supplied upon request.



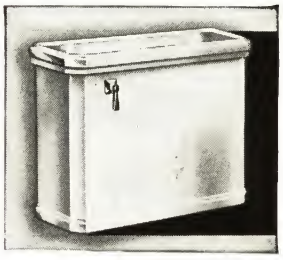
No. 230



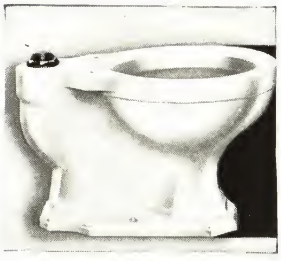
Reverse Trap Bowl

Where to Buy

If you will write to our home office and factory at Kokomo, Ind., we will supply names of nearest wholesale jobbers who stock our line and who can furnish prices and further data.



No. 231



Syphon Jet Bowl



Syphon Jet Combination



No. 200



No. 350W



Wash Down Combination | Paul Revere | Mt. Vernon | Washington Unit Closet | Reverse Trap Combination



No. 400 | No. 400L | No. 350L | No. 350CL | No. 350 C. L. & B.

THE BRUNSWICK-BALKE-COLLENDER CO.

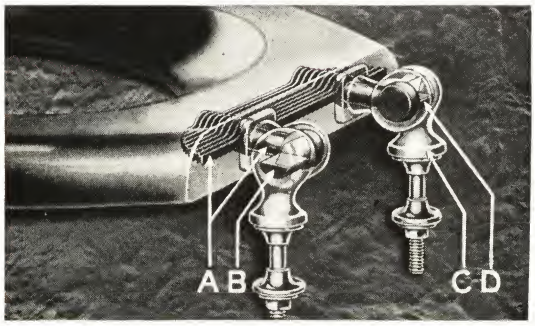
TELEPHONE
Wabash 4020

GENERAL OFFICE
623-633 South Wabash Avenue
CHICAGO, ILL.

ESTABLISHED 1845

REPRESENTATIVES IN ALL PRINCIPAL CITIES

BRUNSWICK WHALE-BONE-ITE SEATS WITH INTEGRAL MOULDED HINGES



Hinge Construction Open Front and Closed Back Seats

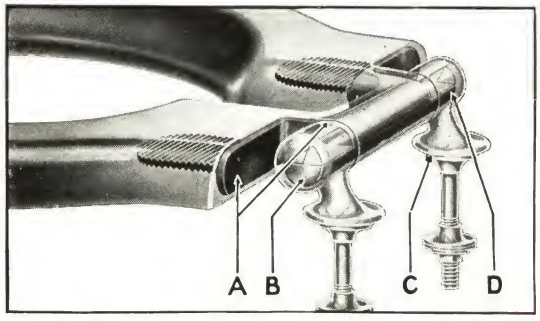
Hinge Construction

A—Heavy metal corrugated hinge plate and post lugs in one piece embedded in laminated core of seat.

B—Metal post bearing, an integral part of hinge plate.

C—Heavy metal post insert and check lug.

D—Covering of Whale-Bone-Ite over hinge plate, posts, inserts, and seat—one solidified unit.



Hinge Construction Open Front and Open Back Seats

For more than 25 years Brunswick Whale-Bone-Ite closet seats have been acclaimed the perfect seats for commercial, industrial, public, and semi-public buildings. Engineered especially to defy the severe abuse given to seats in such locations, Whale-Bone-Ite seats end replacement costs—forever! Backed by Brunswick's guarantee. No Whale-Bone-Ite seat has ever worn out.

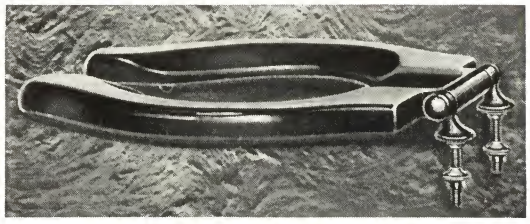
Whale-Bone-Ite, an exclusive Brunswick composition, coupled with expert design and craftsmanship results in a toilet seat of unmatched strength and sanitation—combined with attractive appearance. Its laminated construction is practically unbreakable. The hinge, a heavy metal casting, and seat core are covered with Whale-Bone-Ite and moulded in a single operation under extreme hydraulic heat pressure into one solidified unit of permanent rigidity—with no insanitary crevices, wholly impervious to moisture.

Specify Whale-Bone-Ite—the seat that is giving superior satisfaction in millions of installations. It can be sterilized or disinfected repeatedly without injury to its smart finish. Available in *ebony* and *mahogany* in open or closed fronts for every type of bowl.



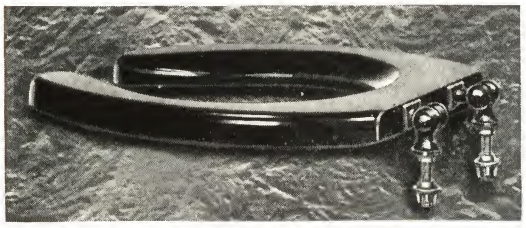
No. 22½-968—For Elongated Bowls
Open front, closed back seat, no cover, with internal check, and integral moulded hinge.
No. 22½-98—Same, without check

Sanitation



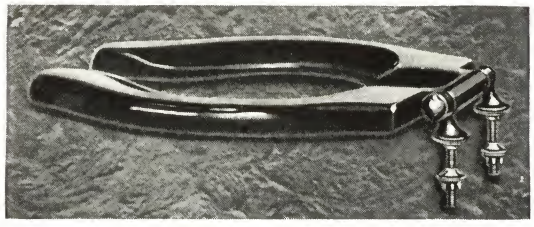
No. 18-568—For Extended Lip Bowls
Open front and back Whale-Bone-Ite seat, no cover, with internal check and integral moulded hinge.
No. 18-58—Same, except without check

Strength

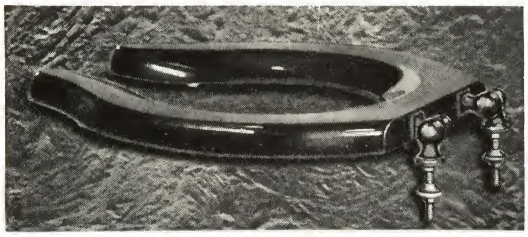


No. 23-968—For Regular Bowls
Open front, closed back seat, no cover, with internal check and integral moulded hinge.
No. 23-98—Same, without check

Beauty in Closet Seats

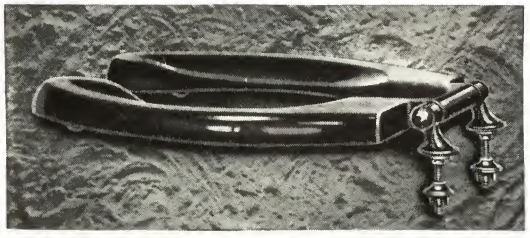


No. 182-568—For Elongated Bowls
Open front and back Whale-Bone-Ite seat, no cover, with internal check and integral moulded hinge.
No. 182-58—Same, without check



No. 21-968—For Extended Lip Bowls
Open front, closed back seat, no cover, with internal check and integral moulded hinge.
No. 21-98—Same, except without check

Complete Catalogue on Request



No. 18½-568—For Regular Bowls
Open front and back Whale-Bone-Ite seat, no cover, with internal check and integral moulded hinge.
No. 18½-58—Same, without check

BRUNSWICK WHITE AND COLORED SEATS

The Brunswick line of Cellulose-covered seats meets every requirement for residential and private building installations—for which they are especially recommended. Attractive design and precise construction reflect Brunswick's outstanding skill in toilet seat fabrication. Brunswick's manufacturing experience for almost a century is your assurance of enduring quality.

Specially processed No. 1 Birch and heavy cellulose sheets are used to make Brunswick seats. Their everlastingly bright and easily cleaned surface is guaranteed against cracking, chipping, peeling and discoloring. Available in a full range of plain and sea pearl colors—in open and closed fronts for every type of closet bowl. Write for the complete catalog.

BRUNSWICK PYRALIN COVERED SEATS



No. 300—Closed Front, Extended Back for Regular Bowl

No. 300—Seat with cover, no check
No. 301—Seat without cover, no check
No. 302—Seat without cover, with check



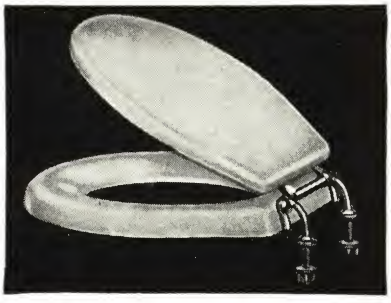
No. 306—Closed Front, Extended Back for Elongated Bowl

No. 306—Seat with cover, no check
No. 307—Seat without cover, no check
No. 308—Seat without cover, with check



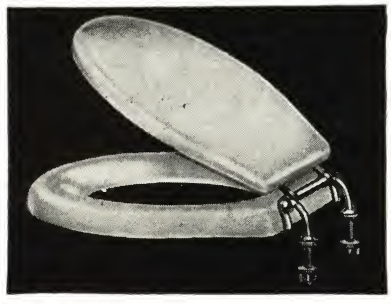
No. 353—Open Front, Extended Back for Elongated Bowl

No. 353—Seat with cover, no check
No. 354—Seat without cover, no check
No. 355—Seat without cover, with check



No. 315—Closed Front, for Regular Bowl

No. 315—Seat with cover, no check
No. 316—Seat without cover, no check



No. 318—Closed Front, for Elongated Bowl

No. 318—Seat with cover, no check
No. 319—Seat without cover, no check



No. 390—Open Front, for Regular Bowl

No. 390—Seat with cover, no check
No. 391—Seat without cover, no check

MONARCH PYRALIN COVERED SEATS



No. 800—Closed Front, for Regular Bowl

No. 800—Seat and cover, no check
No. 801—Seat without cover, no check



No. 805—Open Front, for Regular Bowl

No. 805—Seat and cover, no check
No. 806—Seat without cover, no check



No. 810—For Elongated Bowl

No. 810—Seat and cover, no check
No. 811—Seat without cover, no check



No. 900—Closed Front, for Regular Bowl

No. 900—Seat and cover, no check
No. 901—Seat without cover, no check



No. 905—Open Front, Extended Back, for Regular Bowl

No. 905—Seat and cover, no check
No. 906—Seat without cover, no check



No. 910—Closed Front, Extended Back for Elongated Bowl

No. 910—Seat and cover, no check
No. 911—Seat without cover, no check

C. F. CHURCH MFG. CO.

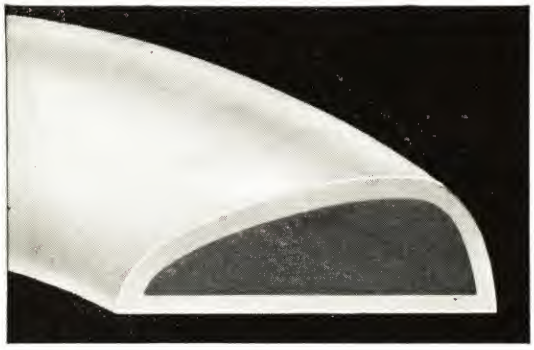
DIVISION OF AMERICAN RADIATOR & STANDARD SANITARY CORP.

HOLYOKE, MASS.

DISTRIBUTORS IN EVERY CITY

THE NEW CHURCH MOL-TEX WHITE MOLDED TOILET SEATS

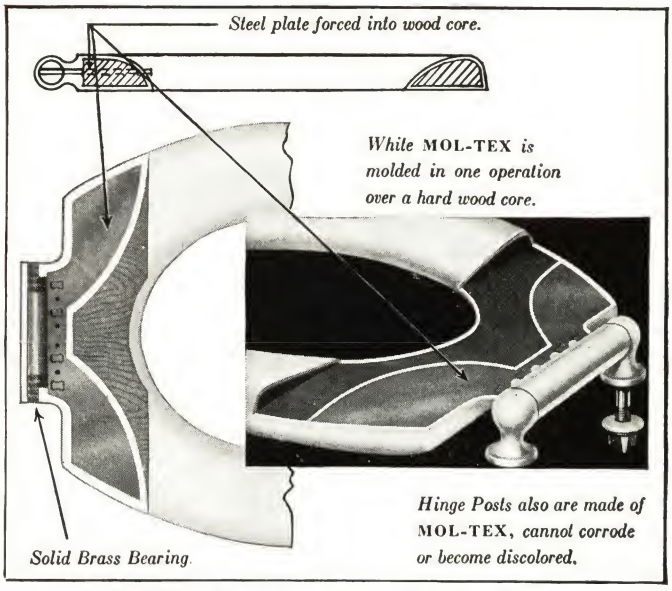
Tougher Than Hard Rubber—Never Discolors—Impervious to Acids



Cross Section Showing Heavy Mol-Tex Covering
Approximately $\frac{1}{8}$ in. thick

Church has introduced a new toilet seat that is outstanding in its advantages. It is made of MOL-TEX, a new snow white plastic seat material, developed by Church to meet the demand for an indestructible white seat. And it is indeed indestructible because it is waterproof, fireproof, acidproof and stainproof.

Resists Abuse and Never Discolors—Abuse scars, medicine stains or cigarette burns that mar other seats may be entirely removed from this MOL-TEX seat in a few seconds without removing the seat from the bowl. The permanent, original white MOL-TEX finish can be permanently maintained with a minimum of care. A few minutes' work with any polishing cleanser, or with steel wool, in extreme cases, removes every mark and restores the original lustre.



Mol-Tex Seats Are Designed for Hard Usage
The core is of thoroughly kiln dried hardwood. A steel plate anchored in the core houses the axis for hinge rotation. All metal is hermetically sealed in the white MOL-TEX plastic

Built to Last a Lifetime

Uninjured by Blows or Scratches—Church MOL-TEX White Molded Seats have a strength far beyond any possible strain that can be imposed upon them. The white plastic is so tough and so resilient that blows and scratches to which toilet seats are continually subjected have no effect on the molded surface or the core within.

No Seams, No Parts to Loosen—The thick, white composition plastic is molded under approximately 400,000 pounds hydraulic heat pressure in one operation over the hardwood core, the heavy steel hinge plate and the solid brass bearing. This produces one homogeneous unit so that the result is a seat without joints or seams—without screws or parts to work loose—but with the internal reinforcing steel plate construction completely housed so that no moisture absorption from the outside is possible.

No Metal Is Visible—The hinged posts are forged from solid brass rod. They have a concealed check and are also completely covered with MOL-TEX, matching the seat exactly, so that no exposed metal is visible when the seat is installed.



Strong—Tough and Resilient
Blows and bangs have no effect on molded surface



Waterproof
Dampness and moisture cannot crack, swell or warp the Mol-Tex seat



Hit It with a Hammer



Burn It with a Cigarette

Waterproof

Church Mol-Tex Seats on test have been immersed in water for six continuous months without showing any evidence of cracking, swelling, rust staining or deterioration.

Cleaning Economy in Hotels and Public Buildings

Where piece work in cleaning is maintained an investigation showed an interesting economy in the sanitary maintenance of Mol-Tex seats over seats of a darker color.

Where maids have to get down on hands and knees to see the dirt on hard rubber seats, Church Mol-Tex seats would save a lot of their time. In a certain hotel employing 100 maids and paying them at the rate of 40¢ an hour an actual saving to that hotel on toilet cleaning alone of $40.00 a day or $15,000 a year has been estimated.

Especially Recommended for Hard Service

Church Mol-Tex Seats are especially recommended for hotels, public buildings, hospitals, factories, schools, office buildings, filling and comfort stations, rail and bus terminals, steamships, and all buildings where hard usage and abuse is to be expected.



Stain It with Iodine



Steel Wool and Cleansing Powder Quickly Restore the Pure White Mol-Tex Lustre

Samples and Information

Interested architects are invited to write for any information they desire and for a sample cross-section which may be examined and tested at their convenience.

MOL-TEX SEATS—AN ENGINEERING TRIUMPH IN IMPROVED TOILET SEAT CONSTRUCTION



No. 9400
Mol-Tex Closed Front Seat and Cover
With Mol-Tex covered white hinge. For regular bowl.
No. 9300—Same as above, except without cover. White check hinge



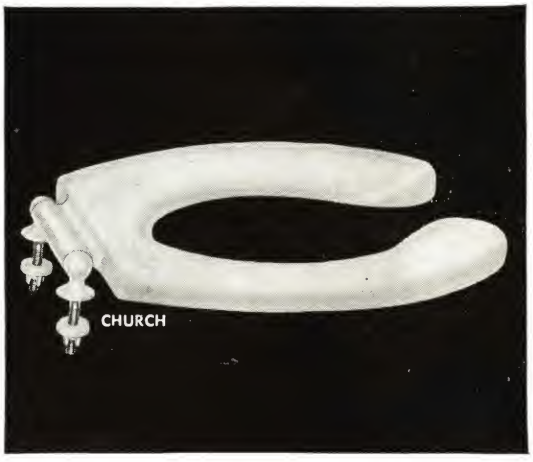
No. 9500
Mol-Tex Open Front Seat, No Cover
With Mol-Tex covered white check hinge. For elongated or extended lip bowl.
No. 9600—Same as above except with cover

For Regular Bowl

Hinge posts are forged from solid brass rod, have concealed check and are covered with Mol-Tex to match the seat exactly.

No exposed metal when seat is installed.

For Elongated Bowl



No. 9700
Mol-Tex Open Front Seat, No Cover
With Mol-Tex covered white check hinge. For regular bowl.
No. 9800—Same as above, except with cover



No. 9900
Mol-Tex Open Front and Open Back Seat, No Cover
With Mol-Tex covered white check hinge. For elongated or extended lip bowl.
No. 9100—Same as above, except for regular bowl

NEVER-SPLIT SEAT COMPANY

Manufacturers of Closet Seats in All Finishes, Constructions and Models

200-210 East Morgan Ave., EVANSVILLE, IND.

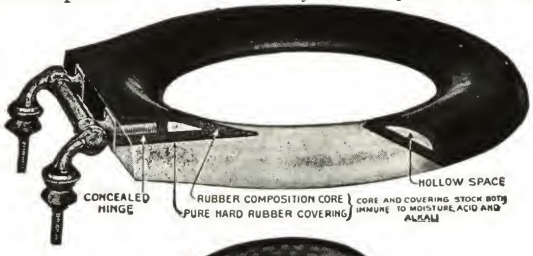
REPRESENTATIVES AND DEALERS IN EVERY LOCALITY

Products

(1) "EVERNU" HARD RUBBER SEATS. (Patented.)
(2) "NEVER-SPLIT" WOOD SEATS. (Patented.)
  (a) White and Colored Sheet Pyralin Covered Seats.
  (b) White and Colored Sprayed Finish Seats.
  (c) Varnished Seats. (All finishes and woods.)
  (d) Special Seats of any description.

Guarantee

"Evernu" Seats are unconditionally guaranteed not to split, break, crack or craze. "Never-Split" hidden screw woodwork is guaranteed unconditionally not to split or come apart at the joints.





"Evernu" Cross Section



"Never-Split" Hidden Screw Construction

"Evernu" Hard Rubber Seats

Construction—"Evernu" Seats are made of pure hard rubber. They are hollow, except across the back where they are made solid and into which solid portion the hinges are attached. The interior wall, made of a special rubber composition, and the exterior wall of pure ebony or mahogany hard rubber are vulcanized together under tremendous hydraulic pressure into one indestructible unit. The hollow center provides lightness and strength. There are no joints to open, no cracks or crevices in the surface.

Finishes—"Evernu" Seats are made either ebony or mahogany in color. There is no finish to wear off or become unsightly, as the finish is simply the hard rubber surface buffed to a lasting luster. Surface can be sterilized and kept sanitary without injuring it in any way. It is impervious to moisture, heat, cold or any destroying elements.

Seats for U. S. Government

"Evernu" and "Never-Split" Seats comply with all U. S. Government specifications covering Hard Rubber and Wood Seats in all finishes—including Master Specifications 448 and WW-P-541.

Catalogue and Construction Sections

Only a few models are shown here. Complete catalogue and construction sections on request.

"Never-Split" Wood Seats

Construction—All "Never-Split" seats are made by our patented hidden screw construction. (See construction cut.) They are held together by heavily threaded steel screws within the wood. The screws absolutely prevent the woodwork from ever splitting or coming apart at the joints. Screws have right and left-hand threads and are embedded into the wood by means of hydraulic pressure; they are entirely invisible, and there are no mortise holes, plugs or fillings in any surface of the woodwork or any outward indication of this unique hidden steel reinforcement.

Finishes—*(A) Sheet Covered*—Extra heavy sheet "pyralin" of the finest quality is used on all "Never-Split" Sheet Covered Seats. Sheeting is applied by a scientific process that completely envelops the woodwork in a seamless, lustrous and durable sheathing. Surface can be easily cleaned and will not chip, crack, craze or discolor. "Never-Split" sheet covered seats are made in pure white, sea pearl colors and plain colors.

(B) Sprayed Seats—"Never-Split" sprayed finish is the highest grade and toughest white or colored sprayed lacquer buffed to a high luster.

(C) Varnished—"Never-Split" oak, mahogany, cherry and walnut finishes are made by carefully filling, staining and shellacking the wood, over which ground coats are applied several coats of highest grade varnish. Final coat can be furnished in gloss finish, dull rubbed or high polish.

Hinges

"Evernu" and "Never-Split" hinges are made from pure new brass. They are scientifically designed for strength and beauty and are offered in many designs and finishes, including nickel-plated brass, chromium plated, white metal, hard rubber covered and white or colored sprayed finish.

Prices

Wholesale plumbing supply dealers and licensed plumbing contractors in every locality can quote prices and give prompt service on "Never-Split" and "Evernu" Seats, which are offered at a wide range of prices for every type of installation.



No. 525-W "Evernu"



No. 120 "Never-Split"



No. 580 "Evernu"



No. 295-2 "Never-Split"



No. 640 "Evernu"

SPERZEL MODERN SEAT CO.

SUCCEEDED BY G. H. TENNANT CO.

1821 Marshall St., N. E.
MINNEAPOLIS, MINN.

TENNANT SANITARY TOILET SEAT FOR PUBLIC BUILDINGS



For Theatres, Filling Stations, Hotels, Railway Stations, Bus Depots, Department Stores, Cafes, Restaurants, Office Buildings, Factories and in any Public Washroom.

It induces clean, decent habits in the washroom because *it looks sanitary . . . and is sanitary.* It invites confidence and dispels fear. It invites and induces proper use.

The new way to health and sanitation in the public washroom. One that is clean and easy to keep clean.

Here is a seat that women will use and will permit their children to use because there is no danger of infection. This modern seat is the solution of a problem which has baffled building owners for years. It will give them a pride in their washrooms, and in many instances will be the means of making new customers and patrons.

Inexpensive

The Tennant costs no more than the ordinary toilet seat, enhances the appearance of your washroom, too, and fits any standard toilet bowl.

The Tennant Modern Toilet Seat is the result of long study to eliminate the objectionable features of public toilets.

Note particularly the construction. There is not a single "hard-to-get-at" surface. There are no corners. Every surface is rounded. No cracks, screws or crevices . . . not a single spot for germs to lodge.

Made of bakelite and non-corrosive metal . . . sanitary, durable materials that are non-porous, acid-resistant. The Tennant Seat gives ample support.

Specify

All toilet seats to be Tennant Modern Toilet Seats as made by G. H. TENNANT Co., Minneapolis, Minn.



Removes Last Vestige of Doubt

100% sanitary.

Persons who prefer may use our special toilet tissue to eliminate body contact completely. Only the Tennant affords this absolute protection.

It is the only seat that can be successfully covered with toilet tissue, making it doubly sanitary.

It offers sanitation in a degree never before attained.

FLUSH-METAL PARTITION CORPORATION

Flush Metal Toilet Stalls, Dressing Room and Shower Compartments, Hospital Cubicles, Flush Metal Doors and Hardware for Marble Toilet Stalls

TELEPHONE
STillwell 4-3380

22-14 40th Avenue, LONG ISLAND CITY, N. Y.

REPRESENTATIVES

ALBANY, N. Y., The Haefner Co., 254 Delaware Avenue—Telephone, Albany 4-8336
BOSTON, MASS., H. W. Mayers Co., 99 Chauncy Street—Telephone, Hubbard 1348
BUFFALO, N. Y., William Clouting Kraetz, 25 East Depew Avenue—Telephone, Parkside 4811
NEWARK, N. J., Boorman and Co., 717 So. Orange Avenue—Telephone, Essex 3-6333
PHILADELPHIA, PA., G. T. Voorhis Co., 220 South 16th Street—Telephone, Pennypacker 6491
WEST HARTFORD, CONN., R. V. Thomas, 22 Fern-Bel Lane—Telephone, West Hartford 32-1145

For Toilet Partitions and Hardware, see File Index

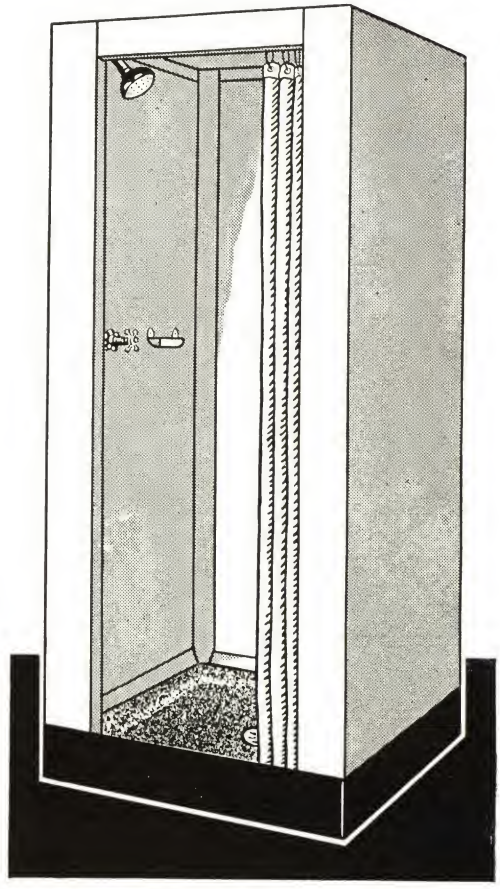
FLUSH-METAL SHOWER COMPARTMENTS

CONSTRUCTION

Flush Metal shower compartments are designed to meet every requirement of modern building construction. They are sanitary, leakproof, economical, and are recommended for all types of buildings and homes, new or old. Flush Metal shower compartments are pleasing in appearance and meet with various needs of installation requirements as to size, color scheme, and price.

The Flush Metal shower compartments are made of Armco Galvanized Paintgrip Sheets and so constructed that the back and side walls interlock on a pre-cast receptor, to form a single watertight rigid unit, thus unsightly screws and the use of plastic filling compounds are eliminated.

Flush Metal shower compartments can be installed in battery formation with filler plates for concealing pipes, and can also be furnished with mixing valves, dome light, side sprays, or glass door, chromium plated frame.



Typical Flush Metal Shower Compartment
Left hand drilling shown

Receptors

Flush Metal terrazzo receptors are incased in a rustproofed reinforced frame and are cast of the highest grade white waterproof cement with the finest black and white marble chips. This mixture is solidly tamped and puddled to give it the highest waterproof qualities. The receptors are cured, ground, polished and finished to resist slipping.

Flushtex receptors have the same non-slip and watertight qualities as the terrazzo receptors and are cast in a rustproofed frame with white and black carborundum chips.

The strainer body is of heavy cast brass with removable brass chrome plated face plate set flush with receptor floor allowing for inside caulking for a 2-in. waste pipe connection.

MODELS AND SIZES

Premier 82 in.—Saratoga 82 in.—Niagara 82 in.

Sizes—Width by depth: 30x30, 30x32, 30x36, 32x32, 34x34, 36x36, 36x42, 42x42 in. *Corner shower* 36x36 in. Models listed obtainable in above sizes.

Premier—Walls and top of Armco Iron white vitreous enamel. The terrazzo pre-cast receptor with stainless frame. Chrome plated hot and cold valves, 6-in. centers; adjustable ball joint shower head, soap dish, curtain rod and dome light.

Saratoga—Walls and top of 16-gauge Armco Galvanized Paintgrip Sheets, with baked-on enamel finish in any standard color. Terrazzo precast receptor with cadmium treated frame. Chrome plated hot and cold valves, 6-in. centers; adjustable ball joint shower head, soap dish, curtain rod and dome light.

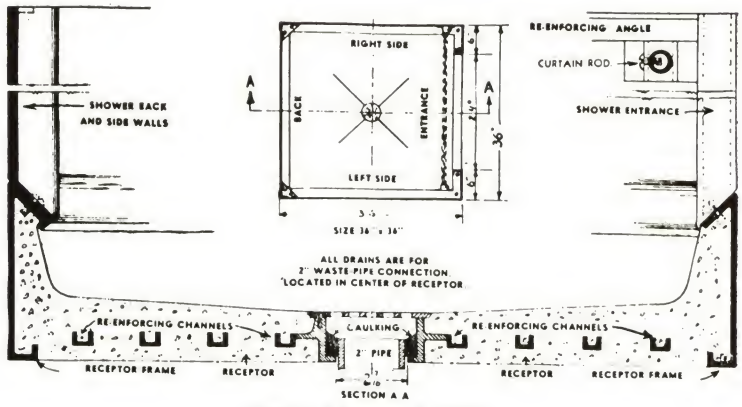
Niagara—Walls of 16-gauge Armco Galvanized Paintgrip Sheets, with baked-on enamel finish in any standard color (no top). Flushtex precast receptor with cadmium treated frame. Chrome plated hot and cold valves, 6-in. centers; adjustable ball joint shower head, soap dish and curtain rod.

Stonebrook 76 in.—A Lower Priced Model

Width by depth: 30x30, 32x32, 36x36 in. *Corner shower* 36x36 in.

Stonebrook—Walls of 18-gauge Armco Galvanized Paintgrip Sheets, with baked-on enamel finish in any standard color (no top). Flushtex precast receptor with cadmium treated frame. Chrome plated hot and cold valves, 3⅜ in. centers; adjustable ball joint shower head, soap dish and curtain rod.

Lower price shower compartments are available for bungalows, cottages and basements. For further details write for circular and price list.



Detail of Shower Receptor

Flush-Metal shower compartments are sold exclusively through plumbing contractors

FIAT

DISTINCTIVE *Beauty*



SHOWER BATH CABINETS

SHOWER DOORS

GLASS SHOWER ENCLOSURES

GLASS BATH TUB ENCLOSURES

FIAT METAL MANUFACTURING CO.

CHICAGO NEW YORK

FIAT *Shower Bath Cabinets . . . Glass Shower*

Foreword

Fiat's line of shower cabinets, glass shower doors, glass bathtub and shower enclosures illustrated and described on the following pages represent fifteen years of pioneering and development devoted to these products.

In the ever-increasing field of pre-fabricated shower cabinets, the Fiat shower cabinet retains its distinctive individuality in both construction and design, and its preferred position among discriminating architects, homeowners and builders.

An important reason for this is strict adherence to a single standard of quality . . . a standard which permits no compromise. Each product represented is unconditionally backed by the reputation of the company.

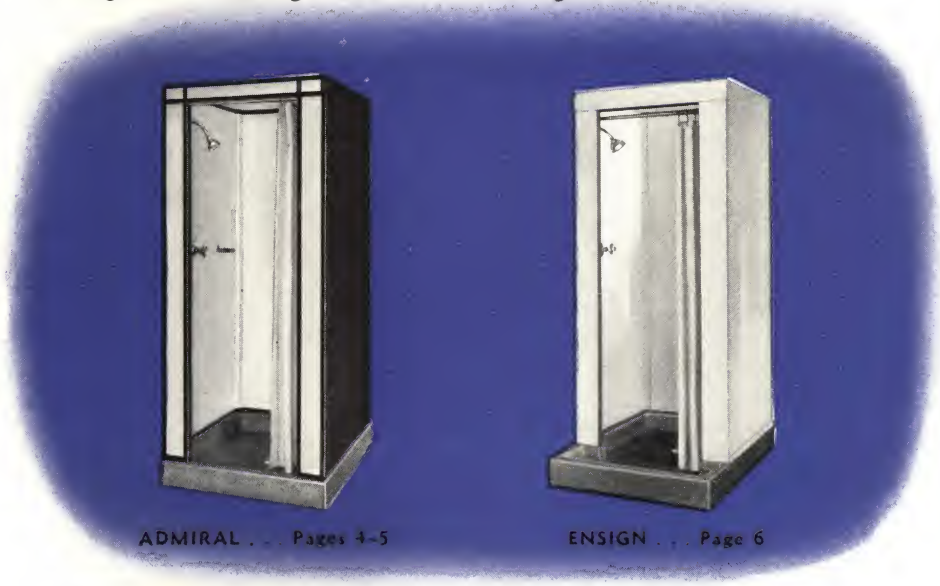
With factories located in Chicago, Ill., and Long Island City, N. Y., and with capable representatives in most large cities in the United States, Fiat is adequately equipped to render the utmost in service and cooperation.

Fiat has consistently adhered to an established policy of distributing its products exclusively through recognized wholesalers of plumbing fixtures.

FIAT OFFERS YOU A CAREFULLY SELECTED

4 Distinctive Models SHOWN BELOW — IN 18 DIFFERENT DESIGNS

Each is designed for a particular use and priced to suit every income. One type of construction and the principle of the pre-cast receptor is characteristic of each model . . . and each offers permanent protection against leakage and rust. Fiat's well diversified line makes it possible for almost everyone to enjoy the recognized advantages of shower bathing.



THE ADMIRAL — The De Luxe Unit of the Fiat line, incorporating every possible cabinet refinement.

Porcelain enameled walls and top; dome lighting fixture; pre-cast TERRAZZO receptor; hollow metal door stiles and headrail in either porcelain or baked enamel finish. Eight designs, including four recessed models.

See pages 4 and 5 for complete details.

THE ENSIGN — A High Standard Grade Unit

Walls and top finished in baked-on synthetic enamel; dome lighting fixture; pre-cast TERRAZZO receptor; hollow metal door stiles and headrail finished in synthetic baked-on enamel. Six designs available.

See page 6 for complete details.

FIAT METAL MANUFACTURING

Doors and Enclosures

LINE FROM WHICH TO CHOOSE

THE MARINE — **A medium priced stock model.**

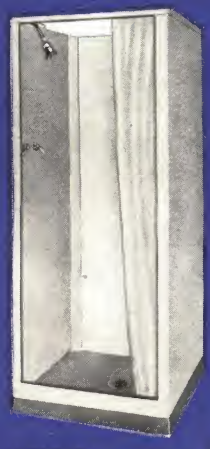
Walls (no top) finished in baked-on synthetic enamel, pre-cast ART-TEX receptor. Two designs available. See page 7 for complete details.

THE SKIPPER — **An inexpensive model for low cost installations.**

Walls (no top) finished in baked-on synthetic enamel, pre-cast STONETEX receptor. One design only . . . available in two sizes. See page 7 for complete details.



MARINE . . . Page 8



SKIPPER . . . Page 8



The Sanitary, Refreshing Way to Bathe

ALSO A FULL LINE OF GLASS DOORS, GLASS TUB AND SHOWER ENCLOSURES

Three distinct models of shower doors . . . Senior and Junior (brass, chromium plated) and Zephyr (aluminum finished in alumilite). All adaptable for use on tile, marble, structural glass or on Fiat shower cabinets.

Special glass shower enclosures used in conjunction with vitreous enameled background walls and the Fiat pre-cast TERRAZZO receptor available in three models and in seventeen different sizes.

Two types of glass bath tub enclosures—Senior (brass chromium plated) and Zephyr (aluminum finished in alumilite). Both types available in fifteen models. Bath-tub enclosures furnished with hinged doors . . . all models rigidly constructed employing only the finest materials.

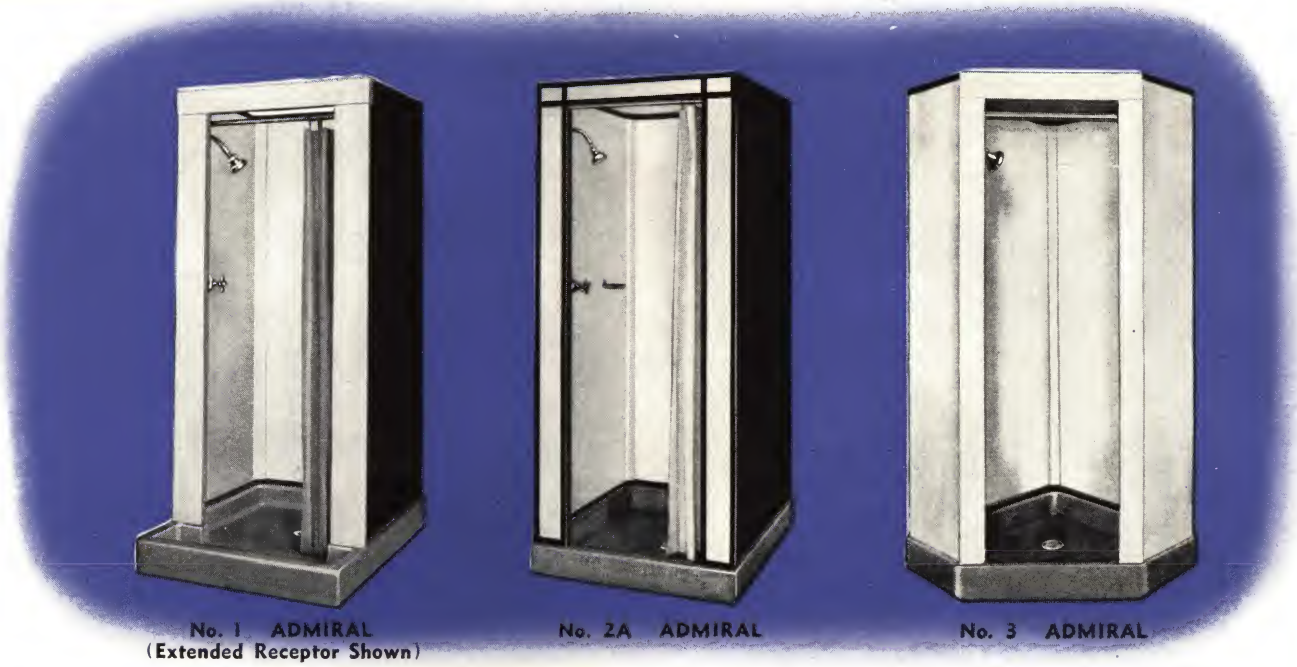




FIAT ADMIRAL
SHOWER BATH CABINETS

ADAPTABLE FOR USE IN MOST

Available in 8 *Outstanding*



No. 1 ADMIRAL (Extended Receptor Shown)

No. 2A ADMIRAL

No. 3 ADMIRAL

SIZES AND SPECIFICATIONS

Regular Receptor W-D-H	Extended Receptor W-D-H
30x30x82	30x42x82
30x32x82	.....
32x32x82	32x44x82
34x34x82	34x46x82
30x36x82	.....
36x30x82	36x42x82
36x36x82	36x48x82
36x42x82	.....
42x36x82	42x48x82
42x42x82	.....
46x36x82	.....
48x30x82	.....
48x36x82	.....
46x44x82	.....
Corner Type	
36x36x82	.....
42x42x82	.....

SIZES AVAILABLE

SPECIFICATIONS

Design No. 1—Admiral—Furnish and install as shown on plans Fiat Design No. 1 Admiral Shower Compartment, size ( ), complete with a pre-cast Terrazzo receptor (extended or regular). Chromium plated brass drain connection (with removable strainer plate) to be cast integral with receptor. Walls and top of compartment to be of No. 16 gauge Armco Ingot Iron finished in (white) vitreous (porcelain) enamel. Hollow metal door frames to be of No. 16 gauge galvannealed steel finished in baked on synthetic enamel to match interior.

Design No. 2A—Admiral—Furnish and install as shown on plans Fiat Design No. 2A Admiral Shower Compartment, size ( ), complete with a precast Terrazzo receptor (extended or regular). Chromium plated brass drain connection (with removable strainer plate) to be cast integral with receptor. Walls and top of compartment to be of No. 16 gauge Armco Ingot Iron finished in (white) vitreous (porcelain) enamel. *Hollow metal door frames to be finished inside and out in vitreous (porcelain) enamel.*

Design No. 3—Corner Admiral—Furnish and install as shown on plans Fiat Design No. 3 Corner Admiral Shower Compartment, size ( ), complete with a pre-cast corner entrance design Terrazzo receptor. Chromium plated brass drain connection (with removable strainer plate) to be cast integral with receptor. Walls and top of compartment to be of No. 16 gauge Armco Ingot Iron finished in (white) vitreous (porcelain) enamel. Hollow metal door frames to be of No. 16 gauge galvannealed steel finished in baked on synthetic enamel to match interior.

Design No. 3A—Corner Admiral—Furnish and install as shown on plans Fiat design No. 3A Corner Admiral Shower Compartment, size ( ), complete with a precast corner entrance design Terrazzo receptor. Chromium plated brass drain connection (with removable strainer plate) to be cast integral with receptor. Walls and top of compartment to be of No. 16 gauge Armco Ingot Iron finished in (white) vitreous (porcelain) enamel. *Hollow metal door frames to be finished inside and out in vitreous (porcelain) enamel.*

Design No. 3B—Chrome Stile Corner Admiral—Furnish and install as shown on plans Fiat Design No. 3B Chrome Stile Corner Admiral Shower Compartment size ( ), complete with a pre-cast corner entrance design Terrazzo receptor. Chromium plated brass drain connection (with removable strainer plate) to be cast integral with receptor. Walls and top of compartment to be of No. 16 gauge Armco Ingot Iron finished in (white) vitreous (porcelain) enamel. *Door frames to be extruded brass, chromium plated, with fronts inset to permit tilting.*

Design No. 3C—Aluminum Stile Corner Admiral—Specifications are the same as for Design No. 3B except that the door frames are to be extruded aluminum alloy finished in "Alumilite," with fronts inset to permit tiling.

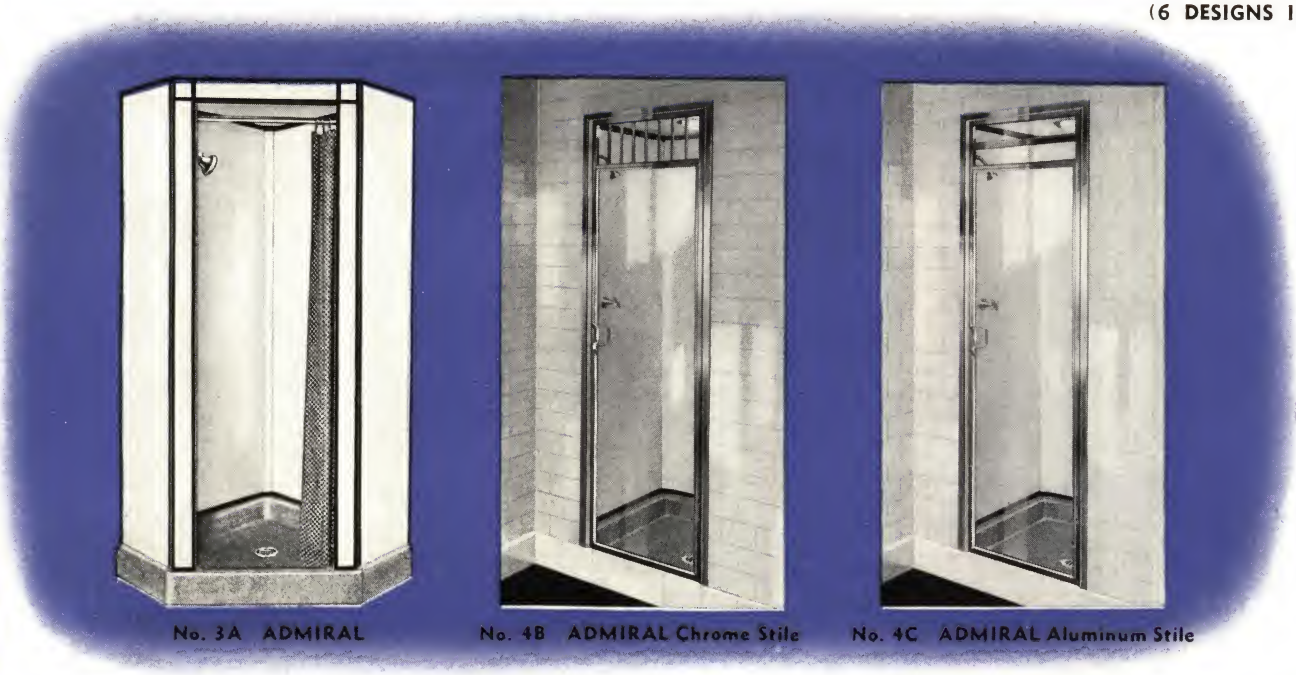
Design No. 4B—Chrome Stile Admiral—Furnish and install as shown on plans Fiat Design No. 4B Chrome Stile Admiral Shower Compartment, size ( ) complete with a pre-cast Terrazzo receptor. Chromium plated brass drain connection (with removable strainer plate) to be cast integral with receptor. Walls and top of compartment to be of No. 16 gauge Armco Ingot Iron finished in (white) vitreous (porcelain) enamel. *Door frames to be extruded brass, chromium plated, with fronts inset to permit tiling.*

Design No. 4C—Aluminum Stile Admiral—Specifications are the same as for Design No. 4B except that the door frames are to be extruded aluminum alloy finished in "Alumilite," with fronts inset to permit tiling.

MODERN AND BEAUTIFUL BATHROOMS

Designs in free standing or recessed types

(6 DESIGNS ILLUSTRATED)



No. 3A ADMIRAL — No. 4B ADMIRAL Chrome Stile — No. 4C ADMIRAL Aluminum Stile

TWO TYPES OF ADMIRALS

Fiat Admiral shower compartments have been designed for two distinct types of installations. One type, characterized by Models No. 1, No. 2A, No. 3 and No. 3A, are especially designed for free-standing or corner installations. Such Models as Nos. 3B, 3C, 4 B and 4C are primarily suited for recess installations.

All Made of Vitreous Enamel—All interior walls of Admiral shower compartments regardless of model number, are finished in vitreous (porcelain) enamel. All concealed wall surfaces are finished in a rough vitreous enamel ground coat. Exterior wall surfaces finished same as interior for small additional cost.

Adaptable in Most Modern Bathrooms—The smooth, glass hard surfaces of vitreous enameled Fiat Admiral shower walls are the ultimate in beauty, sanitation and long life. The combination of these superior walls with Fiat's pre-cast TERRAZZO receptor, results in a truly modern leakproof and rustproof shower compartment. With as many as seventeen sizes from which to choose, and an unending variety of color combinations in both terrazzo and vitreous enamel, the Fiat Admiral shower cabinet assumes a prominent position in the most modern bathroom.

OUTSTANDING CONSTRUCTION FEATURES

Side Walls and Top—All side wall and top material is 16 gauge ARMCO enameling iron finished in vitreous (porcelain) enamel. Back and side wall connections made by continuous, leakproof spring keyed joints, eliminating the use of screws. Refer to page 10 for details of this construction.

Lighting—All Admiral compartments are furnished with a dome light fixture consisting of chromium plated frame and threaded dome glass. Cork gasket between frame and top prevents passage of steam and water to electrical equipment. Electrical equipment furnished by others.

Door Frames and Headrail—Door frames and headrail of Models Nos. 1, 2A, 3 and 3A are of hollow metal construction. See page 11 for details. Door frames and headrail of Models 4B and 3B are extruded brass chromium plated; and Models 3C and 4C have door frames and headrail of extruded aluminum finished in "alumilite."

Curtain Rods—One inch O. D. brass chromium plated.

Doors—Senior, Junior or Zephyr shower doors can be used on all Admiral cabinets. Door size of No. 1 and 2A, 24 x 72 in.; No. 3 and 3A, 22 x 72 in.; No. 4B and 4C, 24 x 74⅞ in.; 3B and 3C, 22 x 74⅞ in. Doors not included in standard equipment.

Valves and Shower Head—Plate No. K-7000 valve and head combination standard equipment on all Admiral shower compartments. Six inch center two valve shower brass chromium plated with chromium plated adjusta-spray head.

Soap Dish—Cast brass chromium plated (FH-7).

Receptor—Pre-cast TERRAZZO with brass drain connection cast integral with receptor. Standard color . . . black and white marble chips No. 0 and No. 1 with white portland cement. Steel wire mesh reinforcement.

Standard Equipment—Side walls, top and dome light, pre-cast TERRAZZO receptor, chromium plated soap dish, curtain rod, K-7000 two valve shower and shower head.

Note: Shower curtains or doors EXTRA.

FIAT ENSIGN
SHOWER BATH CABINETS

A HIGH STANDARD GRADE UNIT

Available in 6 Designs

GENERAL DESCRIPTION AND FEATURES

The Ensign shower compartment is essentially the same as the Admiral in design, construction and standard equipment; the walls and top, however, are of 16 gauge rustproofed galvannealed steel finished in synthetic baked-on enamel inside and out.

Designs Available and Modifications—The same flexibility of use and variety of designs found in the Admiral line is carried through to the Ensign model. Six designs are featured . . . two for free standing or corner installations, Nos. 6 and 8, and four recess installations, Nos. 6B, 8B, 6C and 8C.

CONSTRUCTION DETAILS

Side Walls and Top—All side wall and top material is 16 gauge rustproofed galvannealed steel finished inside and out with synthetic baked-on enamel over a prime coat. Back and side wall connections same as Admiral. Refer to page 10 for details.

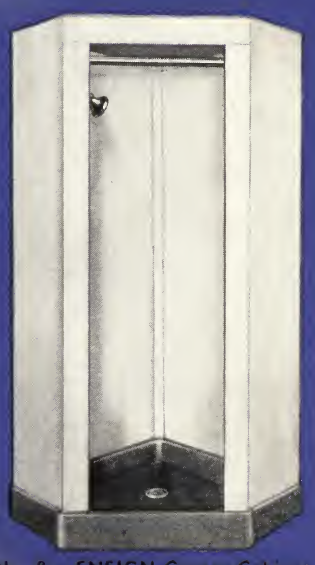
Lighting—All Ensign compartments are furnished with a dome light fixture consisting of chromium plated frame and threaded dome glass. Cork gasket between frame and top prevents passage of steam and water to electrical connections. Electrical equipment furnished by others.

Door Frames and Headrail—Door frames and headrail of Models No. 6 and 8 are of hollow metal construction . . . 16 gauge rustproofed galvannealed steel finished in baked-on enamel to match interior. See page 10 for details. Door frames and headrail of Models 6B and 8B are extruded brass chromium plated; and Models 6C and 8C have door frames and headrail of extruded aluminum finished in "alumilite."

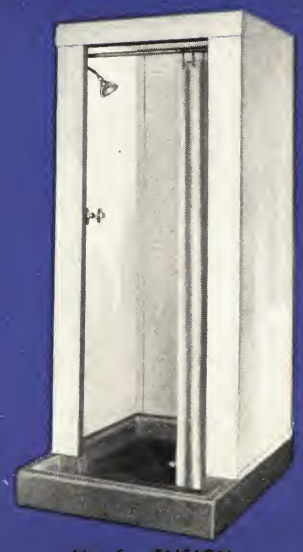
Curtain Rods—One inch O. D. brass chromium plated.

Doors—Senior, Junior or Zephyr shower doors can be used on all Ensign cabinets. Door size of No. 6, 24 x 72 in.; No. 8, 22 x 72 in.; Nos. 8B and 8C, 22 x 74⅞ in.; Nos. 9B and 9C, 24 x 74⅞ in. Doors not included in standard equipment.

Valves and Shower Head—Plate No. K-7000 valve and head combination standard equipment on all Ensign shower compartments.



No. 8 ENSIGN Corner Cabinet



No. 6 ENSIGN (Extended Receptor Shown)

Six inch center two-valve shower brass chromium plated with chromium plated adjusta-spray head.

Soap Dish—Cast brass chromium plated (FH-7).

Receptor—Pre-cast TERRAZZO with brass drain connection cast integral with receptor. Standard color . . . black and white marble chips No. 0 and No. 1 with white portland cement. Steel wire mesh reinforcement.

Standard Equipment—Side walls, top and dome light, pre-cast TERRAZZO receptor, chromium plated soap dish, curtain rod. K-7000 two-valve shower and shower head.

Note: Shower curtains or doors EXTRA.

SIZES AND SPECIFICATIONS

Regular Receptor W-D--H	Extended Receptor W-D--H
30x30x82	30x42x82
30x32x82	.....
32x32x82	32x44x82
34x34x82	34x46x82
30x36x82	.....
36x30x82	36x42x82
36x36x82	36x48x82
36x42x82	.....
42x36x82	42x48x82
42x42x82	.....
46x36x82	.....
48x30x82	.....
48x36x82	.....
46x44x82	.....
Corner Type	
36x36x82	.....
42x42x82	.....

SPECIFICATIONS

Design No. 6—Ensign—Furnish and install as shown on plans Fiat Design No. 6 Ensign Shower Compartment, size ( ), complete with a pre-cast Terrazzo receptor. Chromium plated brass drain connection (with removable strainer plate) to be cast integral with receptor. Walls and top of compartment to be of No. 16 gauge rustproof galvannealed steel finished in (white) baked-on synthetic enamel. Door frames to be of hollow metal construction.

Design No. 8 — Corner Ensign — Furnish and install as shown on plans Fiat No. 8 Corner Ensign Shower Compartment, size ( ), complete with a pre-cast corner entrance design Terrazzo receptor. Chromium plated brass drain connection (with removable strainer plate) to be cast integral with receptor. Walls and top of compartment to be of No. 16 gauge rustproofed galvannealed steel finished in (white) baked-on synthetic enamel. Door frames to be of hollow metal construction.

Design No. 8B—Corner Chrome Stile Ensign—Furnish and install as shown on plans Fiat Design No. 8B Corner Chrome Stile Ensign Shower Compartment, size ( ), complete with a pre-cast corner entrance design Terrazzo receptor. Chromium plated brass drain connection (with removable strainer plate) to be cast integral with receptor. Walls and top of compartment to be of No. 16 gauge rustproofed galvannealed steel finished in (white) baked-on enamel. *Door frames to be extruded brass, chromium plated, with fronts inset to permit tiling.*

Design No. 8C—Corner Aluminum Stile Ensign—Specifications are the same as for Design No. 8B except that the door frames are to be extruded aluminum alloy finished in "Alumilite," with fronts inset to permit tiling.

Design No. 9B—Chrome Stile Ensign—Furnish and install as shown on plans Fiat Design No. 9B Chrome Stile Ensign Shower Compartment, size ( ), complete with a pre-cast Terrazzo receptor. Chromium plated brass drain connection (with removable strainer plate) to be cast integral with receptor. Walls and top of compartment to be of No. 16 gauge rustproofed galvannealed steel finished in (white) baked-on synthetic enamel. *Door frames to be extruded brass chromium plated, with fronts inset to permit tiling.*

Design No. 9C—Aluminum Stile Ensign—Specifications are the same as for Design No. 9B except that the door frames are to be extruded aluminum alloy finished in "Alumilite," with fronts inset to permit tiling.

FIAT MARINE

FIAT SKIPPER (BELOW)

SHOWER BATH CABINETS

THE MARINE—AN INEXPENSIVE STOCK MODEL

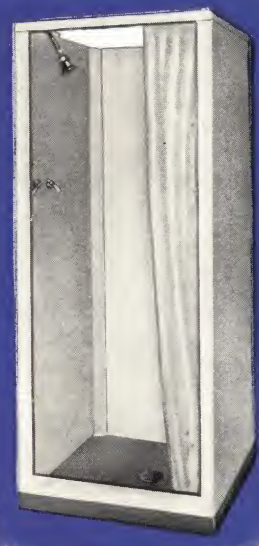
Available in 2 Designs



No. 16 CORNER MARINE



No. 15 MARINE



The SKIPPER is an alternative model for Typical Low Cost Installations

MARINE GENERAL DESCRIPTION AND FEATURES

Walls (no top) of 18-gauge rustproofed galvannealed steel finished in white synthetic baked-on enamel inside and out. Back and side wall connection and construction same as Admiral and Ensign.

Receptor—Pre-cast Art-Tex with brass drain cast integral with receptor. Standard color . . . black trap-rock chips No. 1 with white and gray portland cement. Steel wire mesh reinforcement.

Curtain Rod—One-inch O. D. brass chromium plated.

Doors—Either Junior or Zephyr may be used on all models.

Valves and Shower Head—Plate No. C-4412 valve and head combination. 3⅜ in. center two-valve shower, brass chromium plated with chromium plated refreshor head.

Soap Dish—Cast brass chromium plated—(MA-6).

Standard Equipment—Side walls, pre-cast Art-Tex receptor, chromuim plated soap dish, curtain rod, C-4412 two-valve shower and shower head, white duck curtain.

Note: Shower door EXTRA.

SKIPPER DESCRIPTION AND FEATURES

Walls, Headrail and Threshold: 20 gauge galvanized paintgrip steel. Back and side wall connections same as Admiral Ensign and Marine.

Receptor—Pre-cast Stonetex . . . flat type, three inches high with brass drain connection cast integral with receptor. Continuous heavy galvanized steel flange cast integral with receptor on all four sides for side wall and threshold attachment.

Valves—Plate No. C-4413 rough chromium plated 3⅜ in. center two valve shower with refreshor head.

Soap Dish—Dull chrome—brass.

Curtain Rod—One inch O. D. black enameled.

Standard Equipment—Side walls, threshold, pre-cast STONETEX receptor (flat type), C-4413 two-valve shower and shower head, white duck curtain, chromium plated soap dish, curtain rod.

SIZES AND SPECIFICATIONS

Marine Line

Regular Receptor	Extended Receptor
W-D-H	W-D-H
30x30x76	30x42x76
32x32x76	32x44x76
36x36x76	36x48x76
Corner Type	
36x36x76	

MARINE SPECIFICATIONS

No. 15 Marine—Furnish and install as shown on plans Fiat Design No. 15 Marine Shower Compartment, size ( ), complete with a pre-cast Art-Tex receptor. Chromium plated brass drain connection (with removable strainer plate) to be cast integral with receptor. Walls (no top) to be of No. 18 gauge rustproofed galvannealed steel finished in white baked-on synthetic enamel.

No. 16 Corner Marine—Furnish and install as shown on plans Fiat Design No. 16 Corner Marine Shower Compartment, size 36x36 in., complete with a pre-cast Art-Tex receptor. Chromium plated brass drain connection (with removable strainer plate) to be cast integral with receptor. Walls (no top) to be of No. 18 gauge rustproof galvannealed steel finished in a white baked-on synthetic enamel.

Skipper Line

Width	Depth	Height
30	30	76
36	36	76

SKIPPER SPECIFICATIONS

Furnish and install as shown on plans Fiat Design No. 18 Skipper Shower Compartment, size ( ), complete with pre-cast (flat type) Stonetex receptor. Chromium plated brass drain connection (with removable strainer plate) to be cast integral with receptor. Walls of compartment to be of No. 20 gauge galvanized paintgrip steel finished in a white baked-on synthetic enamel.

FIAT CHROMIUM PLATED GLASS BATHTUB AND SHOWER ENCLOSURES

BATHTUB ENCLOSURES (At Right)

Add Distinction to the Modern Bathroom

Two outstanding models available in fifteen designs . . . Zephyr (aluminum) and Senior (chromium plated brass). Both types are custom made to conform to exact measurements taken at the job site, and both possess such important construction features as continuous piano hinges, adjustable wall and tub channels, drip gutter and water table on doors, and many others. In order to maintain the leakproof qualities of Fiat bathtub enclosures, doors swing one way only either in or out.

No. N-500S—For corner type Neo-Angle Tub. Three stationary panels and one door. No grille.

No. 500S—For corner type tubs. Four stationary panels and one door. No grille.

No. 401S—For 5 ft. and 5 ft. 6 in. recess tubs. Two stationary panels and one door. Full width bar grille.

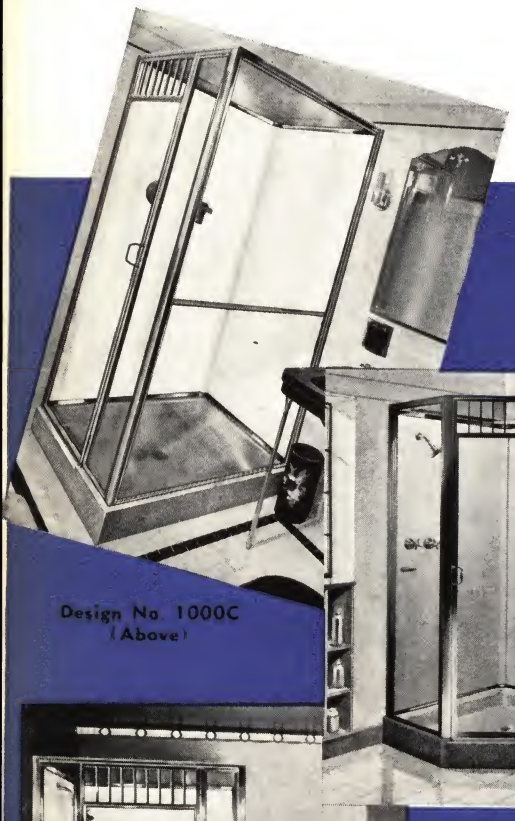


Design No. N500S (Above)



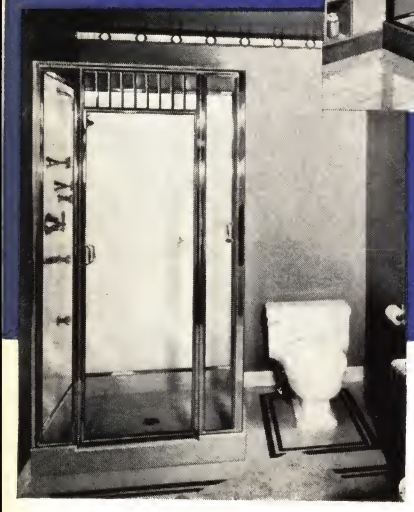
Design No. 500S (Above)

Design No. 401S (Above)



Design No. 2000C (Below)

Design No. 1000C (Above)



Design No. 3000C (Left)

SHOWER ENCLOSURES (At Left)

of Lasting Beauty and Simplicity

Three outstanding models available in twelve different sizes. Vitreous enameled background walls, pre-cast Terrazzo receptors and Senior construction glass front and side panels and Senior doors characteristic of all models. Fiat's method of attaching vitreous enameled panels and glass panels to receptor insure permanent protection against leakage so often caused by settling of building and other causes.

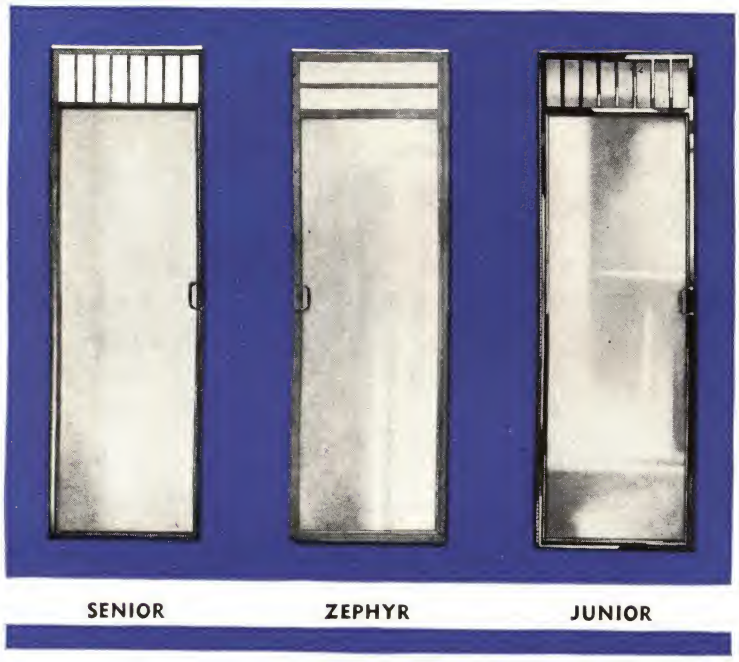
No. 1000C—Furnished in sizes up to 36 x 42. One glass side panel, one small glass front panel and Senior door, Terrazzo receptor, vitreous enameled background walls and top.

No. 2000C—Corner entrance model, available in two sizes. Two glass panels and Senior door, vitreous enameled background walls and top. Corner entrance type Terrazzo receptor.

No. 3000C—Furnished in sizes over 36 x 42. Same as No. 1000C except that Two small glass panels and Senior door are furnished across front. Extra front panel provided when width of enclosure exceeds 36 inches.

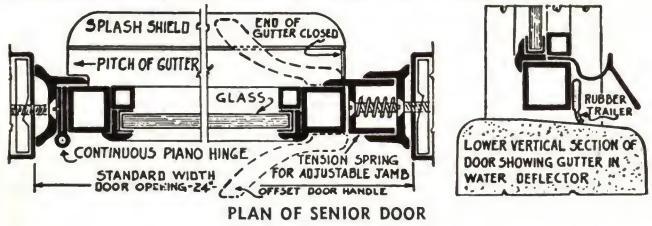
Special Enclosures—In certain instances, Fiat engineers are called upon to design special enclosures to accommodate receptors and/or background walls which are either already in place or being furnished by others. When contemplating such a shower it is advisable to present your problem to us so that the material we are to furnish will be in exact correlation with the balance of the shower unit.

CONSTRUCTION FEATURES OF DOORS — Wall Connections



SENIOR ZEPHYR JUNIOR

CONSTRUCTION OF *Senior* DOOR



PLAN OF SENIOR DOOR

Frame—Heavy brass seamless tubing ¾ x ¾ in. and ⅜ x ⅜ in. with extruded brass mouldings.

Jambs—Extruded brass; strike side of two channels and tension springs forming the adjustable jamb.

Hinge—Specially constructed, leakproof continuous brass piano hinge.

Lock—Double acting friction catch guaranteed against door binding.

Glass—Clear or obscure, set into a heavy rubber "U" channel held in place and fitted into heavy extruded brass mouldings in such a manner that the glass can be replaced without dismantling the door.

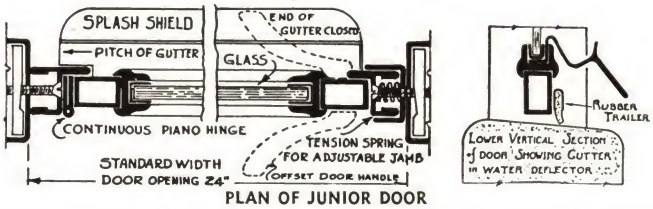
Handles—Special off-set design on both sides of the door.

Water Deflector—Made of 18 Ga. brass with gutter to prevent water from dripping onto the floor when the door is opened.

Grille Vent—7 inch high bars of ⅜ x ⅜ in. seamless brass tubing.

Finish—Heavy chromium plating.

CONSTRUCTION OF *Junior* DOOR



PLAN OF JUNIOR DOOR

Frame—½ x ¾ in. seamless brass tubing with extruded brass mouldings.

Jambs—Double formed 18 Ga. brass; strike side of two channels and tension springs forming the adjustable jamb.

Hinge—Specially constructed, leakproof continuous brass piano hinge.

Lock—Two bullet catches, guaranteed against door binding.

Glass—Clear or obscure, set into a heavy rubber "U" channel.

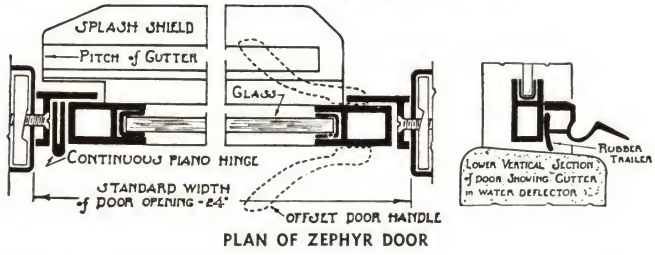
Handles—Special offset design on both sides of door.

Water Deflector—Made of 18 Ga. brass with gutter to prevent water from dripping onto the floor when the door is opened.

Grille Vent—7 inch high bars of ⅜ x ⅜ in. seamless brass tubing.

Finish—Heavy chromium plating.

CONSTRUCTION OF *Zephyr* DOOR



PLAN OF ZEPHYR DOOR

Frame—One-piece extruded aluminum alloy frame.

Jambs—Extruded aluminum alloy.

Hinge—Specially constructed, leakproof continuous aluminum piano hinge.

Lock—Two bullet catches, guaranteed against door binding.

Glass—Clear or obscure, set into a heavy rubber "U" channel.

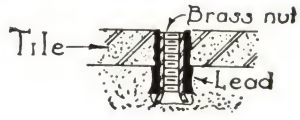
Handles—Special off-set design on both sides of door.

Water Deflector—Made of extruded aluminum with gutter to prevent water from dripping onto the floor when door is opened.

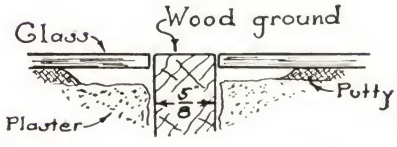
Vent—Horizontal solid aluminum towel bar.

Finish—"Alumilite."

WALL CONNECTIONS



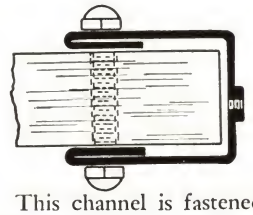
Tile—A lead anchor furnished by us is used for fastening purposes. The door or enclosure is securely fastened to lead anchors with machine screws.



On Glass—A wood ground is put up on the rough plaster, and should be flush with the finished wall. Wood screws are then used to fasten the door or enclosure to the wall.

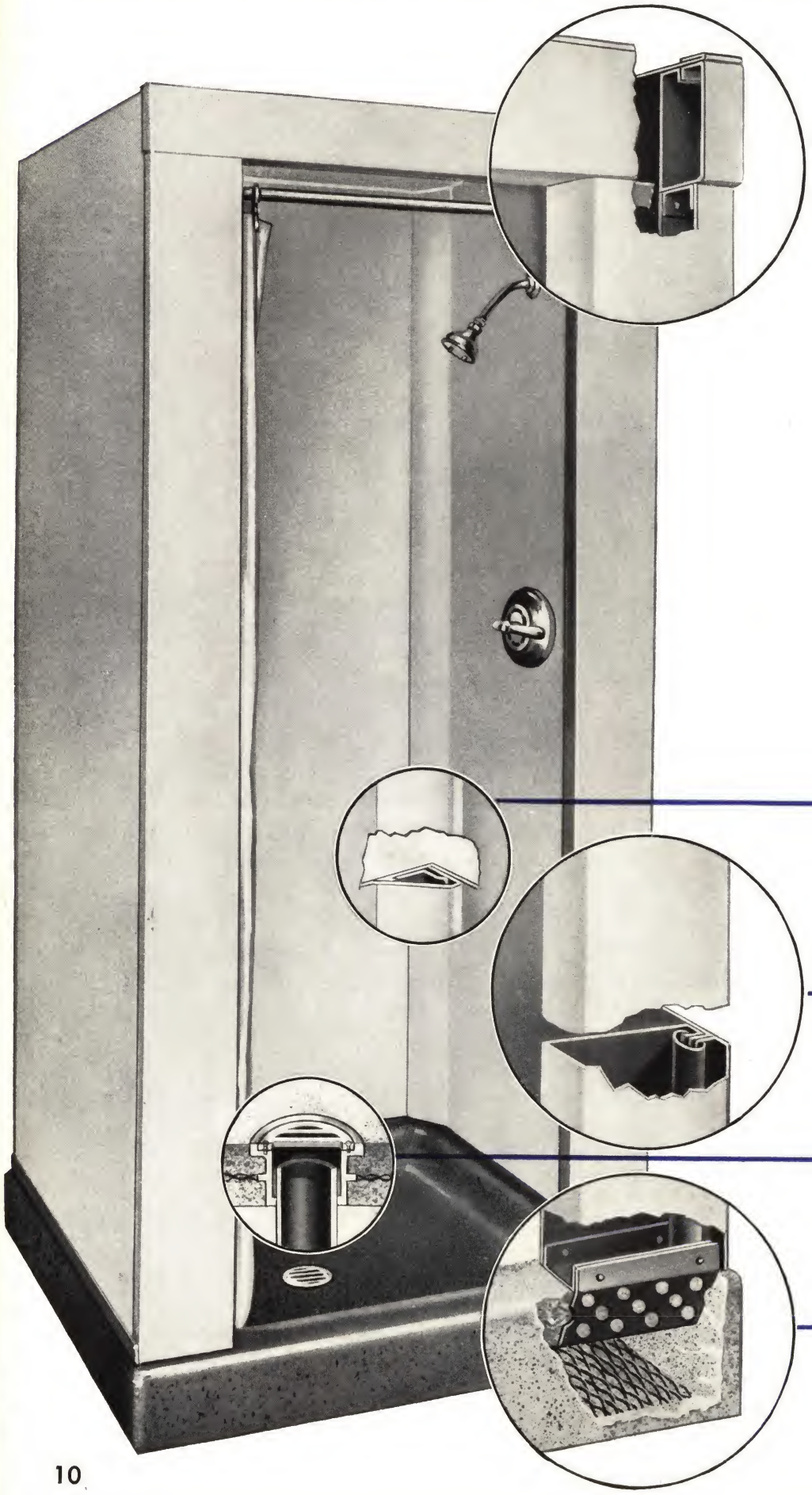
Plaster—On plaster walls a hole is first drilled through the metal lath and the door securely fastened by use of toggle bolts. This type of connection is also used on hollow metal door frames of Fiat shower cabinets.





Marble—When doors are to be erected on marble or structural glass walls, a channel is made to cap the end of the wall. This channel is fastened in place with through bolts and cap nuts.

CONSTRUCTION DETAILS OF FIAT ADMIRAL AND ENSIGN SHOWER CABINETS



HEADRAIL CONSTRUCTION — Hollow metal construction—ends of headrail slotted to receive side walls. "U" shape channels spot welded onto headrail drive down into hollow metal door stiles.

BACK CORNER — Corner construction renders leakage impossible. Spring steel flange eliminates all screws and makes for increased strength.

STILE CONSTRUCTION— Side panels locked into one piece hollow metal stiles by spring steel tubing.

RECEPTOR CONSTRUCTION—Receptor flange cast integral with receptor—note perforations in flange to insure bond.

Receptor flange extends 1 in. above shoulder on three sides and enters stile at front and is thus concealed from view.

Brass drain cast integral with receptor is set over 2-inch iron waste pipe. The strainer is removed to caulk the joint.

RECEPTORS—Sizes, Compositions, Types and Details



RECEPTOR TYPES

Corner—Used on Fiat shower cabinets . . . can also be used in conjunction with tile shower walls.



Extended—Used on Fiat shower cabinets.

Sizes

REG.	RAB.	EXT.	FLAT
30 x 30	30 x 30	30 x 42	30 x 30
30 x 32	.....	.....	.....
32 x 32	32 x 32	32 x 44	32 x 32
34 x 34	.....	34 x 46	.....
30 x 36	30 x 36	.....	.....
36 x 30	36 x 30	36 x 42	.....
36 x 36	36 x 36	36 x 48	36 x 36
36 x 42	.....	.....	.....
42 x 36	.....	42 x 48	.....
42 x 42	42 x 42	.....	42 x 42
46 x 36	.....	.....	.....
48 x 30	.....	.....	.....
48 x 36	.....	.....	.....
46 x 44	.....	.....	.....
.....	72 x 36	.....	.....

Corner Entrance Design

36 x 36	.....	.....	.....
42 x 42	.....	.....	.....

COMPOSITIONS

Terrazzo—Black and white marble chips (No. 0 and No. 1), white portland cement.

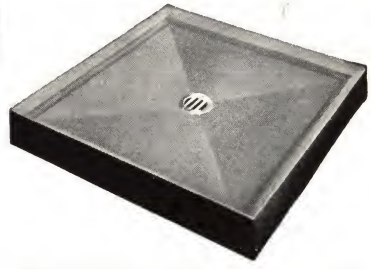
Art-Tex—Black traprock chips (No. 1), white and gray portland cement.



Regular—Used on Fiat shower cabinets . . . can also be used in conjunction with tile shower walls.

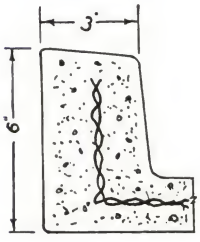


Rabbeted—Designed for marble or slate shower walls.



Flat—Used on Skipper shower cabinet. Terrazzo and Art-Tex types used in conjunction with tile shower walls.

SECTION THROUGH THRESHOLD



Note that the threshold slopes in to keep water from draining out on to the floor.

SECTION THROUGH FRONTS OF CORNER RECEPTOR



Heavy shoulder to conceal flange.

Perforations in flange insure bond.

Heavy expanded reinforcing steel mesh throughout entire receptor.

SECTION OF RECEPTOR WITH DELUXE SHOULDER

Heavy shoulder to conceal flange.

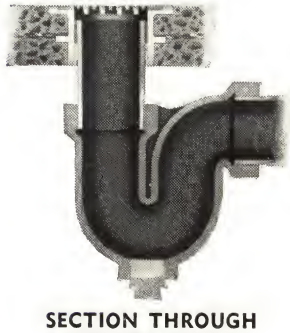
Perforation in flange to insure bond.

Heavy expanded reinforcing steel mesh throughout entire receptor.



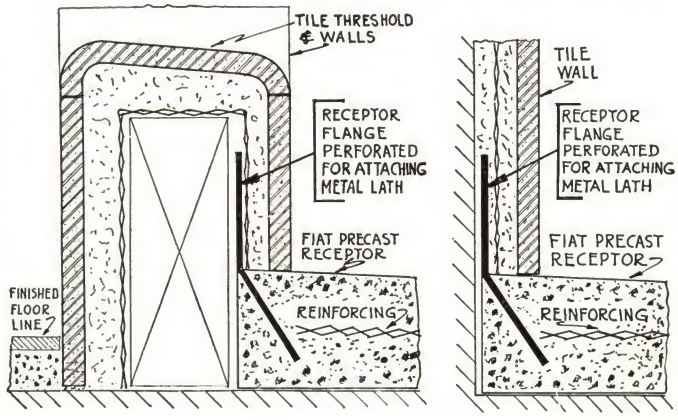
FIAT LEAKPROOF PRECAST RECEPTOR—FOR TILE SHOWER

SHOWER DRAIN



SECTION THROUGH SHOWER DRAIN

Chromium plated drain connection with a four-inch removable strainer plate which allows for inside lead caulk joint with 2-inch iron pipe and "P" trap. The drain connection is supplied with heavy lugs which insure bond when cast integral with receptor. This drain connection is standard on all Fiat receptors. Fiat does not supply the 2-inch iron pipe and "P" trap.



FIAT

SHOWROOMS & FACTORIES

Showrooms

CHICAGO . . . . . 1201 Roscoe Street

NEW YORK . . . . . 101 Park Avenue

BOSTON . . . . . 11 Beacon Street

PHILADELPHIA . . . . 1309 Arch Street

MINNEAPOLIS . . Room 412, National Building

WASHINGTON, D. C. . . 1254—24th Street N. W.

Factories

1209 Roscoe Street, Chicago, Illinois

21-45 Borden Avenue, Long Island City, New York

MEMBER
OF PRODUCERS' COUNCIL

FIAT METAL MANUFACTURING CO.

Fiat
METAL MFG. CO.

THE IDENTIFICATION OF A QUALITY LINE

THE HIMMEL BROTHERS CO.

Manufacturers of Shower Doors and Shields

1409-15 Dixwell Avenue, NEW HAVEN, CONN.

"HIMCO" EXTRUDED SHOWER DOORS AND SHIELDS

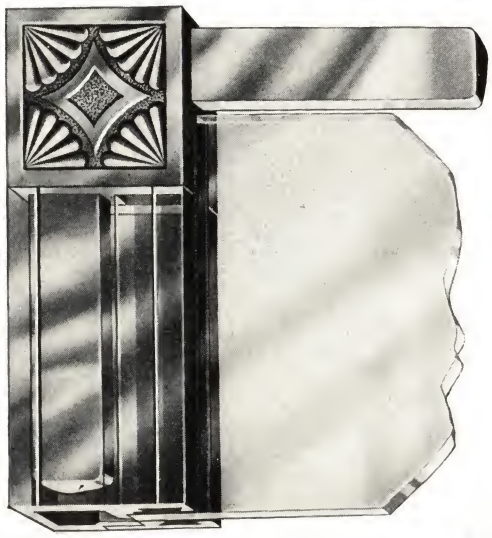
Sag-proof Water-proof Crack-proof

Based on "Himco" Patented Principle of Extruded Store Front Construction—Real custom built construction at a reasonable price. Heavy 10-gauge extruded bronze, heavily chromium plated.

Doors Are Sag-proof—Heavy extruded members are reinforced with mechanically forged, decorated corner angles, adding stiffness and preventing twisting or weaving of door.

Doors Are Water-proof—Special grooved shaped rubber packing is used on edge of jambs, and takes up any inequalities. A continuous piano hinge used on door has a wide lap on the latch side. Bottom of door is protected by a heavy rubber guard, which fits snugly against the sloped curb of enclosure or top of tub. A metal drip also carries back any water from face of door. The rubber guard is easily replaced by unscrewing the metal drip.

Glass Is Crack-proof—It is set in our patented extruded System No. 400 line rubber cushion construction, which allows glass to expand and contract, and takes up jars and shocks. In case glass is broken by accident, it is readily removed by simply unscrewing the cover mould on inside of door.



Patented

Illustration of the forged brass corner reinforcement showing one end in frame in phantom and one end exposed

Ventilating the Enclosure—In the single door to a shower stall, the grille is placed in top of door. In the enclosures over tub, the grille is carried to ceiling and is fixed; bottom of grille acts as a transom over door.

Standard sizes of "Himco" Shower Stall Doors:

24 in. x 72 in.	24 in. x 78 in.
26 in. x 72 in.	26 in. x 78 in.
28 in. x 72 in.	28 in. x 78 in.

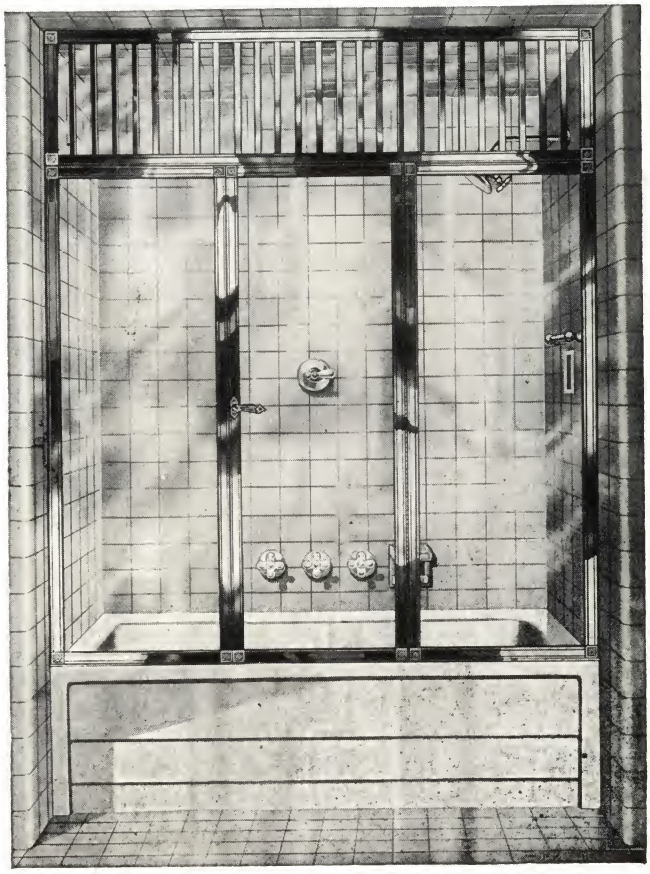
Other sizes will be made to order.

"Himco" Three Panel Glass Enclosure—For recessed tub showers, can be obtained with one section stationary and two sections to serve as doors, or with two sections stationary and one section to serve as door. Can be built to any dimensions required. Length of tub ordinarily determines width of enclosure. Quotations submitted for etched or special glass, special finishes, or other special requirements.

Hardware and Finish—Entire door and enclosure is finished in heavy chromium plated finish. Hardware designed especially for doors. Doors and stationary panels are glazed with the finest quality clear polished plate glass.



Patented



Patented

G. M. KETCHAM MFG. CORP.

Manufacturers of Shower Doors, Bathtub Enclosures, Medicine Cabinets

TELEPHONE
TRiangle 5-6306

81 Washington Street, BROOKLYN, N. Y.

BRANCH OFFICES

PHILADELPHIA, PA., 2402 Market St.—Telephone, Rittenhouse 5886 WASHINGTON, D.C., First and K Sts., N. E.—Telephone, Metropolitan 4685

SALES REPRESENTATIVES

BOSTON, MASS., A. Taylor Kennedy, 575 Albany St.
MIAMI BEACH, FLA., Patrick Mooney, Monterey Apartments, 1611 Michigan Ave.

SAMPLES ALSO DISPLAYED IN

NEW YORK, N. Y., Architects' Sample Corporation, 101 Park Ave. PHILADELPHIA, PA., Architects Exhibit, 17th and Samson Sts.



Neo Angle Tub Enclosure
Plate 8A and 8C

SHOWER STALL DOORS

A Construction

Solid extruded brass jambs and frames, ¼-in. polished plate glass; extra heavy 14-gauge piano hinge. All metal parts chromium plated.

C Construction

Heavy 14-gauge channel bronze frames; piano hinge 17-gauge brass, $\frac{7}{32}$-in. crystal glass. All metal parts chromium plated.

This construction, though differing in weight details and cost, is similar in appearance and operation.

Model A doors have our patented adjustable jamb feature.



Shower Stall Door
Models A and C

ENCLOSURES

Neo Angle Tub Enclosure

Consists of two doors and a stationary grille above. An ideal arrangement for this new tub.

Bathtub Shower Enclosure

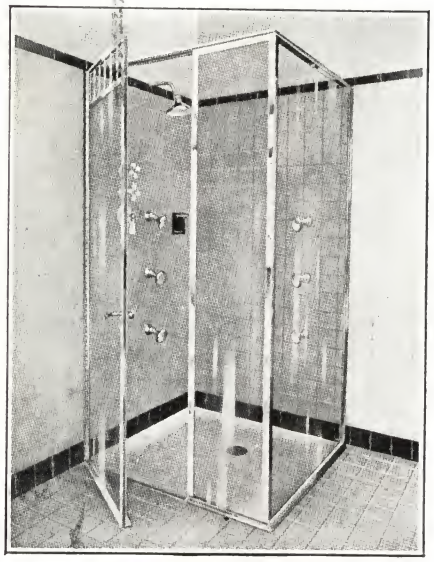
Represents an ideal arrangement where tub is recessed between two walls. Constructed so as to consist of two panels extending from each wall which can be of any desired size, and a door in the middle.

Corner Shower Enclosure

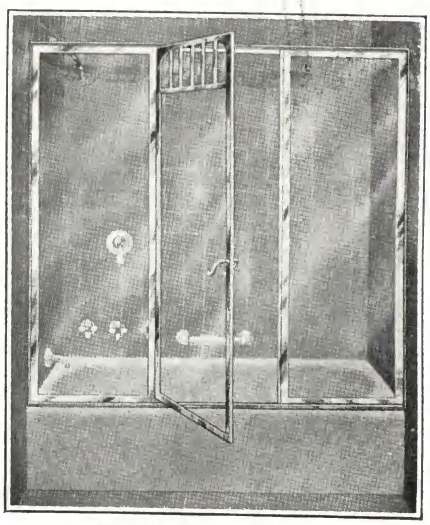
A practical enclosure affording means of saving space and of obtaining an extremely light shower stall.

Illustration shows enclosure placed upon a receptor. We can also construct same to fit over a tile base.

Complete Catalogue Furnished on Request



Corner Shower Enclosure
Plate 7A and 7C



Bathtub Shower Enclosure
Plate 2A and 2C

KEYSTONE SHOWER DOOR CO.

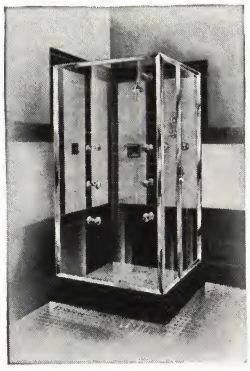
Manufacturers and Designers of Shower Doors and Bathtub Enclosures

3550-2552 North 16th Street, PHILADELPHIA, PA.

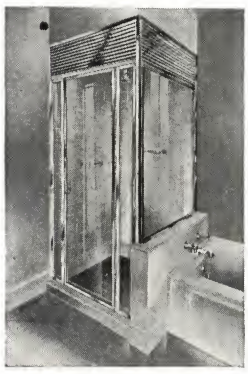
AGENTS IN PRINCIPAL CITIES



Door No. 40*



Enclosure No. 230†



Enclosure No. 240†

MATERIALS—MODELS

Our products are divided into four separate and distinct classes as follows:

Key Model, Reserve Model, Standard Model, De Luxe Model.

The metal entering into the construction of all models consists entirely of composition bronze and brass. All channels, angles and special shapes are extruded through dies, insuring evenness and uniformity in the process of manufacture. All screws and other fastenings are made of brass. No iron or steel is used in any part of our shower doors or bath enclosures, thus eliminating any possible chance of corrosion or stain on the chromium finish through oxidation.

The packing used for the installation of glass is composed of mineral and vegetable compounds of great durability, does not deteriorate with age, and will not disintegrate under water pressure. The glass is installed in the channel frames packed under pressure to insure a watertight fit.

Each structure is highly polished and chromium plated, making a beautiful finish impervious to water.

SPECIFICATIONS

Key Model—Consists of ⅞-inch special extruded channel, select crystal sheet glass, full length piano hinge, and metal drip apron. Mortise and tenon joints.

This model made for installation on Tile only.

Reserve Model—This consists of 1-inch special extruded channel frames with mortise and tenon joints, and angle return full length piano hinge, also metal drip apron. These doors are made with or without grill at top, or with scroll ornaments and urn, all as illustrated. Thickness of glass is ¼-inch plate.

Standard Model—This construction consists of 1-inch special extruded channel frames with miter joints securely fastened at corners with brass countersunk screws. Also full length hinge and angle combination, and metal drip apron. These doors are made with or without grill at top, or with scroll ornaments and urn. Thickness of glass is ¼-inch "polished plate."

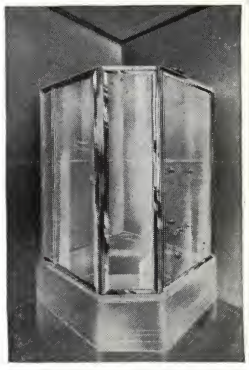
The separate shower or bathtub enclosures consisting of door and one or more panels are fitted with adjustment channels to compensate for walls built out of plumb.

De Luxe Model—This consists of 1¼-inch special extruded channel frames with mitered joints securely fastened at corners with brass countersunk screws. Special features of the De Luxe construction are channel and chair shapes for adjustment to irregular walls; baffle fittings and aprons with curled drip to shed the water inward into stall or tub. These doors are glazed with ¼-inch select quality plate glass.

CRAFTSMANSHIP

We specialize in the manufacturing of shower doors, tub enclosures and stall enclosures; thus we are able to give you the utmost in design, material and craftsmanship. Every feature of our products has been carefully proven for design, strength and durability. Each order is given individual attention and is custom-made to suit required specifications. This insures a perfect installation, beautifully executed and structurally sound.

Enclosure No. 110†



Enclosure No. 130†



Enclosure No. 160‡



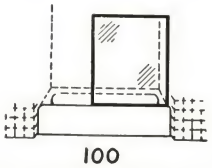
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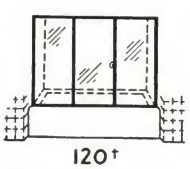
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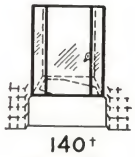
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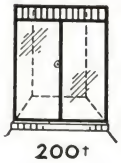
120†



140†



150†

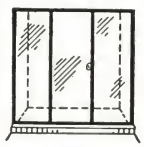


200†

ARCHITECTURAL SERVICE

We maintain an Architectural Department so that we may be of further service by sending at your request detailed prints on any type of installation required.

Our engineers have had many years' experience in our line and are glad to give you the benefit of their knowledge in construction and layout. We solicit inquiries.



210†



220†

† *With or Without Grill*

‡ *Standard and De Luxe Model Only*

* *De Luxe Model Only*

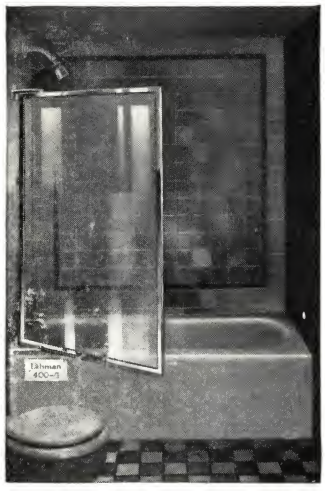
LEHMAN SPRAYSHIELD COMPANY

Shower Bath Doors—Sprayshields—Enclosures—Receptors

2514-2518 North Broad Street, PHILADELPHIA, PA.

REPRESENTATIVES IN

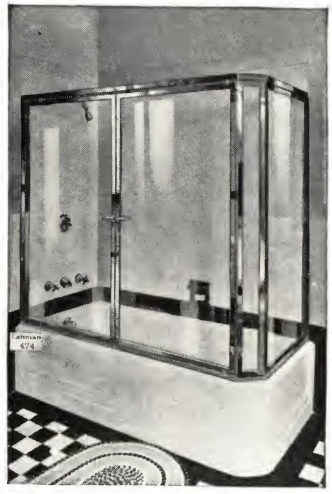
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SEATTLE
SPOKANE
ST. LOUIS
SYRACUSE
WASHINGTON



No. 400 Sprayshield
Swings in clearing valves
also opens outward



No. 412-44 Sprayshield
Without grille like No. 402 and 412
Shown with glass No. 702 and 704



No. 474 Enclosure
For corner tub
Panel follows 45° angle of tub



No. 843 Enclosure
For neo-angle corner bath
Recess tub enclosures also made

Custom Built for Perfect Fitting

Lehman Shower Enclosures are immaculate, sanitary, efficient, practical and economical. They bring comfort, beauty, and water protection to the bathroom without the expense of laundering and replacing mildewed curtains. They are built for durability without stinting on materials—no substitution of crystal as plate glass. Every door, sprayshield and compartment is made for its individual bathroom, for erection in new or old buildings.

Superior Design, Craftsmanship, Materials

Lehman equipment is built up to a standard to merit the continued confidence of architects and responsible contractors. It is not skimped down to a price for bargain hunters. Exclusive features, such as the hidden monosleeve hinge, vertical adjustment to compensate for building settlement, telescoping jambs and aprons, free floating roller catch, inward swinging of sprayshields, are covered by 23 patents and are the result of 15 years' research and specialization. Special fittings for attachment to marble and structural glass. Our process of pressure-pad glazing protects glass from contact with bronze, and provides for expansion and contraction. Every Lehman Enclosure bears our name and is fully guaranteed.

Solid Bronze for Durability

No thin tubing or flimsy construction. 1¼ to 2 lbs. of bronze per lineal foot of Lehman glazing frame. Grille spindles are ½-in. solid rod, lathe tapered. Screws are extra strength alloys.

Choice of Models

Swan—Extra heavy bronze frame—¼ in., 52-oz. select plate glass.
Doors—Monosleeve hinge, adjustable jambs. 51 pounds.*
Sprayshields—Spacing bar to connect brackets. 30 pounds.*

Mermaid—Bronze frame—¼ in., 52-oz. polished plate glass.
Doors—Monosleeve hinge, adjustable jambs. 45 pounds.*
Sprayshields—Spacing bar to connect brackets, 25 pounds.*

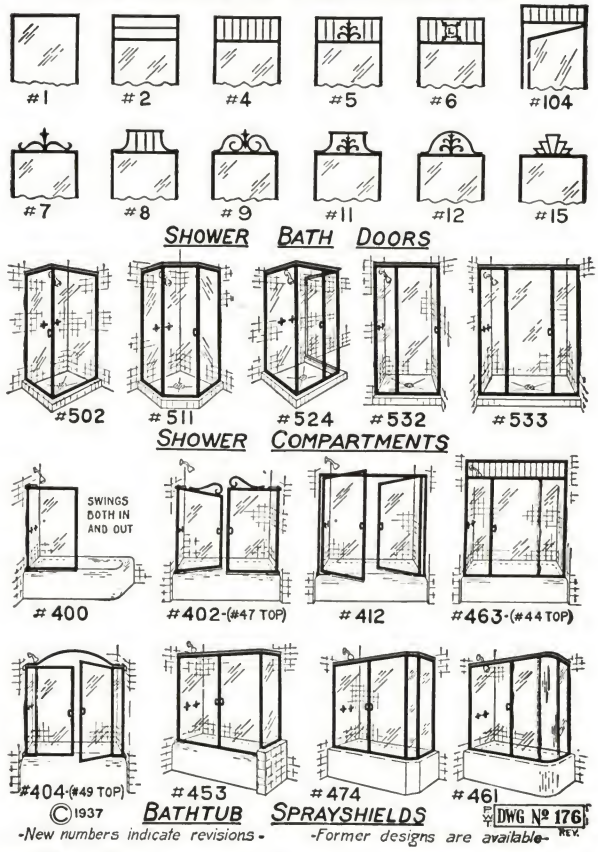
Gem—Bronze frame—$\frac{7}{32}$ in., 45-oz. selected crystal glass.
Doors—Patent monosleeve hinge, plain jambs. 39 pounds.*
Sprayshields—Solid bronze brackets, 20 pounds metal.*

Viking—Bronze frame—$\frac{7}{32}$ in., 45-oz. selected crystal glass.
Doors—Special piano hinge, made for tile only. 33 pounds.*

*"Pounds" refer to weights of metal in standard sizes of No. 4 doors, and No. 400 sprayshields of respective models.

LEHMAN SHOWER BATH ENCLOSURES

Chart Showing Typical Arrangements and Top Designs.
Available in Any Size, Model, Design Combination, or Glass.



Swan, Mermaid, Gem, models are similar in appearance and operation. All items custom made, any design, fully guaranteed. Clear glass and polished chromium are standard, but decorated glass and gold or other plating can be furnished. We reserve right to modify construction details.

Lehman Bathtub Sprayshields Swing In and Out

Only Lehman Patent Sprayshields swing inward over bathtubs, with clearance for the valves, out of the way when not in use. Also swing outward, providing full access for tub bathing and cleaning. With Lehman equipment any built-in tub serves also as a shower compartment, bringing the freshness of sparkling glass and chromium instead of the sogginess of "Bathing in a Tent."

Shower Bath Doors with Hidden Hinge

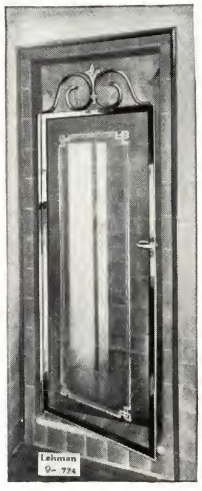
Lehman doors are custom built, insuring watertight fitting, and permitting a wide selection of ornamental designs of metal and glass, yet they cost no more than ordinary doors and reduce installing expense. Only Lehman doors are adjustable vertically. The full length bronze monosleeve hinges are integral with door frames, and eliminate objectionable screws and crevices.



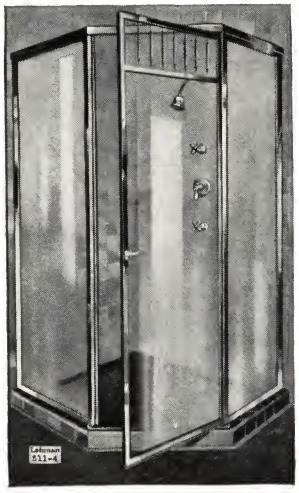
No. 4 Shower Door
Ventilator grille
Solid bronze spindles



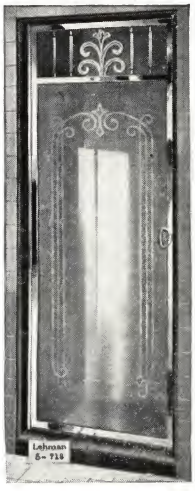
No. 553 Corner Compartment
Buttress wall and glass panel
Lehman Terrazzo Receptor



No. 9 Shower Door
For arched or square top
Glass No. 724 shown



No. 511 Glass Enclosure
No. 4 door—tile receptor shown
Made any size and any design



No. 5 Shower Door
Ornamental grille
No. 718 Glass shown

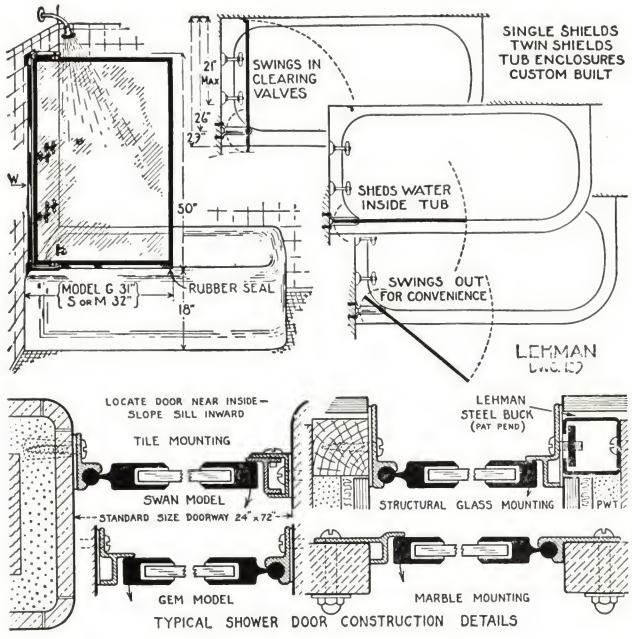
Lehman Crystal Shower Compartments

Glass enclosures increase the usable area of bathrooms, eliminating bulky darkening partitions, and reducing construction costs. Being made to measure, they can be fitted into any available nook, and they make extra bathrooms practical in very limited spaces—ideal for modernization. They are erected after tiling. Panels shipped glazed ready for erection.

Sprayshield Construction—Sprayshields are installed after fixtures and tile, without drilling the bathtub. Sturdy bronze brackets are attached to the wall, but all weight rests on the tub. Sprayshields hang inside the drainage line of the tub rim with a renewable rubber seal to close the joint. Stop bumpers and a friction catch regulate the swinging.

Standard single shields for 30-in. wide bathtubs: No. 400 Gem Sprayshield approx. 31 in. wide, 50 in. high. No. 400 Swan and Mermaid approx. 32 in. wide, 50 in. high.

Door Construction—Most Lehman doors are reversible, right or left, finished both inside and outside. Standard fittings are for attachment to tile. Fittings for marble or structural glass when ordered. Telescoping drainage apron. Latch is special free floating roller. Doors regularly open outward. Special jambs, aprons, saddles and gutters for all room conditions. Sill should drain inward ⅜ in. Build your doorway reasonably square, and send us finished dimensions. Made any size, but standard size fits 24x72 in. finished clear doorway.



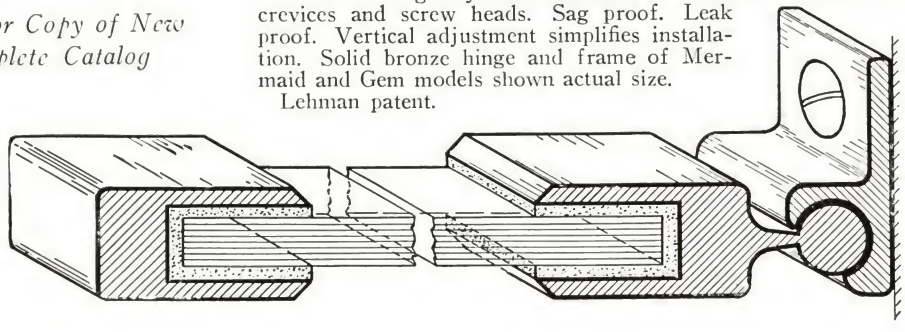


Write for Copy of New Complete Catalog

Lehman Monosleeve Hinge

Machined with door glazing frame from one bar of solid bronze. Full length cylinder eliminates hundreds of dirt-catching crevices and screw heads. Sag proof. Leak proof. Vertical adjustment simplifies installation. Solid bronze hinge and frame of Mermaid and Gem models shown actual size.

Lehman patent.



FRED H. LEWIS COMPANY

213 W. Hubbard Street, CHICAGO, ILL.

LEWIS SHOWER BATH CASINGS



Lewis Shower Bath Casing
As installed by plumbing contractor

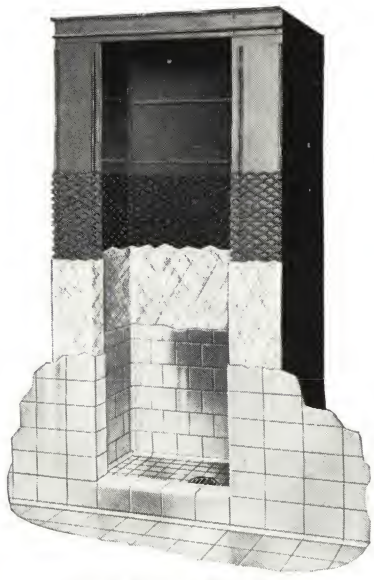
Lewis Shower Bath Casings provide a dependable and positive, leakproof method of building shower compartments with tile, Vitrolite, Carrara glass, marble or other kindred wall and floor facings.

The Lewis Casing is of knocked down construction which simplifies handling and installation. When assembled it presents a rigid, leakproof unit. It is installed on the rough floor but not fastened to the floor or surrounding walls. It simply rides the building—hence does not subject wall facings of the shower to any strain as a result of shrinkage of joists and studs vibration or settlement of the building.

STANDARD SIZES—REGULAR MODEL CASING

Casing size, in.	Outside of casing, in.		Approx. finished dimension of tile compartment, in.	
	Width	Depth	Width	Depth
36x36	36	36	33	32
36x42	36	42	33	38
39x40	39	40	36	36
42x36	42	36	39	32
42x42	42	42	39	38
45x46	45	46	42	42
48x36	48	36	45	32
48x42	48	42	45	38
48x48	48	48	45	44
54x42	54	42	51	38
60x48	60	48	57	44

Over-all height of all sizes 84 in.



Lewis Shower Bath Casing
Showing stages in construction of tile shower compartment

Details

Material—Pan is of rigid, hard tempered sheet zinc. Walls and furring are of 18-gauge sheet steel coated inside and out with mineral asphalt.

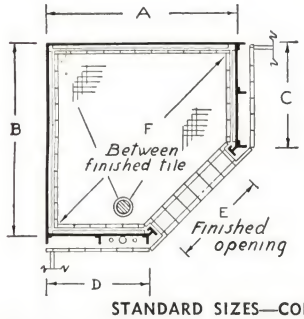
Perforated Furring Angles—Spot welded to walls and pilasters, provide anchorage for metal lath and hold lath ⅜ in. away from casing walls to insure strong mortar bond. Can be furnished with outside wall furred for corner installation.

Waste Connection—For double drainage drain with clamping device—see list below.

Doors—Made especially for use with Lewis Casings can be furnished. Casings provide for 24x72-in. finished tile door opening.

Open Top—Permits continuation of compartment walls to room height, providing adequate "breathing space" for bather. Separate lath is attached to studs above top of casing. This prevents strains in finished walls of the compartment.

Installation—Made by plumbing contractor. Casings do not change specifications for any other trade.



Corner Entrance Casings

Furring on outside of corner entrance model provides space for supplies and valves. When corner entrance casings are installed to extend into the bathroom the space above the casing to room ceiling is left open.

STANDARD SIZES—CORNER ENTRANCE CASINGS

Casing size, in.	Dimensions, in.						Over-all height, in.
	A	B	C	D	E	F	
42x42	42	42	21	21	24	55	84
45x45	45	45	24	24	24	58	84
48x48	48	48	26	26	26	63	84

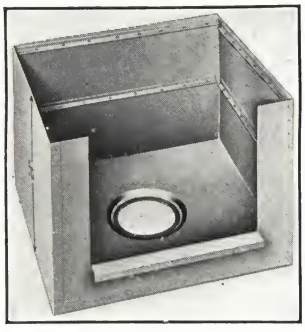
Drains

Any drain listed below can be used with Lewis Casings or Pans.

Fleming Drains	Josam Drains
F-40 Series—any drain F-50 Series—any drain F-60 Series—any drain F-70 Series—any drain F-80 Series—any drain	300 Series—Nos. 352 to 383, inclusive 300R Series—Nos. 353R to 373R, inclusive Any combined shower drain and trap which takes a plated brass strainer.

2-in. bottom outlet drain with clamping ring and chromium plated strainer can be furnished with casings or pans if desired.
Note: Clamping ring *must* be used.

Lewis Prefabricated Shower Pan



An inexpensive, watertight, factory made pan for roughing-in shower compartments of tile, etc. Eliminates the uncertainties of "made on the job" pans.

24 inches high. Made of hard tempered sheet zinc. Furring angles stiffen pan and provide anchorage for metal lath.

STANDARD SIZES—PANS

Pan size, in.	Outside of pan, in.			Approx. finished dimension of tile compartment, in.	
	Width	Depth	Height	Width	Depth
36x36	36	36	24	33	33
36x42	36	42	24	33	39
39x39	39	39	24	36	36
42x36	42	36	24	39	33
42x42	42	42	24	39	39

Special sizes at slight extra cost.

Other Lewis Products

Glass Shower Curtains for Bathtubs.
Glass Shower Doors.

MILWAUKEE STAMPING COMPANY

824 South 72nd Street, MILWAUKEE, WIS.

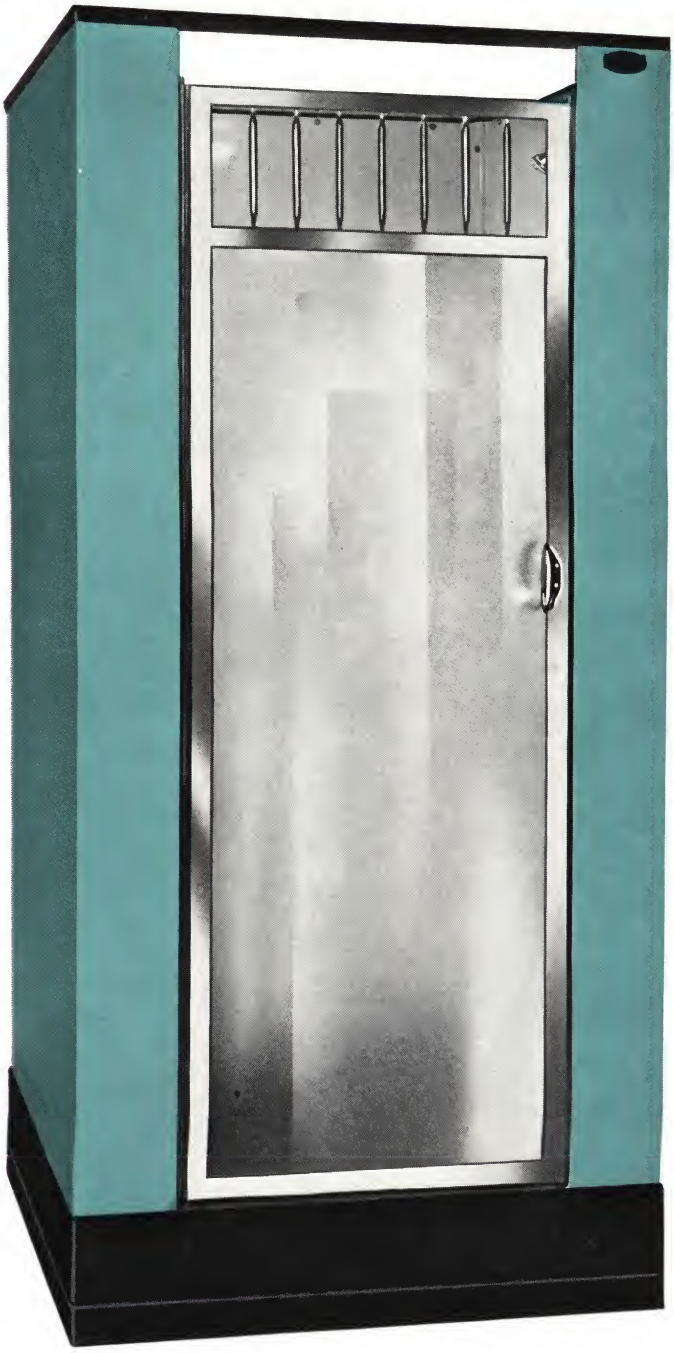
CHICAGO OFFICE, 150 No. Wacker Drive—Telephone: Randolph 4227-28 NEW YORK OFFICE, 50 Cliff Street
REPRESENTATIVES IN ALL PRINCIPAL CITIES

For Milwaukee Stamping Company's Toilet Partitions and Builders Hardware, see File Index

BATHE-RITE SHOWER CABINETS

A SHOWER OF GOOD HEALTH

Modern Bathe-Rite Shower Cabinets hold an enviable position of leadership in the shower cabinet field. Bathe-Rite is a name which is first choice of architects and contractors the country over because it represents the very smartest in modern cabinets, styled and built to meet the present-day demands for permanent, leak-proof, low-cost shower installations. There is a Bathe-Rite Cabinet for every purpose . . . each constructed with a full measure of quality and durability.



BATHE-RITE RECEPTORS

TERRAZZO — Fine marble chips and cement, pre-cast with cross-laced steel and reinforcement. Attractive hand-polished, slip-proof finish which is resistant to water, acid, alkali, and grease. Center drain constructed for easy assembly and life-time service.

GREY GRANITE — An economical receptor made of white cement mixed with white marble chips, crushed granite, and crushed copper slag. A water-proof and slip-proof finish resists acid, alkali, and grease. Heavy galvanized expanded metal reinforcement. Color is grey speckled with black.

VITREOUS (Porcelain) — Made of heavy steel welded into one piece. Cream stipple enamel outside and cream and white inside. Floor is slip-proof. Base anchoring frame of galvannealed steel fastens to floor. Receptor anchors to base frame. Special colored finishes at a slight extra cost.

GREYSTONE RECEPTOR — An economical receptor of grey cement and lannon stone chips. Heavy expanded galvanized metal reinforcement. White color.

METAL RECEPTOR — A substantial one-piece construction made with bottom frame eliminating filling or grouting under cabinet. Finished in black synthetic baked enamel. Center drain.

BATHE-RITE WALLS

Walls for all models are three-piece knock-down construction except in Models K and B, which are welded one-piece units. Wedge type joints at the rear right and left hand corners allow for positive leak-proof assembly. Walls connect to receptor with brass machine screws, chrome or nickel plated. All connections in assembly are made from inside of cabinet. Gauge and type of metal varies with models. Finishes: Prime, Green, White, and special colors.

BATHE-RITE EQUIPMENT AND ACCESSORIES

Bathe-Rite Shower Cabinets are self-contained, requiring no additional under structure, lead pan or other similar preparatory construction. Cabinets are guaranteed to remain water-tight and are not affected by seasonal building movement. Cabinets can be drilled for any type valves and head if template or drilling dimensions are furnished. Valves and head should always be located on side wall for easy access before entering cabinet. Standard shower head height is 5 ft. 6 in. from receptor.

All square cabinets come in 30″ x 30″, 32″ x 32″, 36″ x 36″, and corner models 36″ x 36″. Certain models can be furnished in special sizes.

BATHE-RITE SHOWER CABINETS

MODEL K. T. — The very finest shower cabinet made. Ideal for the best residences and all other types of high class buildings. Walls are 14-gauge B. & S. Kupraluminum. Terrazzo receptor. All sizes. Priced from $155.50 to $178.00.



MODEL F. F. — A good quality cabinet for residences, apartments, hotels, and all other public buildings. Fine appearance and sturdy construction. Grey Granite receptor. All sizes. Priced from $96.50 to $114.00. Corner Model F. F. C. priced from $111.50 to $124.00.





MODEL K. T. C. — The same fine quality construction throughout as in Model K. T. but in the corner style. Exceptionally popular where space is limited. Priced from $175.50 to $188.00, completely equipped.

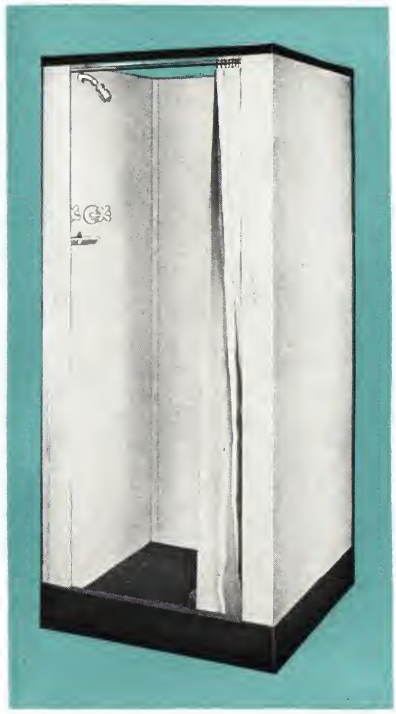


MODEL C. F. — A medium priced cabinet that has won national preference for general shower installations. Quality built and smartly styled. Grey Granite receptor. All sizes. Priced from $60.50 to $93.50. Corner Model C. F. C. priced from $93.50 to $103.50.

MODEL F. T. — A fine quality shower cabinet styled for the better residences, apartments, hotels, clubs, and all public buildings. Built for lifelong service. Terrazzo receptor. All sizes. Priced from $111.50 to $129.00. Corner Model F. T. C. priced $126.50 to $139.00.



MODEL C. V.—Medium price and high quality are combined in this popular cabinet designed for general shower facilities. Sturdily built. Vitreous Enamel (Porcelain) receptor. All sizes. Priced from $60.50 to $93.50.



See Specifications on Page 4

BATHE-RITE SHOWER CABINETS

MODEL K — A Kupraluminum model of special aluminum alloy. Designed for every type of building. Welded one-piece unit. Lifelong service. Standard sizes. Priced from $128.50 to $133.50. Corner Model K. C. priced at $143.50. Special sizes to order.





MODEL C. V. C.—All of the same fine qualities built into Model C. V. are included in this corner model. Extremely popular when space is a consideration. Vitreous receptor. Priced from $93.50 to $103.50.

MODEL B — An unusually heavy steel cabinet built for heavy duty use in industrial plants, institutions, hotels, and the like. Welded one-piece construction. Standard sizes. Priced from $70.00 to $75.00. Model B. C. corner style at $85.00. Special sizes to order.



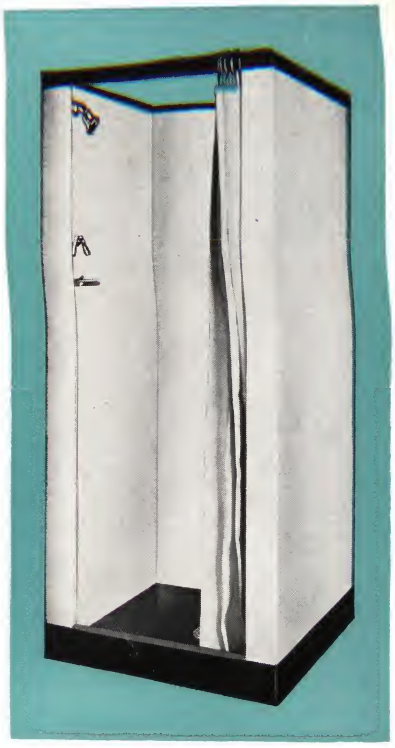
MODEL D—A popular priced cabinet for summer homes, tourist camps, clubs, etc.. Receptor of heavy steel with synthetic baked enamel. Sizes 32″ x 32″ and 36″ x 36″ only. Priced from $60.50 to $73.50.





MODEL A. F. — A cabinet that is favored for low-cost installation. Similar to Model A but with Greystone receptor. Size 30″ x 30″ only. Priced from $37.85 to $47.85.

MODEL A — A low-priced shower designed for summer homes, low-cost residences, resorts, basements, etc. Economical yet extremely serviceable. Synthetic baked enamel steel receptor. Size 30″ x 30″ only. Priced from $34.85 to $44.85.



See Specifications on Page 4

MILWAUKEE STAMPING COMPANY

BATHE-RITE SHOWER CABINETS
A SHOWER OF GOOD HEALTH

ARCHITECTURAL SPECIFICATIONS

Furnish and Install Bathe-Rite Cabinet Size.....

MODEL K. T. — Heavy 14-gauge B. & S. Kupraluminum walls. Furnish in (prime coat), (white), (matched) synthetic baked enamel finish. Pre-cast Terrazzo galvanized expanded metal reinforced receptor. Equipped with polished chrome plated brass shower head, twin valves, soap dish, 1″ curtain rod and hangers with curtain, drain with removable strainer, 2″ pipe caulking connection.

MODEL K. T. C. (Corner) — Same specifications as in Model K. T.

MODEL F. F. — Heavy 16-gauge galvannealed steel walls. Furnish with (prime coat), (white), (matched) synthetic baked enamel finish. Pre-cast Grey Granite galvanized expanded metal reinforced receptor. Equipped with polished chrome plated brass shower head, twin valves, soap dish, 1″ curtain rod and hangers with curtain, drain with removable strainer, 2″ pipe caulking connection.

MODEL F. F. C. (Corner) — Same specifications as in Model F. F.

MODEL F. T. — Heavy 16-gauge galvannealed steel walls. Furnish in (prime coat), (white), (matched) synthetic baked enamel finish. Pre-cast Terrazzo steel reinforced receptor. Equipped with polished chrome plated brass shower head, twin valves, soap dish, 1″ curtain rod and hangers with curtain, drain with removable strainer, 2″ pipe caulking connection.

MODEL F. T. C. (Corner) — Same specifications as in Model F. T.

MODEL C. F. — Heavy 18-gauge galvannealed steel. Furnish in (prime coat), (white), (matched) synthetic baked enamel finish. Pre-cast Grey Granite galvanized expanded metal reinforced receptor. Equipped with polished chrome plated brass shower head, twin valves, soap dish, 1″ curtain rod and hangers with curtain, drain with removable strainer, 2″ pipe caulking connection.

MODEL C. F. C. (Corner) — Same specifications as in Model C. F.

MODEL C. V. — Heavy 18-gauge galvannealed steel walls. Furnish in (prime coat), (white), (matched) synthetic baked enamel finish. Welded one-piece Vitreous enamel receptor. Equipped with polished chrome plated brass shower head, twin valves, soap dish, 1″ curtain rod and hangers with curtain, drain with removable strainer, 2″ pipe caulking connection.

MODEL C. V. C. (Corner) — Same specifications as in Model C. V.

MODEL B — Heavy ⅛″ rust-resisting steel walls. Welded one-piece unit. Receptor, galvanized steel, inverted construction. Furnish in grey neutral baked on prime coat. Equipped with polished chrome plated brass soap dish, 1″ curtain rod and hangers, white duck curtain, drain with removable strainer, 2″ pipe caulking connection. Available in special sizes.

MODEL B. C. (Corner) — Same specifications as in Model B.

MODEL K — 10-gauge B. & S. Aluminum walls. Welded one-piece unit. 8-gauge B. & S. Aluminum receptor, inverted construction. Furnished with baked on aluminum prime coat. Equipped with polished chrome plated brass soap dish, 1″ curtain rod and hangers, white duck curtain, drain with removable strainer, 2″ pipe caulking connection. Available in special sizes.

MODEL K. C. (Corner) — Same specifications as in Model K.

MODEL D — Heavy galvannealed, rust-resisting steel walls. Furnish in (prime coat), (white), (matched) synthetic baked enamel finish. Heavy steel receptor to be baked synthetic black enamel. Equipped with dull chrome plated brass shower head, twin valves, soap dish, 1″ curtain rod with hangers and curtain, drain with removable strainer, 2″ pipe caulking connection. Available in 32″ x 32″ and 36″ x 36″ only.

MODEL A — 20-gauge galvanized steel walls. Furnish (unfinished), (green) or (white) synthetic baked enamel finish. Receptor of heavy steel in black baked enamel. Equipped with dull chrome plated brass shower head, twin valves, soap dish, curtain hangers and white duck curtain. Chrome plated drain with removable strainer, 2″ pipe caulking connection. Available in 30″ x 30″ only.

MODEL A. F. — 20-gauge galvanized steel walls. Furnish (unfinished), (green) or (white) synthetic baked enamel finish. Pre-cast reinforced Greystone receptor. Equipped with dull chrome plated brass shower head, twin valves, soap dish, curtain hangers and white duck curtain. Chrome plated drain with removable strainer, 2″ pipe caulking connection. Available in 30″ x 30″ size only.

ADDED EQUIPMENT

Bathe-Rite Shower Cabinets can be furnished with the following added equipment at slightly added costs.
Glass Shower Door with frame of heavy drawn brass tubing, polished chrome finish. Hinge full length of door. Translucent glass $\frac{7}{32}$″ thick.

Top Cover with dome light and brackets for mounting electrical connections. Finished to match cabinet.

Filler Plates to cover openings of 1″ or more between abutting cabinets or between cabinet and wall. On smaller openings, furnish joint strips.

MERIT SHOWER CABINET CORP.

TELEPHONE
CAledonia 5-5195

OFFICE AND SHOWROOM
101 Park Avenue, NEW YORK, N. Y.
FACTORY AND WAREHOUSE: 144-150 West 18th Street, NEW YORK, N. Y.

Merit Shower Cabinets

Merit Shower Cabinets are designed to meet practical sanitation requirements. The cabinet walls are made of *"Armco Paintgrip"* stretcher leveled steel sheets, chemically treated to thoroughly clean them of any foreign material and the entire surface coated with zinc. The walls are then "Parkerized" to produce a smooth bonderized surface for the prime coat. Cabinets are finished with DuPont "Dulux" enamels baked on at high temperatures and can be furnished in any desired color.

Merit Shower Cabinets are shipped "knocked down." They are quickly and easily assembled and are absolutely leakproof. All models are completely equipped with accessories ready to connect to hot and cold water pipes and drain pipes.



"Superior"
Model No. 50

A high grade cabinet for use where the best is desired. 16-gauge steel. Standard equipment includes chrome-plated brass shower valves; ball joint water-saving shower head, soap dish, brass chrome-plated octagon curtain rod and curtain of selected quality. Fittings have octagon design flanges. Made in following sizes: 30″x30″x82″; 30″x36″x82″; 32″x32″x82″; 36″x30″x82″; 36″x36″x82″; 36″x42″x82″; 42″x36″x82″. No. 120 Glass Door optional.



Metal Shower Door
Model No. 175



"Michigan"
Model No. 60

Built of 18-gauge steel. Furnished completely equipped ready for installation. Made in three sizes: 30″x30″x78″; 32″x32″x78″; 36″x36″x78″

Merit Shower Bath Receptors

These receptors are "precast" in various sizes and in three grades as listed below. They are equipped with a brass chrome-plated drain, securely embedded. All types are leakproof and non-slip. Walls are fastened firmly to the receptor, thus becoming an integral unit, unaffected by settlement, expansion or contraction.

Terrazzo — White portland cement, with black and white marble chips, polished to smooth surface.

Carbostone — White portland cement, crushed stone aggregate, evenly distributed carborundum flakes showing on the finished surface.

Durostone — White and gray portland cement and crushed stone aggregate.

Merit Shower Doors

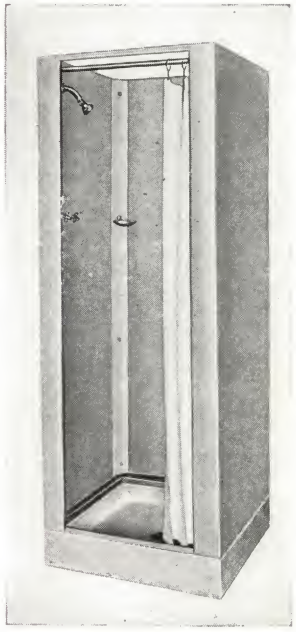
Metal Shower Door, Model No. 175 is an inexpensive, leakproof door which can be attached to any Merit Shower Cabinet. Furnished in color to match.

Regular Equipment — Heavy brass piano hinge and drain gutter, cast bronze chrome plated handle, and a chrome plated slide lock. Height of door 63 ins. allowing space at top for vision and ventilation.



"Ontario"
Model No. 70

Built of 20-gauge steel. Furnished completely equipped ready for installation. Made in three sizes same as Michigan Model No. 60. Illustrated with No. 175 Metal Door



"Erie"
Model No. 80

An excellent cabinet for use where a low priced shower is desired. Made in one size only: 30″x30″x78″

HENRY WEIS MANUFACTURING CO., INC.

CABINET SHOWER DIVISION

ELKHART, INDIANA

Sold Nationally through Plumbing Jobbers

For Metal Compartment Division Products, see Manufacturers' Index

Sixteen years of progressive cabinet shower experience with exhaustive tests under every condition of use are behind each **Weisway** Cabinet Shower. Thousands of installations in all types of buildings and under all conditions of service confirm the tested claims made for the new line of **Weisways** introduced in 1935.

WEISWAY Cabinet Showers

Guaranteed Leakproof

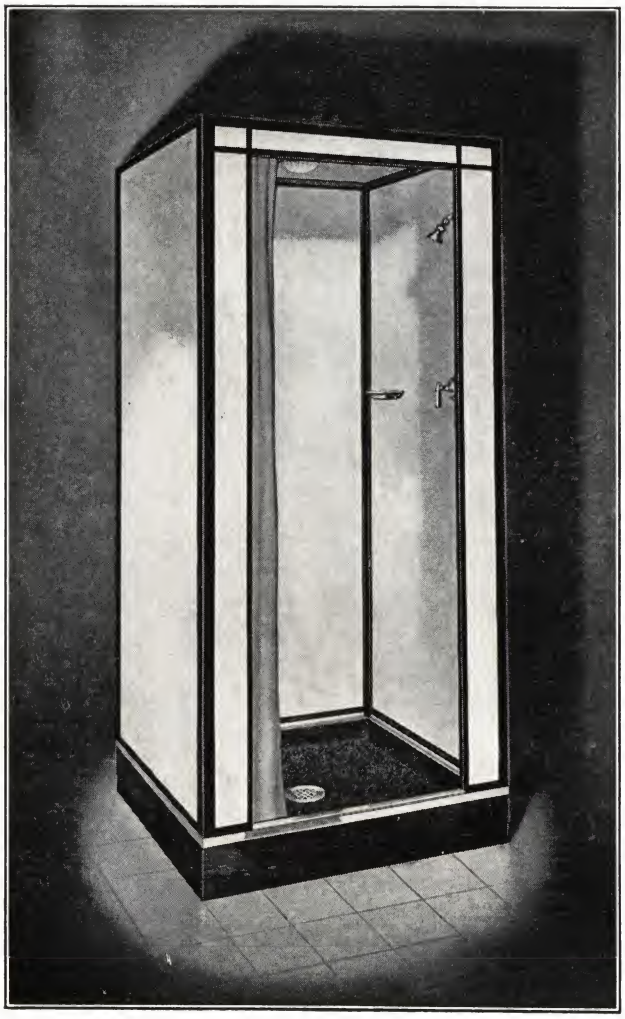
Leading architects the country over are specifying them.

FOOT-GRIP—NO-SLIP RECEPTOR (Patented)—For the first time in the plumbing industry, under a newly developed process, a **Vitreous Porcelain Enameled Cabinet Shower Receptor** has been produced, the floor of which is positively "non-slip" dry or wet. Made of one-piece heavy Armco Iron, it is leakproof, non-breakable, non-absorbent, thoroughly sanitary, and can be carried and set by one man.

FLUSH OUTSIDE CONSTRUCTION—There are no projecting members outside to conflict with room plaster or trim—snug, neat installation.

NO VISIBLE BOLTS AND SCREWS—Due to entirely new methods of fabrication and assembly no bolt or screw heads are visible from either the inside or outside of the cabinet—an exclusive **Weisway** feature—finest finished appearance.

TYPES—There are two types of cabinets available in this new construction. **VP Weisway** and **BW Weisway**. Both have the same construction and assembly features throughout and the same Vitreous Porcelain "Foot-Grip—No-Slip" receptors. In the **VP Weisway**, the entire cabinet body is of Armco Iron finished with **Vitreous Porcelain Enamel** inside and out. In the **BW Weisway**, the cabinet body is of galvannealed steel finished in the finest baked-on synthetic gum enamel.



VP WEISWAY
Vitreous Porcelain Enamel

WALLS—Armco Iron. Standard finish—interior and front faces of entrance stiles, white vitreous porcelain enamel with black trim. Available in other colors in shades that will harmonize with colored bathroom fixtures of other manufacture. Exterior (standard finish) sides and back, black ground-coat vitreous porcelain enamel. When either or both sides or back are exposed, they are finished to match interior, if so ordered, at small additional charge. Top, including Weis Showerlite, less electrical equipment, furnished as an extra.

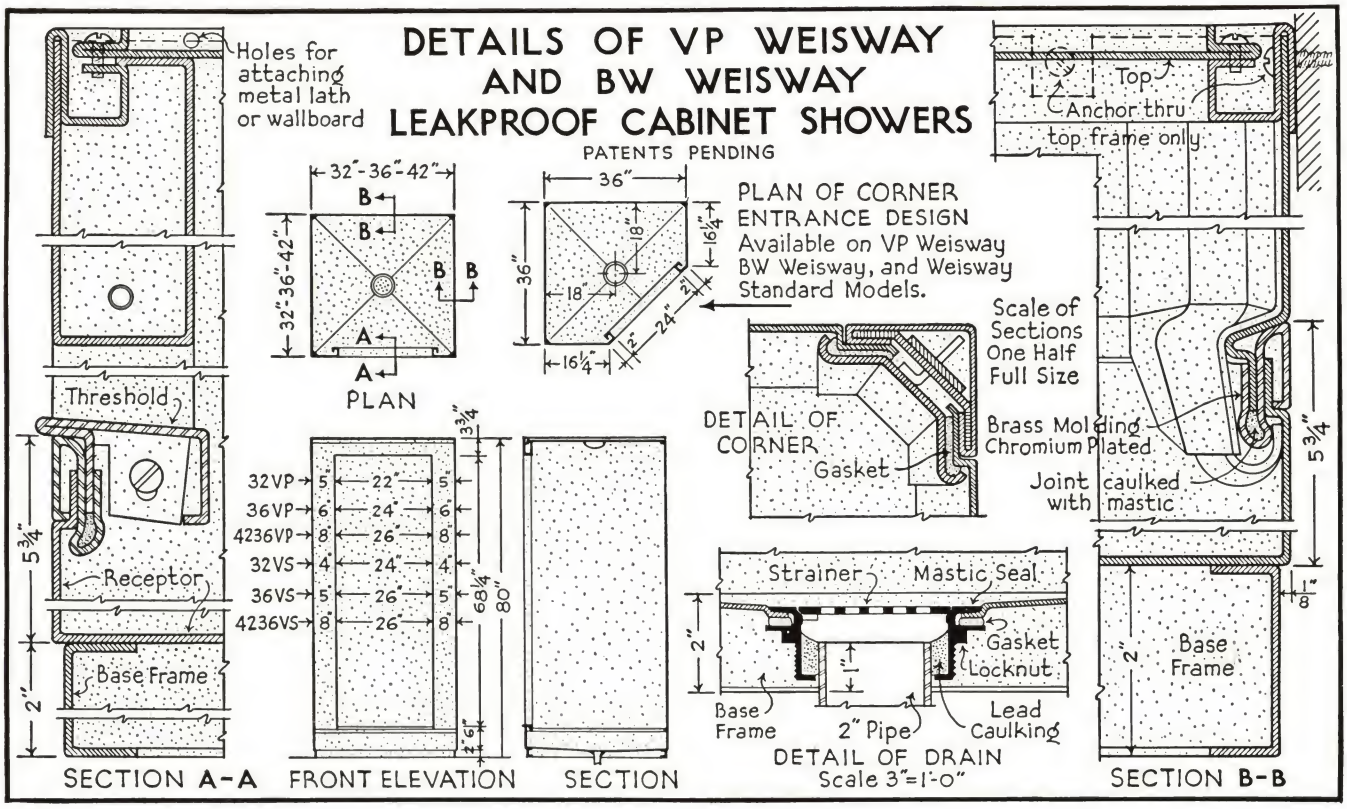
RECEPTOR—Armco Iron, one piece, vitreous enamel. Exterior Jet Black; Interior Textured Green on Black. Floor, "Foot-Grip—No-Slip" surface. Cast waste with strainer, threshold, and exterior trim, all brass chrome plated.

STANDARD EQUIPMENT—Brass Chromium Plated: (1) Two-valve (renewable seats) combination unit. (2) Adjustable water-saver type, self-cleaning head. (3) Cast Brass waste with strainer for 2-in. pipe. (4) Soap Dish. (5) Curtain Rod.

Size, in. W D H	Catalog number	Code	Approx. Shipping weight
32x32x80	32VP	PWLS	340 lbs.
36x36x80	36VP	PBOK	360 lbs.
36x36x80*	36VPC*	PUDX	360 lbs.
36x42x80	3642VP	PYXK	410 lbs.
42x36x80	4236VP	PADN	410 lbs.

Sizes other than above available.
* Corner entrance model; see illustration for BW WEISWAY model.

NOTE: VP WEISWAY is illustrated with mixing valve, optional equipment on all WEISWAY Cabinets. Walls must be drilled at factory for standard, optional or other specified fixtures.



BW WEISWAY

Baked Synthetic Gum Enamel Cabinet

CONSTRUCTION—The construction features of the **BW Weisway** are identical with those of the **VP Weisway** as shown on the construction details above.

WALLS—Galvannealed steel. Standard finish White Weisway baked enamel, inside and out, with black trim. Other colors at small extra cost. Also furnished baked prime coat for finish by others. Top, including Weis Shower-lite, less electrical equipment, furnished as an extra.

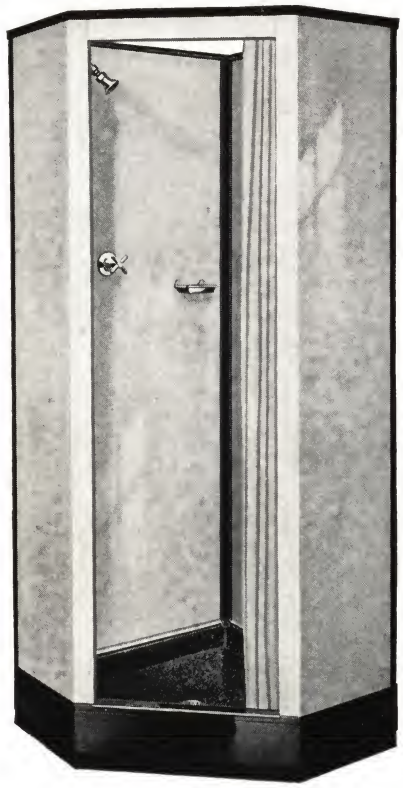
RECEPTOR—Armco Iron, one piece, vitreous porcelain enameled; Exterior, Jet Black; Interior, Textured Green on Black. Floor, "FOOT-GRIP—NO-SLIP" surface. Threshold, Black vitreous porcelain enameled. Cast waste with strainer, brass chromium plated. Exterior trim brass enameled.

STANDARD EQUIPMENT—Brass Chromium Plated: (1) Two-valve (renewable seats) combination unit. (2) Adjustable, water-saver type, self-cleaning head. (3) Cast waste and strainer for 2-in. pipe. (4) Soap dish. (5) Curtain rod.

Size, in. W D H	Catalog number	Code	Approx. Shipping weight
32x32x80	32VS	VELZ	310 lbs.
36x36x80	36VS	VOSR	330 lbs.
36x36x80*	36VSC*	VROB	330 lbs.
36x42x80	3642VS	VIZU	390 lbs.
42x36x80	4236VS	VUEP	390 lbs.

* Corner entrance model; see illustration.
Sizes other than above on special order.

NOTE: BW WEISWAY is illustrated in corner entrance design—also available in VP WEISWAY and WEISWAY Standard—suggested where space arrangement requires special consideration for convenient entrance.



WEISWAY STANDARD

WALLS—Special processed galvanized steel. Finish, White Weisway baked enamel, inside and out. Other colors at small extra charge. Also furnished in baked prime coat for finish by others. Corner assembly members and top frame, Black Weisway baked enamel.

STANDARD EQUIPMENT — Brass Chromium Plated: (1) Two-valve (renewable seats) combination unit. (2) Adjustable, water-saver type, self-cleaning head. (3) Cast waste and strainer for 2 in. pipe. (4) Soap dish. (5) Curtain rod. (6) White duck curtain, 100% pre-shrunk, with chromium rings.

WEISWAY STANDARD



Patented

RECEPTOR—Armco Iron, one-piece, vitreous porcelain enameled; exterior, Black; interior, Textured Green on Black. Floor, "Foot-Grip—No-Slip" surface. Threshold, Black vitreous porcelain enameled. Cast waste with strainer, brass chromium plated.

Size, inches W D H	Catalog number	Code	Approx. Shipping weight
32x32x76	32VR	SPVO	250 lbs.
36x36x76	36VR	SPZU	270 lbs.
36x36x76*	36VRC	SPKE	270 lbs.

* Corner entrance model; see illustration for BW WEISWAY model.

WEISWAY JUNIOR

Made in one size only, designed to meet needs where space is limited. Specifications, except for modified refinements, are similar to the Weisway Standard.

Size, inches W D H	Catalog number	Code	Approx. Shipping weight
30x30x76	30SP	SPLR	195 lbs.

COTTAGER

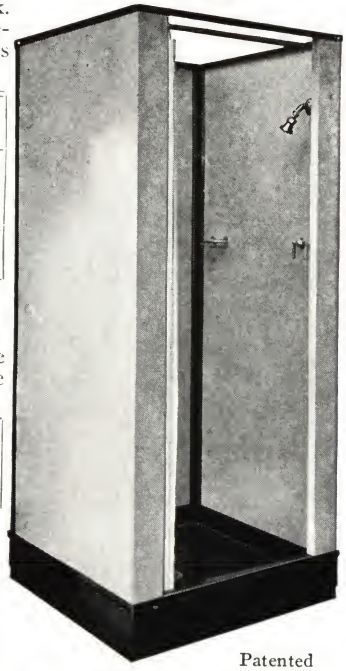
WALLS—Galvanized steel, select Spangle Finish, modernistically paneled. Entrance stiles and top frame, Black baked enameled. Sidewalls finished in pastel green or white baked enamel at extra cost.

RECEPTOR—Galvanized steel, one-piece construction. Black enamel finish, baked on at 350°F.

STANDARD EQUIPMENT—Brass Dull Chromium Plated: (1) Two-valve (renewable seats) combination unit. (2) Adjustable, self-cleaning head. (3) Cast waste and wrought strainer for 2-in. pipe. (4) Soap dish. (5) Curtain rod. (6) White duck curtain, 100% pre-shrunk, with chromium rings.

Size, inches W D H	Catalog number	Code	Approx. Shipping weight
30x30x76	53G	CURZ	140 lbs.

BUDGETEER



Patented

BUDGETEER

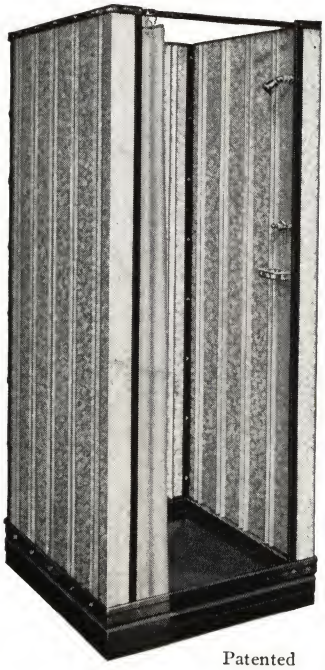
WALLS—Galvanized steel. Furnished in baked prime coat, for finish by others, or inside and outside pastel green baked enamel. Other colors at small extra charge. Corner assembly members and top frame Black baked enamel.

RECEPTOR—Galvanized steel, one-piece construction, Weisway special Black enamel finish, baked on at 350°F. Threshold, galvanized steel, Black baked enamel.

STANDARD EQUIPMENT—Same as for Cottager cabinet.

Size, inches W D H	Catalog number	Code	Approx. Shipping weight
32x32x76	32B	BRMD	250 lbs.
36x36x76	36B	BRKT	270 lbs.

COTTAGER



Patented

WEISTALL INTEGRAL

WALLS—Series S, Steel, ⅛ in. (11 gauge) copper-bearing steel. Series A, Aluminum Alloy, ⅛ in. (9 gauge) aluminum alloy. Finished in prime coat only (gray metal primer baked on at 350°F.).

BOTTOM—Series S, Steel, ⅛ in. (11 gauge) galvanized steel. Series A, Aluminum Alloy, ⅛ in. (9 gauge) aluminum alloy. Finished in prime coat only (gray metal primer baked on at 350°F.). Cast waste with strainer, brass chromium plated.

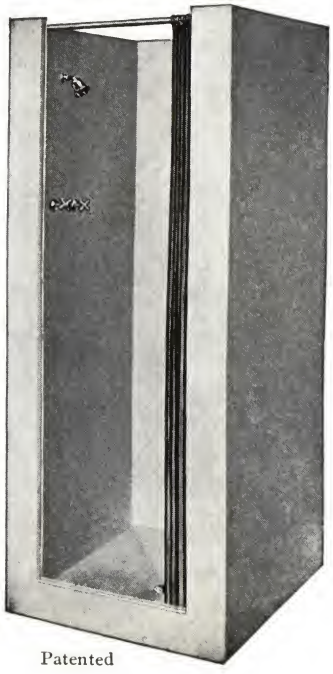
STANDARD EQUIPMENT—Brass Chromium Plated: (1) Two-valve (renewable seats) combination unit. (2) Adjustable, water-saver type, self-cleaning head. (3) Cast waste and strainer for 2 in. pipe. (4) Soap dish. (5) Curtain rod. (6) White duck curtain, 100% pre-shrunk, with chromium rings.

Note: After installation, cabinets should be given two coats of air-drying enamel of good quality, applied according to manufacturer's instructions. Weistall baked-on primer will not bleed through finish coats. Baked enamel finish not available.

	Size, inches W D H	Catalog number	Code	Approx. Shipping weight
Series-S Steel	36x36x72	1S	WSIK	360 lbs.
	40x28x72	2S	WSOU	340 lbs.
	28x40x72	3S	WSOV	340 lbs.
	32x32x72	4S	WSAR	320 lbs.
Series-A Alum. Alloy	36x36x72	1A	WAFJ	220 lbs.
	40x28x72	2A	WAGT	220 lbs.
	28x40x72	3A	WAHB	220 lbs.
	32x32x72	4A	WAJX	200 lbs.

Special Sizes Series S Cabinets available.

WEISTALL INTEGRAL



Patented

WEISWAY FOOT-GRIP, NO-SLIP RECEPTORS

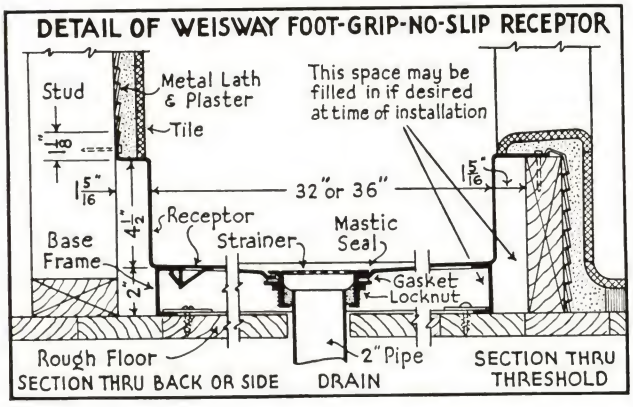
FOR WALLS OF TILE, CEMENT PLASTER, MARBLE, GLASS OR OTHER MATERIALS

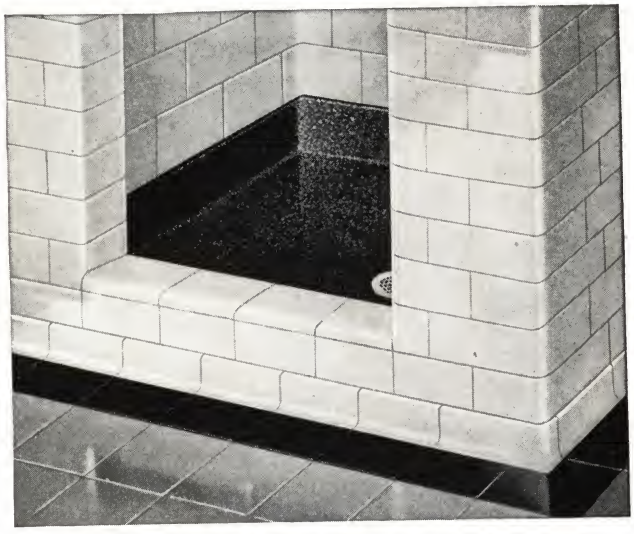
The new Foot-Grip, No-Slip vitreous porcelain enameled shower receptor, so successful in Weisway Cabinet Showers, is available in a special design adaptable to walls of tile, cement plaster, marble, glass or other materials.

This development assures permanent leakproofness since the receptor is not affected by settling or shrinkage of building. No necessity of built-in lead pans and special drains. The beauty, permanency and sanitation of vitreous porcelain is at last combined with a floor surface that is non-slip. The Weisway receptor, which is one-piece, leakproof and non-breakable, can be carried and set by one man.

Size, in. W D	Catalog number	Code	Approx. Shipping weight
32x32 36x36	32CPT 36CPT	CPTB CPTX	100 lbs. 100 lbs.

Specifications—Armco Iron, one-piece, vitreous porcelain enameled. Exterior—jet black; interior—textured green on black. Floor—FOOT-GRIP, NO-SLIP surface. Chromium plated cast brass waste and strainer for 2" pipe, inside caulking. Base frame—galvannealed steel, black baked enamel finish.







WEIS SHOWER-LITE

Furnished as integral part of all top-ceiling units on VP and BW Weisway cabinets. The bowl of opalescent glass is 1¾ in. deep and 5½ in. in diameter with brass chromium plated frame hinged for access to lamp.

WEIS ENTRANCE ADAPTER FRAME

A combination buck and trim of chromium plated brass for easy adaptation of VP Weisway Cabinet Shower entrances to tile, marble, glass, linoleum or plaster front facing, if desired, where cabinet is recessed. Furnished with knocked-down jambs, header and threshold as detailed below. This combination, when assembled, affords a practical, permanent and finished opening treatment. Weis High-Door may be used with entrance adapter frame.

Weis High-Door

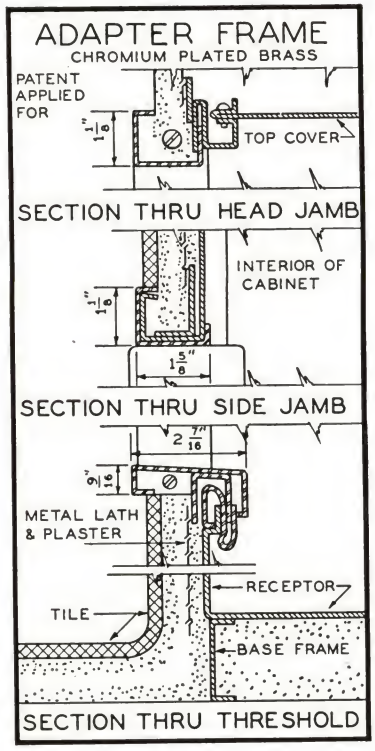
This high quality glass door of attractive ventilator design is available on the VP and BW Weisway models only. The door jambs and frame with integral one-piece full length hinge are solid extruded bronze, heavily chromium plated.

Weis Low-Door

The handsome Weis Low-Door is available on all WEISWAY Cabinets except the Cottager and Weistall Integral. The door frame and jambs are reinforced stainless steel with specially designed hinges.









MEMORANDA

THE BRUNSWICK-BALKE-COLLENDER CO.

TELEPHONE
Wabash 4020

GENERAL OFFICE
623-633 South Wabash Avenue
CHICAGO, ILL.

ESTABLISHED 1845

REPRESENTATIVES IN ALL PRINCIPAL CITIES

BRUNSWICK RUBBERCEPTOR OF SEAMLESS RUBBER WITH SAFETY TREAD

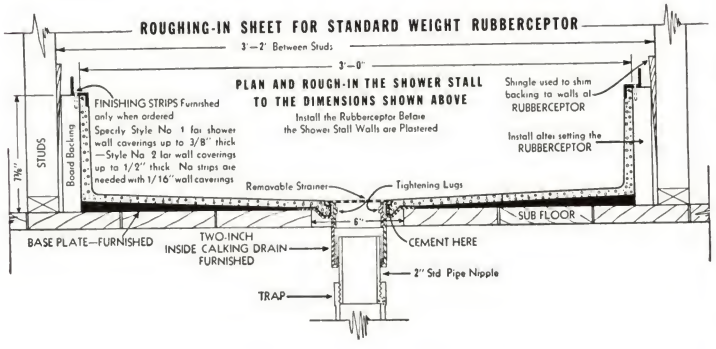
PREVENT LEAKS, FALLS, DANGER OF CONTAMINATION IN SHOWER STALLS.

BRUNSWICK'S NEW RUBBERCEPTOR ELIMINATES THESE HAZARDS.

This one-piece prefabricated solid rubber shower receptor, three feet square and six inches deep, should be used for the floor of all shower stalls. Its waterproof seamless construction is obtained by pressing it from one solid block of the highest grade non-oxidizing rubber. This eliminates the lead pan leakage hazard.

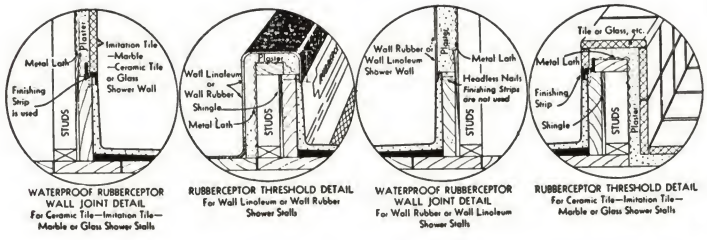
The Brunswick Rubberceptor protects the bather from the dangers of slipping, falling, and injury in the shower stall. Tiny pyramids moulded into this shower floor form the slip-proof tread which makes the Brunswick Rubberceptor safe for even the young and the aged.

The new Rubberceptor is sanitary—easily cleaned, with no corners or crevices to hold dirt and germs. The whole receptor is molded from one piece of seamless rubber hence is both impervious and free from joints. It will never crack because it is flexible. The Brunswick Rubberceptor, not only protects the bather from injury and eliminates leakage hazards, but in addition, it is always warm and pleasantly comfortable underfoot.



INSTALLATION PROCEDURE

1. Install female half of drain.
2. Install base plate.
3. Set Rubberceptor.
4. Install male drain section, using cement furnished.
5. Fit in board backing, using shingles.
6. Fit in FINISHING STRIPS if ordered, otherwise use nails furnished.
7. Check your installation with a level to make sure water will drain out of the Rubberceptor.
8. Cover Rubberceptor with corrugated cardboard furnished, so other workmen will not damage.





QUESTIONS AND ANSWERS

1. How Long Will the Rubberceptor Last?
Brunswick is using an ideal material for a shower receptor because non-oxidizing rubber will not deteriorate in use. Over one thousand Rubberceptors have been installed for three years without any sign of deterioration.

2. Is the Rubberceptor Odorless?
Non-oxidizing rubber is completely deodorized.

3. In What Types and Sizes Does It Come?
The Rubberceptor is available in two weights. The Standard Weight finishes three feet square and weighs 50 lbs. The extra heavy also finishes three feet square but weighs 100 lbs. See Standard Weight details. Complete information on the Extra Heavy Rubberceptor will be furnished upon request.

4. What Colors Are Available?
Brunswick Rubberceptors are made in two patterns: Black marbled with fine streaks of white and Ivory marbled with fine streaks of black. Either pattern harmonizes beautifully with any color scheme.

5. With What Shower Wall Materials Can the Rubberceptor Be Combined?
The shower walls above the Rubberceptor may be tile, glass, wall rubber, wall linoleum, marble, imitation tile, or Keene's Cement, in fact any material you would want to use on a shower stall wall. Details for successfully joining these wall coverings to the Rubberceptor are shown at left.

6. How Should Floor Beneath Rubberceptor Be Prepared?
A smooth, level floor of any material is all that is required. The Rubberceptor is furnished with a three-foot square asphalt plate which gives the necessary pitch for drainage. See details.

7. What Make of Drain Should Be Used With the Rubberceptor?
A special Brunswick cast brass chromium plated drain is furnished with the Rubberceptor—absolute leakproof construction.

8. Is It Easy to Clean?
The Rubberceptor is very easily cleaned with soap, water and a brush. It will not be harmed by any cleaning agent which is not of petroleum extraction. Cleaning is seldom necessary because the Rubberceptor is rinsed every time it is used.

9. Is the Rubberceptor Expensive?
No—installed, the Rubberceptor means a genuine saving on a shower installation because it eliminates the lead pan, double-drainage drain, and fifteen square feet of tile.

10. How is the Rubberceptor Sold?
The Rubberceptor is sold and installed exclusively by Plumbing Contractors. In its installation this is the only trade necessary on the job.

DORAN COMPANY

ESTABLISHED 1917

75 Horton Street SEATTLE, WASHINGTON

Representatives in All Principal Cities—Consult Local Telephone Directory or Write Factory Direct

DORAN SAFE-T-SHOWR THERMOSTATIC WATER MIXING VALVE PRICED FOR UNIVERSAL USE

Operation and Advantages

The Safe-T-Showr Thermostatic Mixing Valve eliminates dangers and inconveniences that have been serious drawbacks to a fuller enjoyment of shower bath bathing. This thermal control functions in two important ways. First: it sets a limit on the maximum temperature of the water it delivers, thus preventing scalding; and second: *it maintains a uniform temperature* at whatever degree the operator sets the valve handle and without those uncomfortable fluctuations so evident in the ordinary type of shower.

Recommended Uses

The Doran Safe-T-Showr is suitable for every type of installation where hot and cold water are to be blended and kept within fixed temperature limits.

Homes, hotels, clubs, schools, factories, institutions, hospitals, barber shops and beauty parlors find use for it.

Principle and Construction

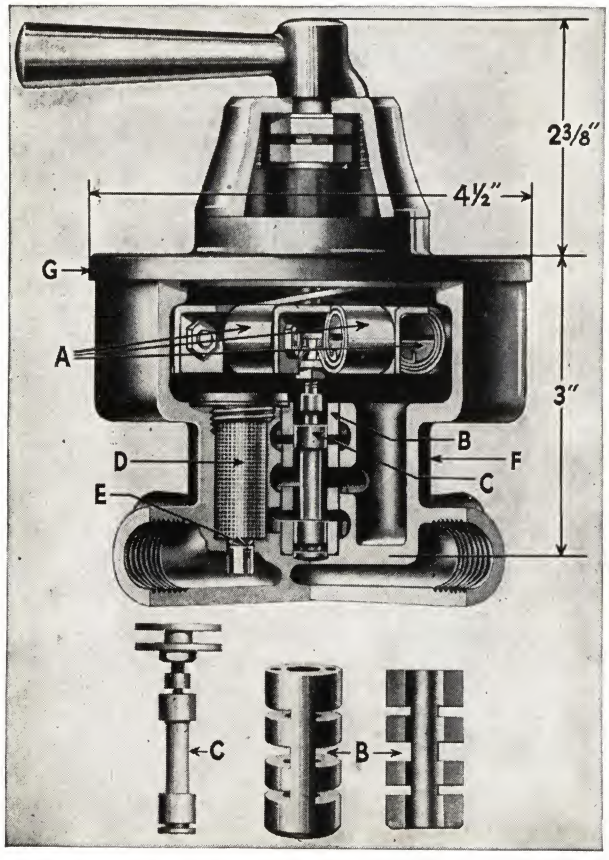
Automatic action is governed by 8 thermal coils (A). The instant water reaches these elements at a greater heat than any particular setting the handle calls for, the elements expand, moving down the piston and admitting cold water. Thus the mixture is held constant to any handle setting. If the cold supply should fail the elements expand to completely close the hot ports; if the handle setting is for warm water and the hot water supply fails, the automatic action cuts off the cold supply. Scalding or chilling under any and all circumstances is prevented.

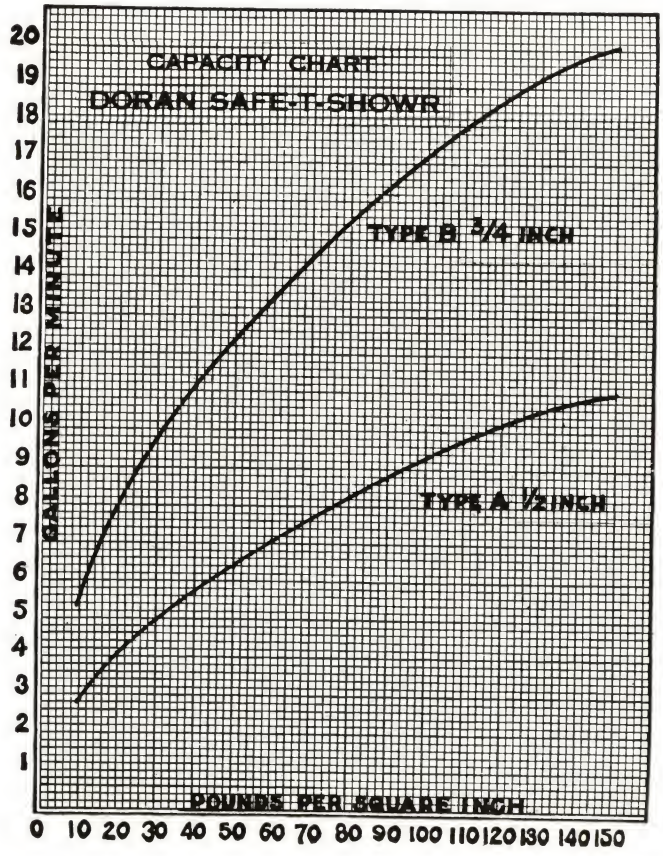
The circular grouping of the eight ½-in. wide thermal coils furnish a centralized power much in excess of the amount necessary to actuate the piston. This gives a very high factor of safety, higher than other thermostatic valves. The thermal coil ends engage directly the floating piston without gears or levers. Friction reduced to the absolute minimum. All this combines, we believe, to make the Safe-T-Showr the safest, the most accurate and most dependable thermostatic valve on the market today. The Safe-T-Showr is set to deliver a maximum temperature of 120°, and handle adjustment permits variations from cold water to 120°. A higher factory setting may be had if desired. The body and cover are made of high pressure cast bronze and all parts are non-corrosive.

The piston (C) is made of stainless steel, and is provided with a simple adjustment for changing the temperature maximum, should this be desired. Sleeve (B) is made of stainless steel and is removable. The thermal elements, Wilco Metal, are guaranteed against crystallization or fatigue. Both the hot and cold inlets of the valve are equipped with check valves (E) and stainless steel strainers (D). All parts are accessible and removable from the face of the mixer. The two discharge openings are for tub and shower, and one should be plugged if only one is desired. Plug furnished with mixer.

The Safe-T-Showr does not shut the water off. A volume control shut-off *must* be installed as indicated in roughing-in diagrams.

Safe-T-Showrs are sold with or without volume control valves, union elbows, loose key stops, etc. An adapter ring is available for steel partition installations.







A-2
A-2—½-in. size
B-2—¾-in. size

SERIES "A" DORAN SAFE-T-SHOWR VALVES—½-IN. SIZE

A-2—Exposed type, polished and chromium plated. For factory or basement showers the exposed type A-2 in rough bronze is available also. Loose key handle if desired.

A-3—Concealed type Safe-T-Showr with round escutcheon, concealed parts rough bronze, exposed parts polished and chromium plated.

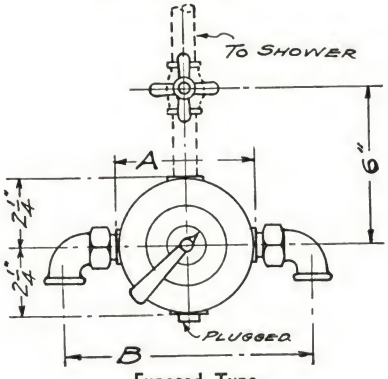
A-4—Concealed type Safe-T-Showr with octagon artcraft escutcheon, concealed parts rough bronze, exposed parts polished and chromium plated.



A-3
A-3—½-in. size
B-3—¾-in. size



A-4
A-4—½-in. size
B-4—¾-in. size

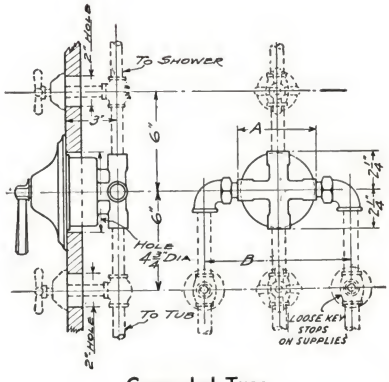


Exposed Type
Type A—½-in. valve
A = 4½ in. B = 8½ in.
Type B—¾-in. valve
A = 5½ in. B = 9¾ in.
Measurements same for either union elbows or loose key stops.

SERIES "B" DORAN SAFE-T-SHOWR VALVES—¾-IN. SIZE

Series "B" Safe-T-Showr Valves are ¾-in. size, available in three types (B-2, B-3 and B-4) and resemble the Series "A" Valves in all respects, except size.

Series "B" also available with ½-in. supplies and ¾-in. discharge.



Concealed Type
Type A—½-in. valve
A = 4½ in. B = 8½ in.
Type B—¾-in. valve
A = 5½ in. B = 9¾ in.

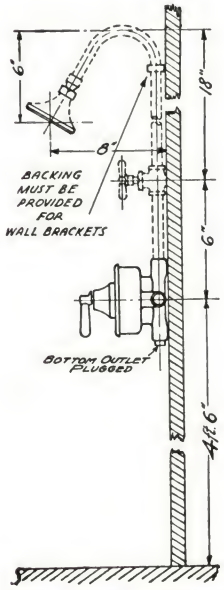
GROUP CONTROL

Although effective group control will safeguard against scalding it does not prevent fluctuations in the temperature of the individual shower units as does individual control.

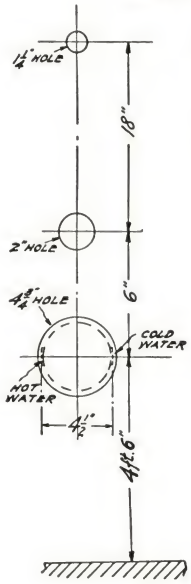
When greater economy makes group control necessary it should be arranged in small units, for otherwise the turning on of only a few showers in a large battery under one master control will not produce sufficient flow to secure satisfactory results.

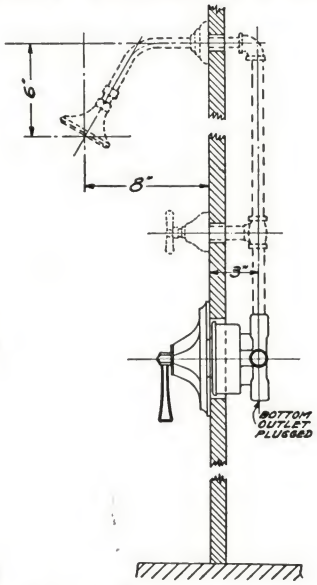
We recommend our series "B" ¾-in. valve, controlling 3 heads, as the safe method of group control.

COMPLETE THERMOSTATIC SHOWERS

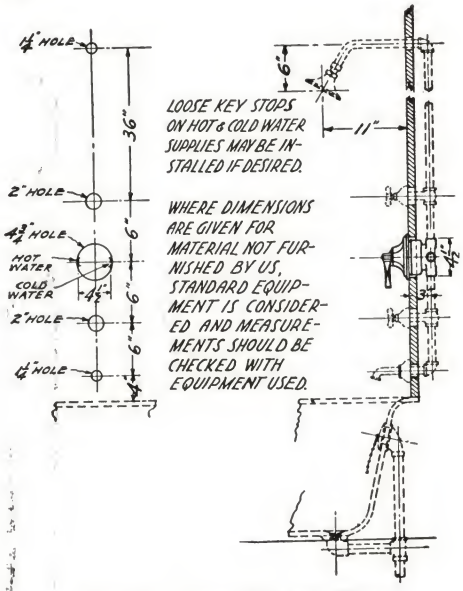


Exposed Type—Shower





Concealed Type—Shower



Concealed Type—Tub and Shower

Ask for Catalog No. 30 A.I.A. File 29-H-3 on Doran Thermostatic Showers
Ask for Circular S-300 on Doran Thermostatic Steam and Water Mixers

INCORPORATED 1913

LEONARD VALVE COMPANY

Manufacturers of Leonard Thermostatic Water Mixing Valves

NEW YORK OFFICE
101 Park Avenue, Room 1724
NEW YORK, N. Y.

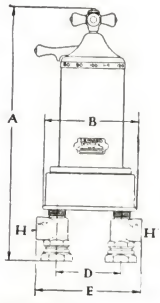
PLANT AND MAIN OFFICE
1360 Elmwood Avenue
CRANSTON, R. I.

Leonard Valves are essential for many purposes—domestic, commercial, and industrial. The anti-scalding and anti-chilling feature results from the Leonard solid metal type of thermostat which is used in all Leonard Valves. Expert workmanship and fine materials give long life and efficient service. There is a Leonard Valve for every possible need, and each one, before leaving the factory, is tested under hot and cold water at varying pressures and temperatures, duplicating as nearly as possible the conditions under which it is to be used.

MODELS B AND MB

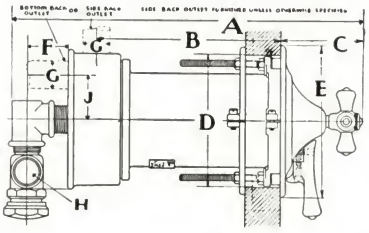


Model B Exposed



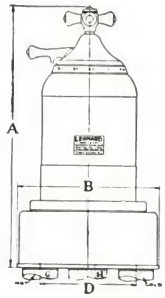


Modified B Exposed



Model B Concealed





B105-120-200 Exposed

Model B Exposed	Roughing-in dimensions, inches				Outlet	Inlet	Capacity, gallons per minute at 45 lbs. per sq. in.
	A	B	D	E	G	H	
B-5	14 5/8	5	3 5/16	5 11/16	3/4	1/2	5
B-10							15
B-20	14 5/8	5	3 5/16	5 13/16	1	3/4	24
B-40	18 1/4	6 7/8	4 3/4	7 3/4	1 1/4	1	45
B-60	18 1/4	6 7/8	4 3/4	8 3/4	1 1/2	1 1/4	63
B-105	15 1/4	9 1/8	6 1/2	....	2	1 1/2	105
B-120	16 11/16	9 1/8	6 1/2	....	2	1 1/2	125
B-200	17 3/4	9 5/8	6 1/2	....	2 1/2	2	200

Model B, Concealed	Roughing-in dimensions, inches							Outlet	Inlet	Capacity, gallons per minute at 45 lbs. per sq. in.
	A	B	C	D	E	F	J	G	H	
B-10	14 1/8	6 7/8	4	5 1/4	6 1/2	1 3/8	1 5/8	3/4	1/2	15
B-20	14 1/8	6 7/8	4	5 1/4	6 1/2	1 3/8	1 5/8	1	3/4	24
B-40	17 1/2	9 5/16	4 1/16	6 1/2	7 1/2	1 7/8	2 1/8	1 1/4	1	45
B-60	17 1/2	9 5/16	4 1/16	6 1/2	7 1/2	1 7/8	2 1/8	1 1/2	1 1/4	63

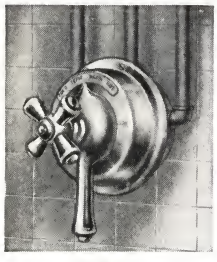
Model B and Modified B Valves are built in a wide range of sizes to deliver tempered water at flows of from 5 to 200 gals. per minute.

Model B Valves have the integral volume control and shutoff and, with the exception of the 105, 120 and 200 sizes, are furnished with combination strainers and check valves. Valves are furnished with a choice of side back, bottom back, side front or bottom front outlet.

Model B Valves, with the exception of the 5, 105, 120 and 200 sizes, can be furnished for horizontal or vertical concealed installation, as well as vertical exposed installation.

The Modified B Valves have no integral volume control and shutoff. Otherwise they are identical to the Model B Valves. They are made for installation where a separate volume control and shutoff is a part of each fixture.

TYPE L-9



L-9-E
For Exposed Piping

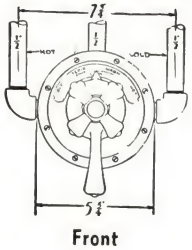
Type L-9 Valves, which have the integral volume control and shutoff feature, are furnished for both exposed and concealed piping. They have a capacity of 9 gals. per minute and are suitable for the control of a single shower or shower and tub combination.

Type L-9-E with Knee Control is equipped with blade lever for temperature regulation and a standard type of stirrup control on the volume control and shutoff.

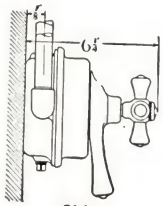
Type L-9 Valves can also be furnished with elbow control.



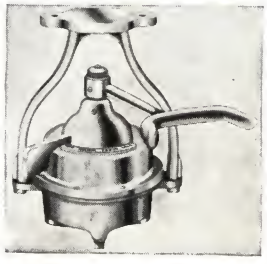
L-9-C
For Concealed Piping



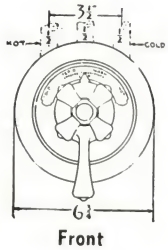
Front



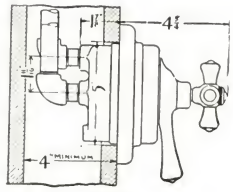
Side



L-9-E with Knee Control



Front



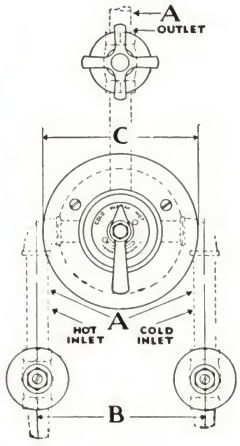
Side

SIMPLE CONSTRUCTION, DURABLE MATERIALS

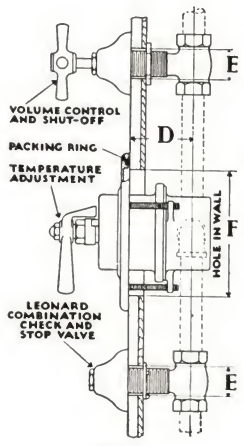
SERIES R

R—Concealed





Front



Side

Series R Valves, equipped with volume control and shutoff and checkstops, are furnished for exposed and concealed piping. The exposed type valves can be furnished in chromium plate, nickel plate or rough finish; the concealed type in chromium or nickel plate finish.

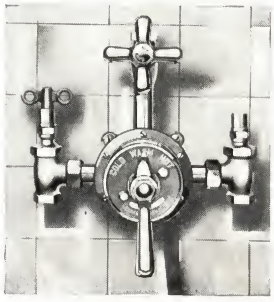
Capacities of Series R Valves in gallons per minute at 45 lbs. pressure are as follows: R-5—5 gals.; R-10—10 gals.; R-15—15 gals.; R-25—25 gals.; R-45—45 gals.

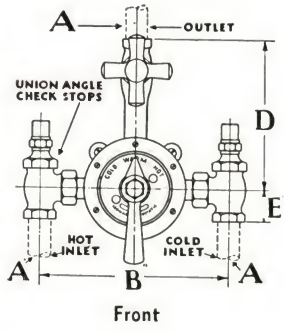
Charts below give dimensions of all Series R Valves.

R—CONCEALED

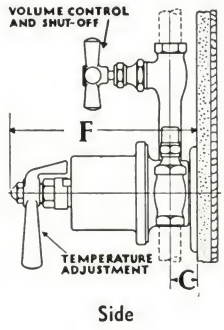
Series R, Concealed	Principal Dimensions, inches					
	A	B	C	D	E	F
R-5-C	1/2	8	6 1/2	3	1 5/16	4 7/8
R-10-C	1/2	8	6 1/2	3	1 5/16	5
R-15-C	3/4	8	6 1/2	3	1 3/4	5
R-25-C	3/4	8	7 1/2	3	1 3/4	6
R-45-C	1	8	7 1/2	3	1 3/4	6

R—Exposed





Front

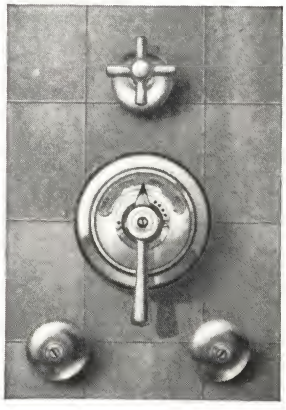


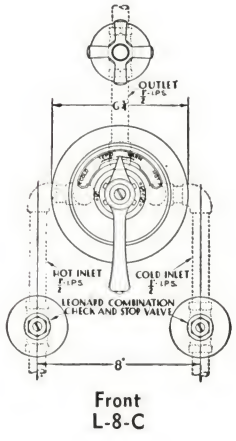
Side

R—EXPOSED

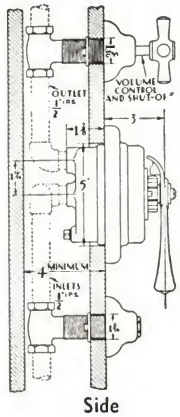
Series R, Exposed	Principal Dimensions, inches					
	A	B	C	D	E	F
R-5-E	1/2	7 3/4	1 1/16	5 7/8	1 1/4	7 7/16
R-10-E	1/2	8 1/4	1 1/8	6 1/8	1 1/4	7 11/16
R-15-E	3/4	8 1/4	1 1/8	6 1/2	1 1/2	7 11/16
R-25-E	3/4	8 5/8	1 3/8	6 3/4	1 1/2	8 1/8
R-45-E	1″ inlet 1 1/4″ outlet	8 3/4	1 1/2	7	1 1/2	8 3/4

TYPE L-8

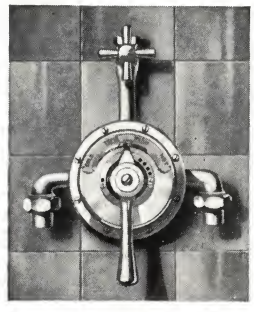




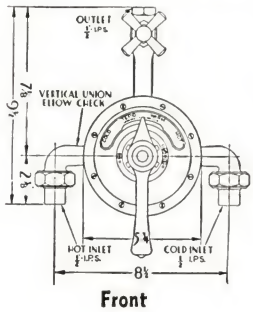
Front
L-8-C



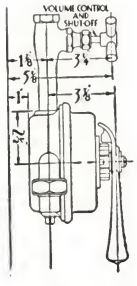
Side



L-8-E



Front



Side

Type L-8-C for concealed piping is furnished with concealed volume control and shutoff, also Leonard Combination Checkstops.

Type L-8-E for exposed piping is furnished with exposed volume control and shutoff and vertical union elbow checks. It does not have the integral volume control and shutoff feature but otherwise is the same as the Type L-9 Valve.

All these valves have the same type of metal thermostat and are anti-scalding and anti-chilling.

THE POWERS REGULATOR COMPANY

Safety Water Mixing Valves

GENERAL OFFICES AND FACTORY
2722 Greenview Avenue, CHICAGO, ILL.
TELEPHONE, Buckingham 7100

GENERAL EASTERN OFFICES
231 East 46th Street, NEW YORK, N. Y.
TELEPHONE, ELdorado 5-2050

BRANCHES AND SERVICE STATIONS
(See Telephone Directory for Local Addresses)

ALBANY	BUTTE	COLUMBUS	GREENSBORO	JACKSONVILLE	MONTREAL	PITTSBURGH	SAN FRANCISCO
ATLANTA	CALGARY	DALLAS	HALIFAX	KANSAS CITY	NASHVILLE	PORTLAND	SEATTLE
BALTIMORE	CHATTANOOGA	DENVER	HARTFORD	LOS ANGELES	NEW ORLEANS	ROCHESTER	SYRACUSE
BIRMINGHAM	CHICAGO	DES MOINES	HONOLULU	MEMPHIS	NEW YORK	ST. LOUIS	TORONTO
BOSTON	CINCINNATI	DETROIT	HOUSTON	MILWAUKEE	OKLAHOMA CITY	SALT LAKE CITY	VANCOUVER
BUFFALO	CLEVELAND	EL PASO	INDIANAPOLIS	MINNEAPOLIS	PHILADELPHIA	SAN ANTONIO	WINNIPEG

For Powers Controls for Heating, Ventilating, Air Conditioning and Hot Water Heaters, see File Index

POWERS SAFETY SHOWER MIXERS (PRESSURE EQUALIZING VALVE TYPE)

Adaptability

Because of its simplicity, rugged construction, safety, and economy features, the Powers Shower Mixer is widely used in residences, hotels, hospitals, and especially on showers subjected to more than average use as in clubs, colleges and universities, schools, public baths, and institutions. It is unequaled for heavy duty. Furnished in three sizes; with ½-in. inlets and outlet for standard showers, and with ¾-in. or 1-in. inlets and outlet for special fixtures.



Comfort and Safety Features—Economies

Pressure Equalizing Valve—Protects bather from danger and discomfort of unexpected "shots" of cold or scalding hot water caused by use of nearby showers, flush valves, etc. If cold water supply fails, it substantially shuts off the hot water.

Safety Stop Screw—Can be set to limit temperature of the shower, thereby preventing the possibility of scalding caused by a "dead end" in the hot water supply.

Check Valves—Built into each inlet, they prevent by-passing or interchange of hot and cold water.

Economies—No time is wasted trying to get water at the right temperature. There are no delays. Fewer showers will accommodate more bathers. No hot or cold water is wasted while bathers wait for showers to get hot or to cool off to the right temperature. Extra large piping, often used to minimize danger of scalding, is unnecessary.

Construction

Powers Mixers are ruggedly built of bronze with all internal working parts chromium plated to resist corrosion and erosion, are not thermostatic and have no composition valve seat washers on hot water inlet to wear out and need frequent replacement. Their sturdy all-metal construction insures a durability not equalled by any other mixer.

Description

Style A—For exposed piping. Has chromium or nickel plated finish with all machined surfaces highly polished. Can be furnished with wall flange if desired, in which case distance from center of inlets to wall should be specified.

Style B—For concealed piping, accessible from the rear. The neck of mixer is provided with a 1½-in. extension to accommodate thickness of marble slab, tile or panel. Has chromium or nickel plated finish, with exposed parts highly polished.

Style C—For concealed piping, accessible only from the front. This style is provided with a metal box to be inserted in wall flush with surface, to receive pipe connections and mixer. The dial covers opening in wall, and when removed makes mixer accessible. Has chromium or nickel plated finish, with exposed parts highly polished. For thin partitions, shells 3 in. deep can be furnished.

Connections—Style A mixer has female connection without union at outlet, Styles B and C have male connection with union at outlet. The Style A mixer can be furnished with union at outlet when specified. All mixers are provided with standard straight union inlet connections. Elbow connections will be substituted if specified.

Special Dials and Handles—Octagonal dials and handles can be furnished for Styles B and C when specified.

Round porcelain dials and handles can be furnished for Styles B and C, ½-in. size only.

Standard Finish—Chromium. Style A, dial, handle, stem, bonnet, and union connections are highly polished, body is plain unpolished chromium; Styles B and C, all exposed parts highly polished.

Special Finishes—White metal dial and handle can be furnished but not mixer body.

Mixers can also be furnished in gold or silver plate or in any color Duco desired.

Capacities

With supply pressures of 50 lbs., the delivery of the ½-in. mixer is 11 gals. per min.; 40 lbs., 10 gals.; 25 lbs., 8 gals. The delivery of the ¾-in. mixer is approximately twice that of the ½-in. size, and of the 1-in. approximately three times that of the ½-in. size.

SPECIFICATIONS

Note: *All notes are explanatory only and should not be included in the specifications. Portions of text in bracketed italics are selective or require specific data inserted.*

(1) Shower Mixers

(1a) General—In shower compartment*(s) (locate),* furnish and install *(a)* Powers Shower Safety Mixer*(s)* as made by THE POWERS REGULATOR COMPANY, Chicago, Ill.

(1b) Description—Mixer*(s)* shall be *(½ in.) (¾ in.), (1 in.),* Style *(A) (B) (C)* with *(standard) (octagonal) (chromium plated) (nickel plated)* dials*(s)* and handle*(s).*

(2) Supplies

(2a) Both hot and cold water supply mains shall be provided with Powers *(specify sizes) (Self-Cleaning Strainers) (Strainer Tees).*

(2b) Cold water line to each mixer shall be provided with loose key stop valve *(with porcelain escutcheon).*

(2c) Hot water line to each mixer shall be provided with a hand valve marked "Volume" *(with porcelain escutcheon).*

Note: *This valve is to be used as a combination volume control and stop valve.*

(2d) All exposed portions of piping, valves, etc., shall be *(chromium plated) (nickel plated).*

(3) Shower Heads

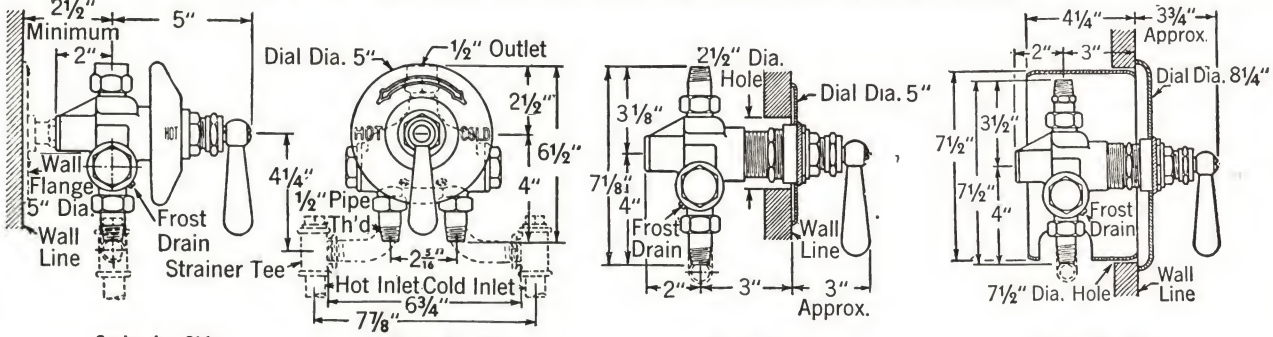
(3a) Furnish and install brass discharge pipe*(s)* with *(gooseneck(s)) (straight wall turn down(s))* and 4 in. diameter cast brass, adjustable, ball joint shower head*(s)* with tightly fitted removable face*(s)* and without gasket*(s).*

(3b) There shall be no valve or throttling device installed in the discharge line from mixer to shower head.

(3c) All exposed portions of piping, shower head*(s),* etc., shall be *(chromium plated) (nickel plated).*

(3d) Discharge line from mixer to shower head when exposed shall be securely anchored to wall or partition.

ROUGHING-IN DIMENSIONS FOR ½-IN. POWERS SAFETY SHOWER MIXERS



Style A—Side | Style A—Front | Style B—Side | Style C—Side

Note: Dimensions of ¾-in. and 1-in. mixers will be furnished by the nearest branch office. See your phone book.

POWERS TYPE "M" SERIES THERMOSTATIC WATER MIXERS

Adaptability

This Powers Thermostatic Water Mixer thermostatically controls the mixing of hot and cold water and delivers tempered water for showers, baby baths, hydrotherapeutic baths, shampoo fixtures, wash-up sinks, photographic developing and printing tanks, industrial processes, etc.

Safety Features

The temperature of the mixed water remains constant regardless of temperature or pressure changes in the supply lines, and failure of either supply shuts off the delivery flow.

Restriction of the delivery to a minimum flow of one-half gallon per minute is possible without a noticeable change in the delivery temperature.



Construction

The thermostat is of the bimetallic type, constructed of rust-proof materials, and has a reserve of power many times that required for normal operation. It is very rugged, yet extremely sensitive. Upon removal of the cover plate the three units comprising the mixer working parts are easily accessible for inspection or cleaning.

The mixer is made of bronze, with stainless steel mixing valves. The valve housing and its seats are heavily chromium plated to resist wear and corrosion. The standard mixer is designed for upward delivery with the outlet at the top. Bottom outlet for downward delivery can be supplied if specified. Both inlets and outlets are tapped with ½-inch pipe thread, but mixers with ¾-inch outlets can be furnished if specified.

Description—Styles, Finishes, Etc.

Style M-E-6 for exposed piping and **Style M-C-6** for concealed piping. Both can be furnished in rough bronze and in polished chromium or nickel finish. M-C-6 can also be furnished with octagonal dial and handle.

Temperature Range—The standard mixer will deliver tempered water at any desired point between cold water and 115° F. It can be furnished for a higher operating temperature (maximum 140°) when ordered.

Capacities—With minimum hot or cold water pressure at 10 lb., maximum delivery is 3 gallons per minute; 20 lb., 4 gals.; 30 lb., 5 gals.; 40 lb., 6 gals.; 50 lb., 7 gals.

SPECIFICATIONS

Note: *All notes are explanatory only and should not be included in the specifications. Portions of text in bracketed italics are selective or require specific data inserted.*

(1) Water Mixers

(1a) General—Furnish and install *(a)* Powers (Style M-E-6) (Style M-C-6) Thermostatic Water Mixer *(s)* as made by THE POWERS REGULATOR COMPANY, Chicago, Ill., in the following locations:

Note: *Here list and locate the water mixers. If both Styles M-E-6 and M-C-6 are used, list and locate each separately.*

(1b) Description—Mixers shall be ½ in., Style *(M-E-6) (and) (M-C-6) (as listed above)* with exposed parts of metal *(chromium plated) (nickel plated) (rough bronze)*. Furnish for maximum temperature of *(specify)*.

Note: *See paragraph on "Temperature Range" at left.*

(1c) Special Shut-offs—Provide *(specify make)* shut-offs in lieu of standard Powers volume control and shut-off valve on the following mixers:

Note: *List and locate.*

(2) Supplies

(2a) Both hot and cold water supply mains shall be provided with Powers *(specify sizes) (Self-Cleaning Strainers) (Union Strainer Tees)*.

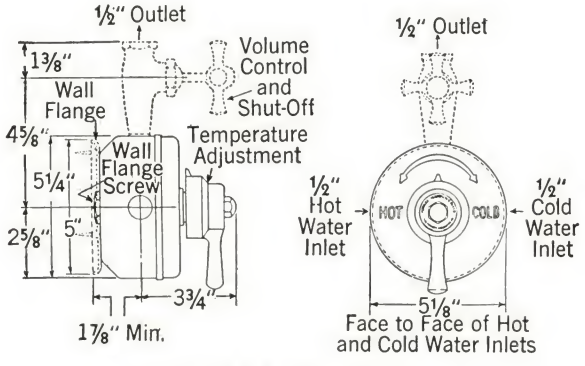
(2b) Hot and cold water line to each mixer shall be provided with loose key stop valves.

Note: *This valve is to be used as a combination volume control and stop valve.*

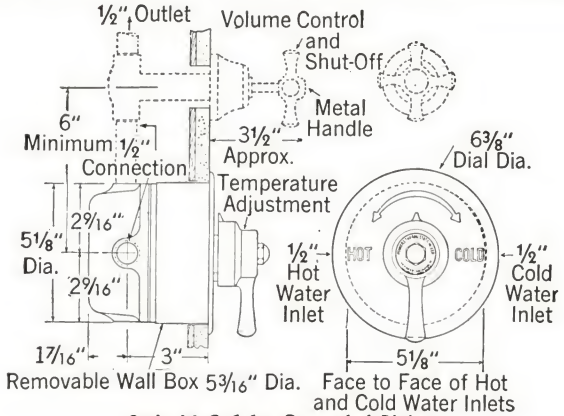
(2c) All exposed portions of piping valves, etc., shall be *(chromium plated) (nickel plated) (rough bronze)*.

(2d) The mixer *(s)* shall be piped for *(upward) (downward)* delivery.

Note: *Upward delivery is standard, but downward delivery furnished if specified.*



Style M-E-6 for Exposed Piping



Style M-C-6 for Concealed Piping

POWERS TYPE "T" SERIES THERMOSTATIC WATER MIXERS

Adaptability

The Powers Type "T" Series Thermostatic Water Mixer is a heavy-duty mixer of greater capacity than the Powers Type "M" Series Mixers described on the previous page. The Type "T" Series controls thermostatically the mixing of hot and cold water, and may be used to deliver tempered water for shower and tub baths, roseate showers, tub and shower combinations, baby baths, hydrotherapeutic baths, shampoo fixtures, wash-up sinks and fountains, photographic developing and printing tanks, industrial processes, etc.

Tub and Shower Combination—Employing the Powers Type "T" Series Thermostatic Water Mixer is used in the finest modern bathrooms where the luxury and comfort of real automatic temperature control of the water for shower and tub are desired. With the arrangement shown at right, the bather can adjust the mixer and have it delivering water at the right temperature before he steps into the tub or shower.



Safety and Convenience Features

Safety Features—The temperature of the water delivered by the mixer remains constant regardless of temperature or pressure changes in the hot or cold water supply lines. Failure of either supply shuts off the delivery flow. Restricting the delivery from maximum flow to two gallons per minute will not vary the delivery temperature noticeably.

Ease of Adjustment—The small cross arm handle labeled "Shut-off" is used to turn on or shut off the delivery and to regulate the volume. The large handle adjusts the temperature and may be left in any desired position.

Construction

The unusually sensitive and responsive thermostatic element is of the same rugged type as that used successfully for over 20 years in thousands of Powers Thermostatic Water Controllers. A flexible metal packless assembly replaces the usual packing box. The mixer body and internal parts are made of bronze. The mixing valve seats are chromium plated to resist wear and corrosion.

The mixer can be piped for either upward or down delivery or both, as it is equipped with outlets at both top and bottom.

Description—Styles, Finishes, Etc.

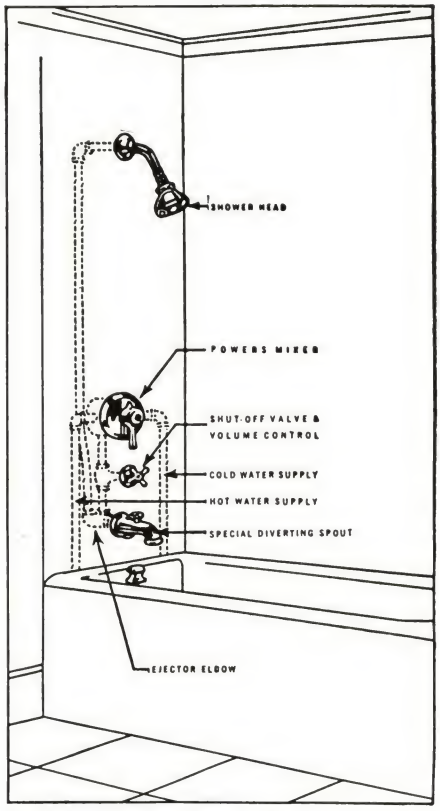
Style T-E—For exposed piping. Can be furnished in rough bronze or in polished chromium or nickel finish.

Style T-C—For concealed piping. Can be furnished in rough bronze or in polished chromium or nickel finish.

Special Shut-off Valves—In cases where a special shut-off valve is required, the standard Powers Shut-off Valve may be omitted.

Capacity—With supply pressure of 50 lbs. the maximum delivery is 12 gals. per min.; 40 lbs., 10 gals.; 20 lbs., 6 gals.

Temperature Range—Temperature range of standard mixer is from cold water to 115° F. A maximum temperature of 140° F. can be furnished upon special order.



Above: One shut-off valve and volume control and a special diverting spout

SPECIFICATIONS

Note: *All notes are explanatory only and should not be included in the specifications. Portions of text in bracketed italics are selective or require specific data inserted.*

(1) Water Mixers

(1a) General—Furnish and install *(a)* Powers *(Style T-E) (Style T-C)* Thermostatic Water Mixer *(s)* as made by THE POWERS REGULATOR COMPANY, Chicago, Ill., in the following locations:

Note: *Here list and locate the water mixers. If both Styles T-E and T-C are used, list and locate each separately.*

(1b) Description—Mixers shall be ½-in., Style *(T-E) (and) (T-C) (as listed above)* with exposed parts of metal *(chromium plated) (nickel plated) (rough bronze). Furnish for maximum temperature of (specify).*

(1c) Special Shut-offs—Provide *(specify make)* shut-offs in lieu of standard Powers volume control and shut-off valve on the following mixers:

Note: *List and locate.*

(2) Supplies

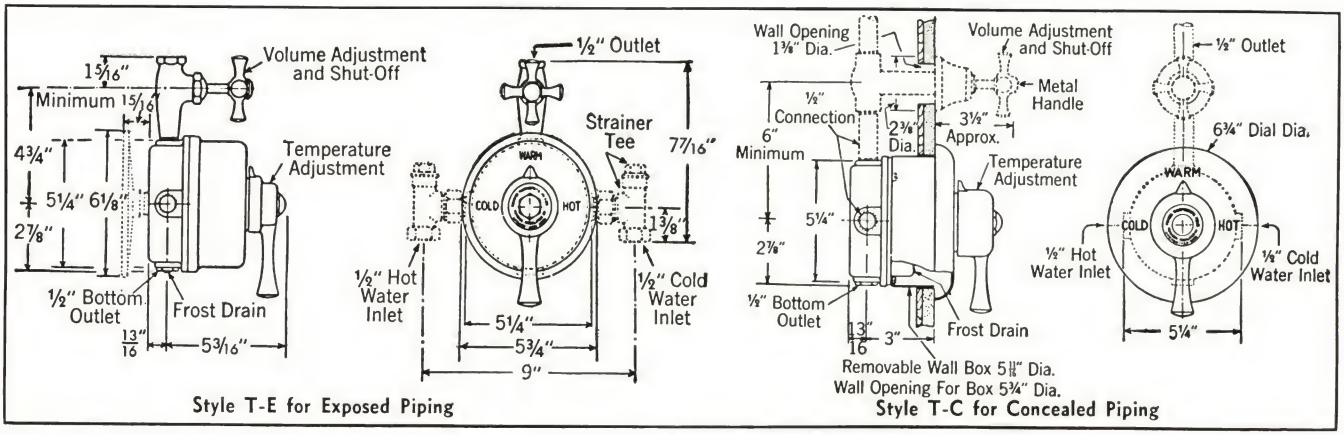
(2a) Both hot and cold water supply mains shall be provided with Powers *(specify sizes) (Self-Cleaning Stainers) (Union Strainer Tees).*

Note: *Strainers are made in ½-in. to 3-in. size.*

(2b) Hot and cold water line to each mixer shall be provided with loose key stop valves *(with porcelain escutcheons).*

Note: *This valve is to be used as a combination volume control and stop valve.*

(2c) All exposed portions of piping, valves, etc., shall be *(chromium plated) (nickel plated) (rough bronze).*



POWERS THERMOSTATIC WATER CONTROLLERS

Adaptability

For shower baths, singly or in gangs, zone showers, hospital hydrotherapy, lavatories, factory washrooms, garages, laundries, and various industrial processes where warm water at a constant temperature is required. (For baby baths use the Thermostatic Water Mixers described on previous pages.)

This controller is accurate and dependable. Mixes hot and cold water, and delivers warm water at any desired temperature between cold water and 115° F. Entirely automatic in operation and scaldproof. Failure of cold water supply substantially cuts off delivery. Can be provided with locked adjustment.

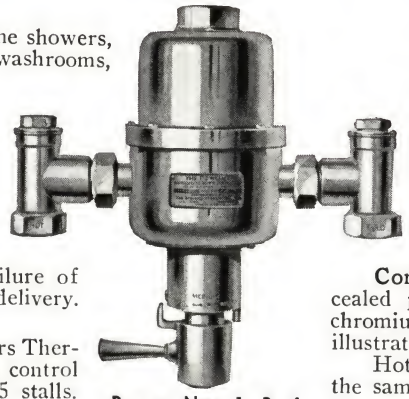
Group or Gang Shower Control—Powers Thermostatic Water Controllers are used for the control of shower baths in groups of from 2 to 25 stalls. They may be used to establish a maximum temperature of hot water supply to protect the entire group from danger of scalding, or to place the entire group of showers unde the control of an attendant.

Individual Shower Control is best suited for adults as it permits each bather to individually adjust the temperature of his shower while the hot water is kept at a safe maximum temperature.

Attendant Control is best suited for the bathing of children in schools, institutions, etc., as the temperature of the entire group of showers is adjusted by one individual.

Zone Showers—Where compulsory bathing is required before entering swimming pools, lane showers are divided into four zones, each controlled by a Powers Controller. First zone is maintained at 105° F.; second at 90° F.; third at 75° F.; and fourth at 60° F.

Because of its efficiency and its hygienic and sanitary advantage, this type of shower is rapidly increasing in popularity.



Powers Nos. 1, 3, 4 Controller for Exposed Piping



Dial and Handle for Concealed Piping

Description

General—Controllers have inlet check valves and strainer tees with removable filter screens.

Temperature Range—Unless otherwise specified, controller will be furnished with a maximum temperature of 115° F.

Discharge—Standard discharge is upward. Specify downward if desired.

Controllers Nos. 1, 3, 4—Are made of bronze, in either rough finish or full chromium or nickel plate.

Controllers Nos. 5, 6—Are also of bronze, chromium or nickel plated, but polished only on machined parts. A rough bronze finish (dipped) can also be supplied. Controller No. 6 can be had in iron body construction with bronze inner parts and aluminum paint finish.

Concealed Piping—When furnished for concealed piping, controller is supplied with polished chromium or nickel plated dial which is mounted as illustrated.

Hot and cold water should always come from the same original source or be under approximately the same pressure, which for best results should not exceed 100 lbs. Use a pressure reducing valve if necessary.

In Ordering—State fully the purpose for which controller is to be used, size and finish of controller, maximum temperature required, whether for exposed or concealed piping, upward or downward discharge, pressure of hot and cold water, temperature of hot water, minimum and maximum delivery volumes.

SPECIFICATIONS

(1) Water Controllers

(1a) General—Furnish and install *(a)* Powers Thermostatic Water Controller(s) as made by THE POWERS REGULATOR COMPANY, Chicago, Ill., in the following locations:

Note: Here list and locate the Controllers.

(1b) Description—Controller(s) shall be No.(s) *(specify.) (Specify finish.) (Specify body for No 6.) (Specify exposed or concealed piping.) (Specify maximum temperature for water delivered.) (Specify locked adjustment.)*

(2) Installations

(2a) Place Controller(s) close to fixture.

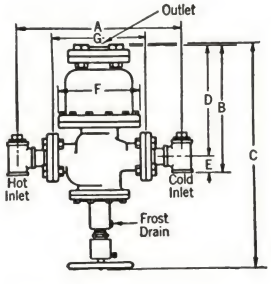
(2b) Provide stop valves in hot and cold water supplies.

CAPACITIES AND PRINCIPAL DIMENSIONS—Capacities are based upon 40 lbs. water pressure, both hot and cold

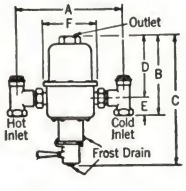
(For greater capacities up to 2650 gals. per min. use Powers No. 10 Regulator with Three-Way Valve described in Bulletin No. 258)

No.	Capacities		Connections, in.		Dimensions for exposed piping, inches							Dimensions for concealed piping, inches				
	Number of shower heads	Gal. p. m.	Inlet	Outlet	A	B	C	D	E	F	G	A	B	C	D	E
1	1 or 2	12	½	¾	9	6⅞	13½	6⅝	1⅜	6⅛	.....	9	5½	5	3⅛	1⅜
3	4	22	¾	1	10½	7⅛	13½	6⅜	1⅝	6⅛	.....	10½	5½	5	3⅛	1⅝
4	8	40	1	1¼	12¼	8⅝	14¾	6⅛	2	6⅛	.....	12¼	6⅝	5	3⅛	2
5	20	100	1¼	1½	16	13	22½	9½	1¾	8⅛	9	16	11¼	7	4	1¾
6	25	125	1½	2	16¾	13¼	22½	9¼	2	8⅛	9	16¾	11¼	7	4	2

For Exposed Piping

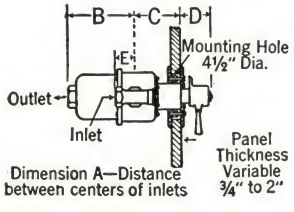


Nos. 5 and 6 Controllers

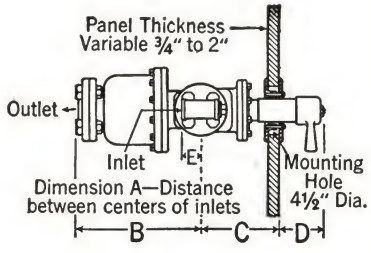


Nos. 1, 3 and 4 Controllers

For Concealed Piping



Nos. 1, 3 and 4 Controllers



Nos. 5 and 6 Controllers

INCORPORATED 1889

SPEAKMAN COMPANY

Showers, Flush Valves and Brass Plumbing Fixtures

WILMINGTON, DEL.

Products

SPEAKMAN SHOWERS for all classes of buildings; COMBINATION FIXTURES for bathtubs, lavatories and sinks; FLUSH VALVES, also other Brass Plumbing Fixtures, all of which are regularly furnished with Speakman Chromium Plate finish. Nickel Plate and other finishes can be furnished when specified.

Facilities

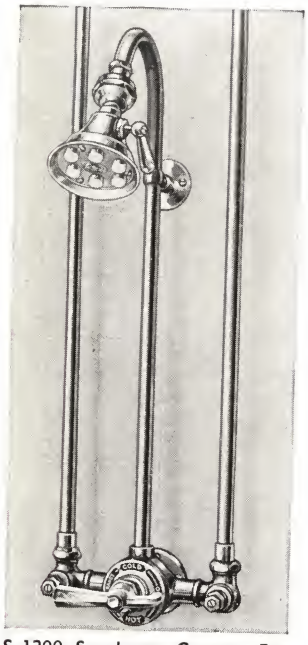
SPEAKMAN COMPANY'S factory is modernly equipped, including an Engineering Department. It has ample capacity to handle large orders. For 70 years this company has built a reputation for efficient, dependable and prompt service.

Prices

Wholesale plumbing supply dealers and plumbing contractors throughout the United States can immediately furnish estimates and quote prices on Speakman products.

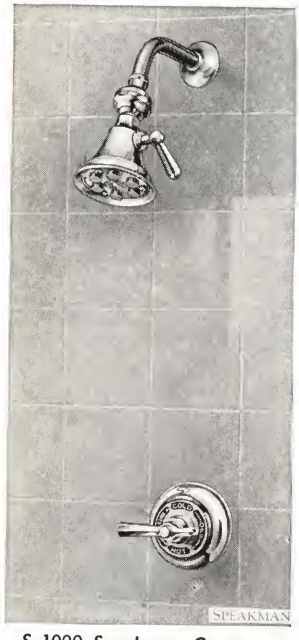
Information

SPEAKMAN COMPANY'S Catalog "S"—new this year—contains complete and up-to-date illustrations with specifications on their full line of modern Showers and Brass Plumbing Fixtures. It is thumb-indexed to permit you to find easily and quickly any desired information. Of interest to architects, engineers and contracting engineers are Catalogs K-1 on Showers and Fixtures for institutional and industrial installations, and K-2 on the Si-Flo Flush Valve. Copies of the above catalogs will be sent upon request.



S-1200 Speakman Century Exposed Mixometer Shower

Size, ½ in. Mixometer with wall flange and monel renewable seats. Screwdriver corner controlling valves with renewable seats and swivel discs. Supplies to overhead 36 in. long. Gooseneck discharge pipe with supporting flange, ball joint and Anystream Self-cleaning Shower Head



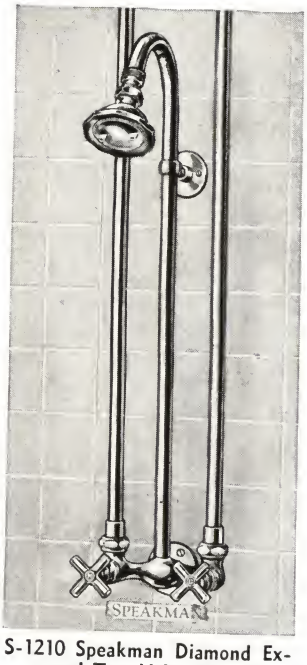
S-1000 Speakman Century Built-in Mixometer Shower

Size, ½ in. Mixometer with monel renewable seats, metal lever handle and metal wall plate. Bent arm with metal wall flange, Anystream Self-cleaning Shower Head, and ball joint with concealed volume control



S-3000 Speakman Century Built-in Mixometer Shower and Bath Combination

Size, ½ in. Mixometer with monel renewable seats, metal wall plate and metal lever handle. Hi-seat bath valves with unions, monel renewable seats, swivel discs, encased washers and monel washer-screws. Metal escutcheons and 4-arm metal handles. Metal over-rim nozzle. Bent arm with metal wall flange, ball joint with concealed volume control and Anystream Self-cleaning Shower Head. Act-Easy Pop-up Bath Drain, 1½-in. size. Valves, including the Mixometer, are connected with brass pipe and tested



S-1210 Speakman Diamond Exposed Two-Valve Shower

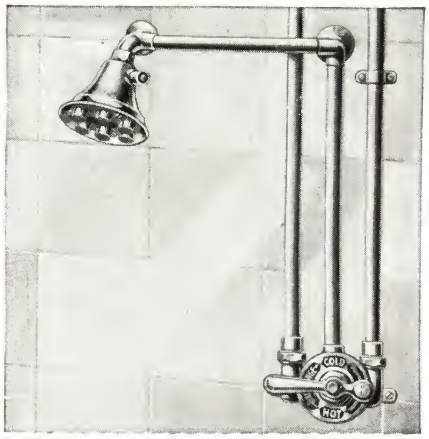
Size, ½ in. Valves with renewable seats, swivel discs, encased washers and 4-arm metal handles. Supplies to overhead 36 in. long. Gooseneck discharge pipe with supporting flange and Diamond Adjusta-Spray Shower Head with ball joint



S-1040 Speakman Century Built-in Two-Valve Shower

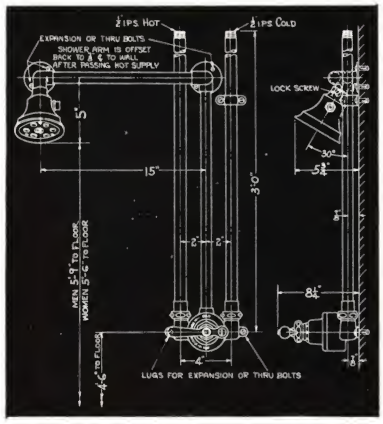
Size ½ in. Combined Hi-seat supply valves and integral stops with unions, monel renewable seats, swivel discs, encased washers, and monel washer-screws. Metal escutcheons and 4-arm metal handles. Bent arm with metal wall flange, ball joint and Anystream Self-cleaning Shower Head

SPEAKMAN SHOWERS FOR SCHOOLS AND INSTITUTIONS



S-1140 Speakman Century Exposed Mixometer Shower

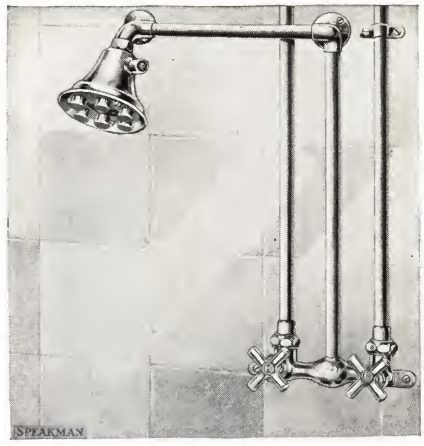
Size, ½ in. Mixometer with monel renewable seats, cast lugs to bolt close against wall, and metal lever handle. Supplies to overhead 36 in. long. Horizontal discharge arm setting head 15 in. off center. Close fitting flanged elbow at each end of arm. Anystream Self-cleaning Shower Head with lock-shield control set at 30° angle. Shower head equipped with lock-screw to prevent malicious removal. Also furnished with head on right-hand side when specified



Roughing-in Measurements for S-1140 Mixometer Shower

Roughing-in measurement for S-1170 same as S-1140 but supplies are on 8-in. centers. Expansion on through bolts not furnished unless specified.

Note: For complete detail on school and institutional showers see our general Catalog "S"



S-1160 Speakman Century Exposed Two-Valve Shower

Size, ½ in. Compression all-cast valve center with cast lugs to bolt close against wall. Monel renewable seats, swivel discs, encased washers, monel washer-screws and 4-arm metal handles. Supplies to overhead 36 in. long. Horizontal discharge arm setting head 15 in. off center. Close fitting flanged elbow at each end of arm. Anystream Self-cleaning Shower Head with lock-shield control set at 30° angle. Shower head equipped with lock-screw to prevent malicious abuse. Also furnished with head on right-hand side when specified.

SPEAKMAN SHOWER HEADS FOR REGULAR AND SPECIAL INSTALLATIONS

All Heads Shown on this Page Finished in Speakman Chromium Plate

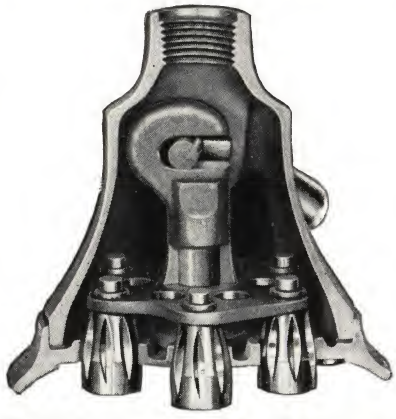


S-2250 Speakman Anystream Self-cleaning Shower Head

(Patented Jan. 2, 1923 and Nov. 3, 1931). ½ in. i.p.s. inlet. Lever handle control. (See sectional view to right.)

S-2255, same as S-2250 but with lock-shield control arranged to operate by a key.

Also furnished with head on right-hand side when specified



S-2250 Speakman Anystream Self-cleaning Shower Head (Sectional View)

(Patented Jan. 2, 1923 and Nov. 3, 1931.) Has 6 tapered plungers, each having 8 tapered grooves which are moved in and out by the lever handle, permitting the bather to enjoy all degrees of shower volume and force. The head is self-cleaning—the force of water going through at flood spray instantly cleans head of all pipe scale or sediment



S-2260 Speakman Wall Type Anystream Self-cleaning Shower Head

½-in. i.p.s. back inlet. Vandal-proof type. Supplied with and operated by a $\frac{3}{16}$-in. hexagon wrench

S-2265, same as S-2260 but with side inlet for exposed installation. Specify whether inlet is to be on right or left

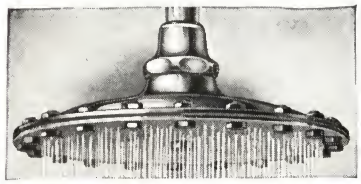


S-2410 Speakman Adjusta-Spray Shower Head

With integral ball joint. ½-in. i.p.s. inlet.

S-2400, same as S-2410 but less ball joint.

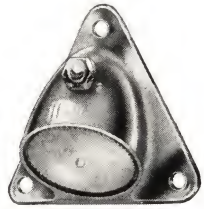
S-2420, same as S-2410 but with lever handle volume control



S-2390 Speakman Club Shower Head

1-in. i.p.s. inlet. 12-in. bolted face. For use where large amount of water is desired. The valves used with this head must be not less than ¾ in. and the supply lines should be large enough to supply the following volume:

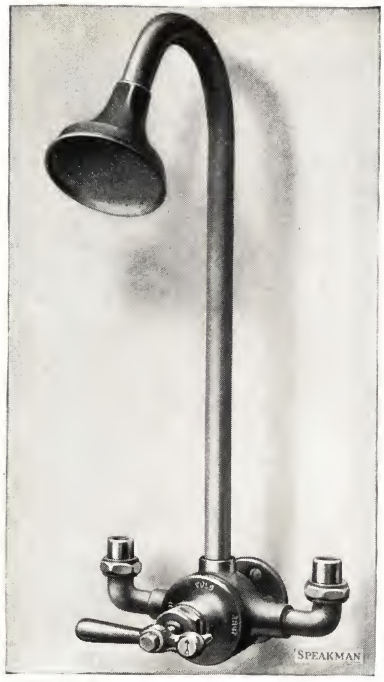
Pressure in pounds....	30	40	50	60
Gallons per minute....	26	29	32	35



S-2450 Speakman Wall Type Adjusta-Spray Shower Head

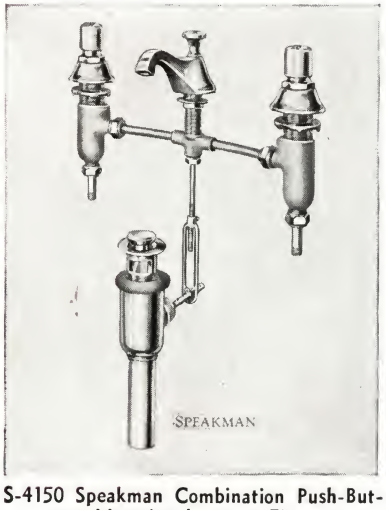
½-in. i.p.s. back inlet. Vandal-proof type. Is furnished with and operated by hexagon wrench.

S-2460, same as S-2450 but with volume control



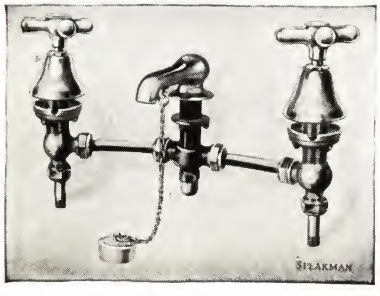
S-2000 Speakman Industrial Mixometer Shower

Size, ½ in. Mixometer with renewable seats, metal lever handle and metal wall flange. Elbow couplings to take supplies from overhead, wall or floor. Galvanized gooseneck discharge pipe with 4-in. cast brass head. Inlets 8 in. center to center



S-4150 Speakman Combination Push-Button Metering Lavatory Fixture

(Patent pending.) Indexed metal push-buttons. External volume adjustment. Non-clogging by-pass. Non-hammering renewable operating unit. ¼-in. threaded tail pieces. Code type nozzle with stream regulator. Pop-up drain with metal lift knob and 1¼-in. o.d. tail piece





S-2120 Speakman Industrial Wash-up Fixture

Size, ¾ in. Male union couplings 3 in. center to center. Heavy pattern combination valve with renewable bonnets and adjustable packing nuts. Renewable seats, swivel discs, encased washers, heavy spindles and 4-arm metal indexed handles. 2-in. cast brass spray head with volume regulator. Spray head set to direct the spray slightly to the front

New Metering Lavatory Faucet

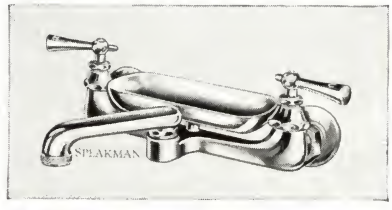


New Self-closing Metering Lavatory Faucet designed for installation where water consumption is a factor. Is positive in operation, non-hammering, non-dripping with non-clogging by-pass. Entire mechanism is self-contained in a single unit.

S-4320 Speakman Push-Button Self-closing Metering Basin Faucet

(Patent pending.) Indexed metal push-button. External volume adjustment. Non-clogging by-pass. Non-hammering renewable operating unit. ¼-in. i.p. thread on tail piece. Code type nozzle with stream regulator.

A hex wrench is furnished with this faucet for adjusting



S-4700 Speakman Graceline Sink Fixture

½-in. male eccentric connections with adjustable threaded flanges. Renewable hub, stuffing box, monel renewable seats, swivel discs, encased washers and monel washer-screws. Extra large removable metal soap dish. Adjustable metal lever handles. Non-splash swinging nozzle. Inlets 8 in. center to center

Left:

S-4010 Speakman Century Plug and Chain Lavatory Combination

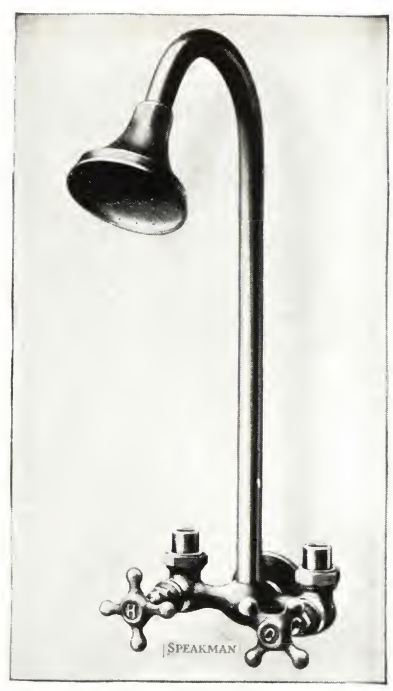
Metal escutcheons and 4-arm metal handles. Valves with monel renewable seats, swivel discs, encased washers, monel washer-screws and ¼-in. threaded tail pieces. Code type nozzle, beaded chain and heavy rubber stopper. Less P. O. plug

Right:

S-4740 Speakman Deck Type Sink Fixture with Transfer Valve, Hose and Spray

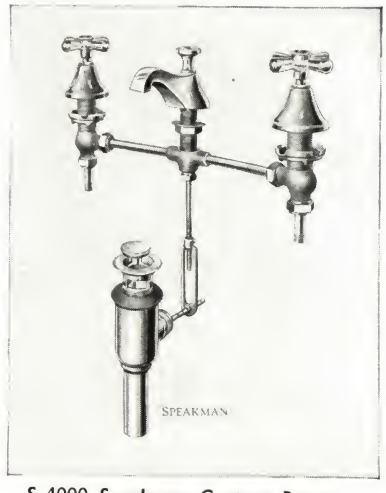
Metal escutcheons and 4-arm metal handles. Elevated swinging nozzle 8½ in. long. Valves with monel renewable seats, swivel discs, encased washers, monel washer-screws and ¼-in. threaded tail pieces.

S-4750, same as S-4740 but less transfer valve, hose and spray



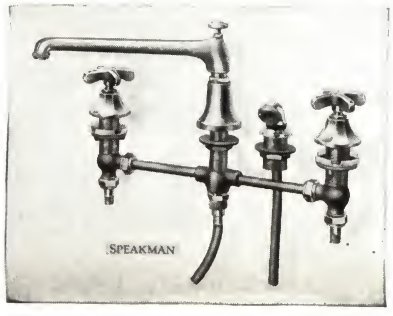
S-2020 Speakman Industrial Columbia Shower

Size, ½ in. Couplings to take supplies from overhead. Valves with renewable seats, swivel discs, encased washers and 4-arm metal indexed handles. Galvanized gooseneck discharge pipe with 4-in. cast brass head. Inlets 5 in. center to center



S-4000 Speakman Century Pop-up Lavatory Combination

Metal escutcheons and 4-arm metal handles. Code type nozzle. Valves with monel renewable seats, swivel discs, encased washers, monel washer-screws and ¼-in. threaded tail pieces. Pop-up drain with metal lift knob and 1¼-in. o.d. tail piece



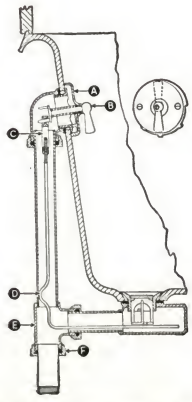


S-3200 Speakman Century Built-in Bath Fixture

Size, ½ in. Hi-seat by-pass valves with unions, monel renewable seats, swivel discs, encased washers and monel washer-screws. Metal escutcheons and 4-arm metal handles. Metal over-rim nozzle. Act-Easy Pop-up Drain, 1½-in. size

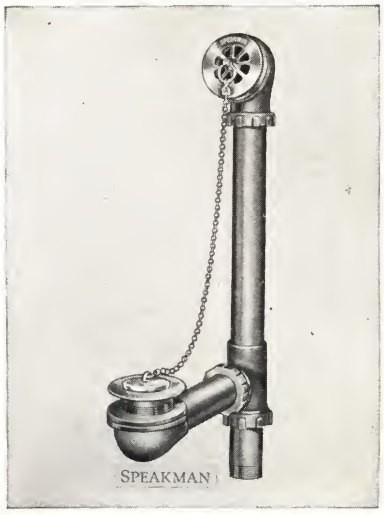


S-3310 Speakman Act-Easy Pop-up Bath Waste



S-3310 Speakman Act-Easy Pop-up Bath Waste in Detail

Size, 1½ in. For built-in tub. Slip connection with metal expansion rings. Slip nut for tail has 1½-in. i.p. thread so nut and tail can be discarded and iron pipe size connection used if desired. Drain tee can be reversed, bringing the outlet parallel with the arm for shallow floor construction. Full overflow area through slots around edge of overflow cover. Lift adjustment of metal stopper made by removing overflow cover. No wall panel required. Can be furnished in 2-in. size when specified



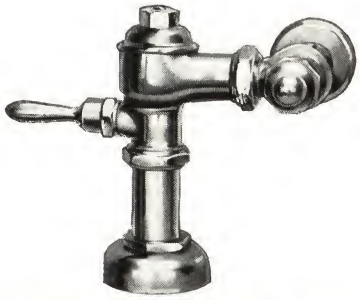
S-3300 Speakman Connected Waste and Overflow

Size, 1½ in. For built-in tub. Slip connection with metal expansion rings. Slip nut for tail has 1½-in. i.p. thread so nut and tail can be discarded and iron pipe size connection used if desired. Drain tee can be reversed, bringing the outlet parallel with the arm for shallow floor construction. Can be furnished in 2-in. size when specified

Speakman Si-Flo Flush Valve

The Speakman Si-Flo Flush Valve was developed to provide a silent but efficient means of water control for water closets, showers, bed pan washers, sterilizers, urinals, slop sinks, autopsy sinks and any other fixture requiring a definite quantity of water in a given time. It positively eliminates throttling, closing and water-hammering noises heretofore associated with flush valve operation.

In operation—even with the supply pressure up to 100 lbs. per sq. in.—it only whispers. In addition, it is easy and simple to maintain. The entire mechanism is contained in a single unit, the replacement of which constitutes a complete repair of the valve.



K-9000 Speakman Si-Flo Closet Flush Valve

With 1-in. capped angle stop on right and handle on left, wall flange, 20 per cent nickel white metal oscillating handle, flush connection, spud coupling and flange for 1½-in. top supply bowl



K-9000-BSP Speakman Si-Flo Closet Flush Valve with Si-Flo Back Syphon Preventer

Has 1-in. capped angle stop on right and handle on left, wall flange, 20 per cent nickel white metal oscillating handle, flush connection, spud coupling and flange for 1½-in. top supply bowl

Si-Flo Piston Unit

The piston unit of the Si-Flo Flush Valve (illustrated) contains all of the working or wearable parts of the valve, except the handle assembly.

In case repair becomes necessary the replacement of this piston unit constitutes a complete repair of the valve and can be replaced in five minutes time. It does not require an experienced mechanic.

The piston is made of a hydraulically moulded composition noted for its long wearing qualities and resistance to solvents, alkalis, and acids.

The cup leather is hydraulically formed and treated so that it will retain its shape and pliability indefinitely.



Si-Flo Flush Valve for Urinals



K-9082 Speakman Chromium Plated Urinal Si-Flo Flush Valve

For stall urinals with ¾-in. capped angle stop for right or left supply inlet, wall flange, 20 per cent nickel white metal oscillating handle, flush connection, spud coupling and flange for o.d. top supply.

K-2 SI-FLO FLUSH VALVE CATALOG

Note: Send for our K-2 Catalog which describes and illustrates Si-Flo Flush Valves for all types of standard installations and many special ones. Included are roughing-in measurements, tables and other technical data of interest to architects and engineers.

MEMORANDA

THERMO-MIX



NO SCALD—NO CHILL

A POSITIVE THERMOSTATICALLY CONTROLLED MIXING VALVE FOR SHOWERS, BATHS AND WHEREVER ACCURATE WATER TEMPERATURE CONTROL IS REQUIRED.

THERMO-MIX, INC., 129 GRAND AVE., BROOKLYN, N. Y.

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THERMOSTATIC MIXING VALVES

ASSURE POSITIVE PROTECTION AGAINST SCALD AND CHILL

In any water system, there are always uncontrollable changes of pressure and temperature which will affect the user's comfort, and sometimes cause severe and dangerous scalding. In the industrial field, it is necessary that water used for processing some materials be kept at an absolutely even temperature, as any change would be detrimental to the material being processed. This also applies to photographic work. Either for personal or for industrial use, the desirability of thermostatically controlled mixing valves to deliver water at a predetermined temperature is readily understood and appreciated.

A Modern Necessity

There are many applications for the use of thermostatically controlled mixing valves. It is most essential in homes, schools, hotels, clubs, hospitals, institutions, public buildings, beauty parlors, steamships, laundries, factories, etc., that all danger of scalding water be removed. The water temperature must be entirely under the control of the individual user, or an attendant, when group control is used.

Mechanism Must Be Positive, Accurate, Non-Corrosive, Simple and Rugged

To be really dependable, the mechanism of a thermostatic mixing valve must be not only positive in its action, accurate and simple in its operation, and so arranged that water has the least corrosive effect upon it, but, above all, it must be rugged in its construction. With a valve which combines all these requisites, there is no uncertainty about the temperature of the mixed water.

Thermo-Mix Valves Have Proved Dependable

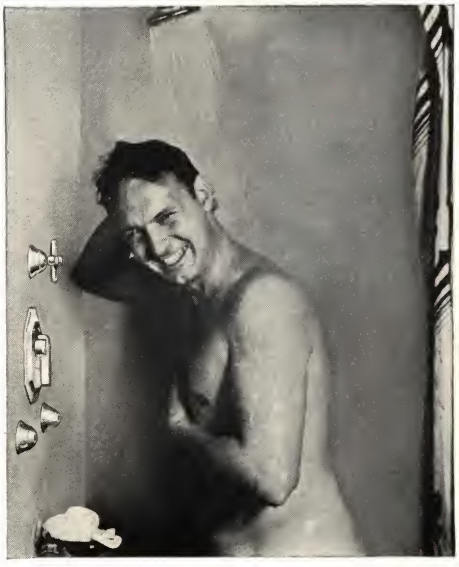
Possessing all of the above desirable features, Thermo-Mix has qualified in the greatest test—that of use under the most adverse operating conditions. The non-corrosive, rugged features of Thermo-Mix, developed during many years of experience in the manufacture of thermostatically controlled mixing valves, have demonstrated their superior quality under every test of hard usage.

All Parts Easily Accessible From the Front

A distinguishing feature of Thermo-Mix Valves is the fact that all of the operating parts are readily accessible and removable from the front of the valve. It is not necessary to disturb any pipe connections to the valve; when the strainers need cleaning, the valve need not be disassembled, because the strainers are also removed directly from the front.



CONTROL FOR SHOWER AND TUB COMBINATION IN THE HOME



A CONTROLLED SHOWER IN THE CLUB



THERMO-MIX NO. 6 IN THE SURGEON'S LAVATORY

THERMO-MIX

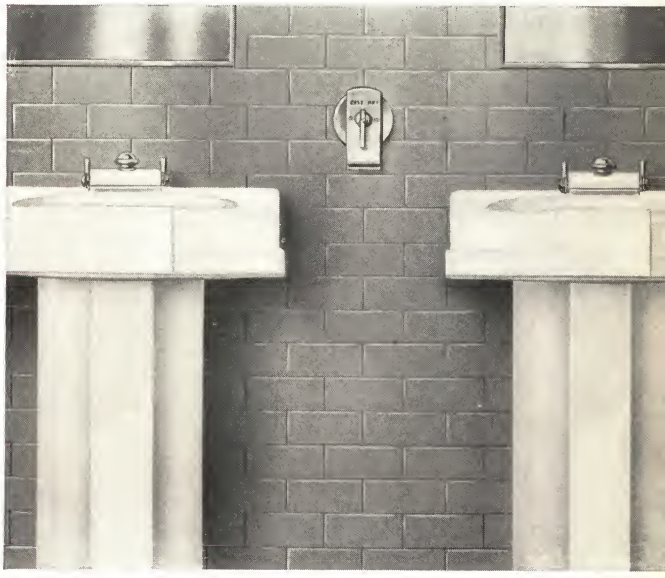
NO SCALD NO CHILL

CHECK THESE IMPORTANT FEATURES OF THERMO-MIX VALVES:—

- Assure Constant Temperature Control Under Extreme Changes in the Water Supply Conditions — This is true even when there are wide differences in cold and hot water supply pressure and changes in supply water temperature, as long as hot water is available.
- May Be Regulated to Deliver Water at Any Desired Temperature Within a 70° Range — Water may be drawn at any temperature from cold water temperature to 130°, as desired. Higher temperatures may be secured if specified. Single unit valves, unless otherwise requested, are set so that water may not be drawn hotter than 105°.
- Are Made of Non-corrosive Materials — All parts in contact with the water are made from Monel Metal, Copper and Bronze.
- Will Automatically Shut Off the Water in Case of Failure of Cold or Hot Water Supply—If the cold water supply fails when the valve is set to deliver warm or hot water, the valve will shut off the hot water to prevent scalding. If the hot water fails when the valve is set to deliver cool water, it will shut off the cold water to prevent chilling.
- Are Made So That the Thermostatic Unit Is Readily Accessible From the Front—The complete controlling unit may be removed from the casing without disturbing any plumbing connections.
- Have Checks and Strainers Built Into the Valve Casing — Thus eliminating pipe connections, but at the same time leaving it possible to remove the strainers and check valves for cleaning, if necessary, without disturbing the operating mechanism of the mixing valve.
- Require No Pressure Reducing or Equalizing Valves — Check valves are built into each casing so that water may not by-pass the valve. Any difference in pressure which may affect the temperature of the mixed water is compensated for by the re-proportioning of the hot and cold water by the actions of the thermostatic element.
- Are Economical—They save water and time usually lost by manipulation of stop valves to try to control the temperature of the delivered water.
- Will Operate Effectively Under the Harshest Treatment and Water Conditions—Thermo-Mix valves are constructed for dependable operation.



24 SHOWERS IN HIGH SCHOOL EQUIPPED WITH THERMO-MIX GROUP CONTROL

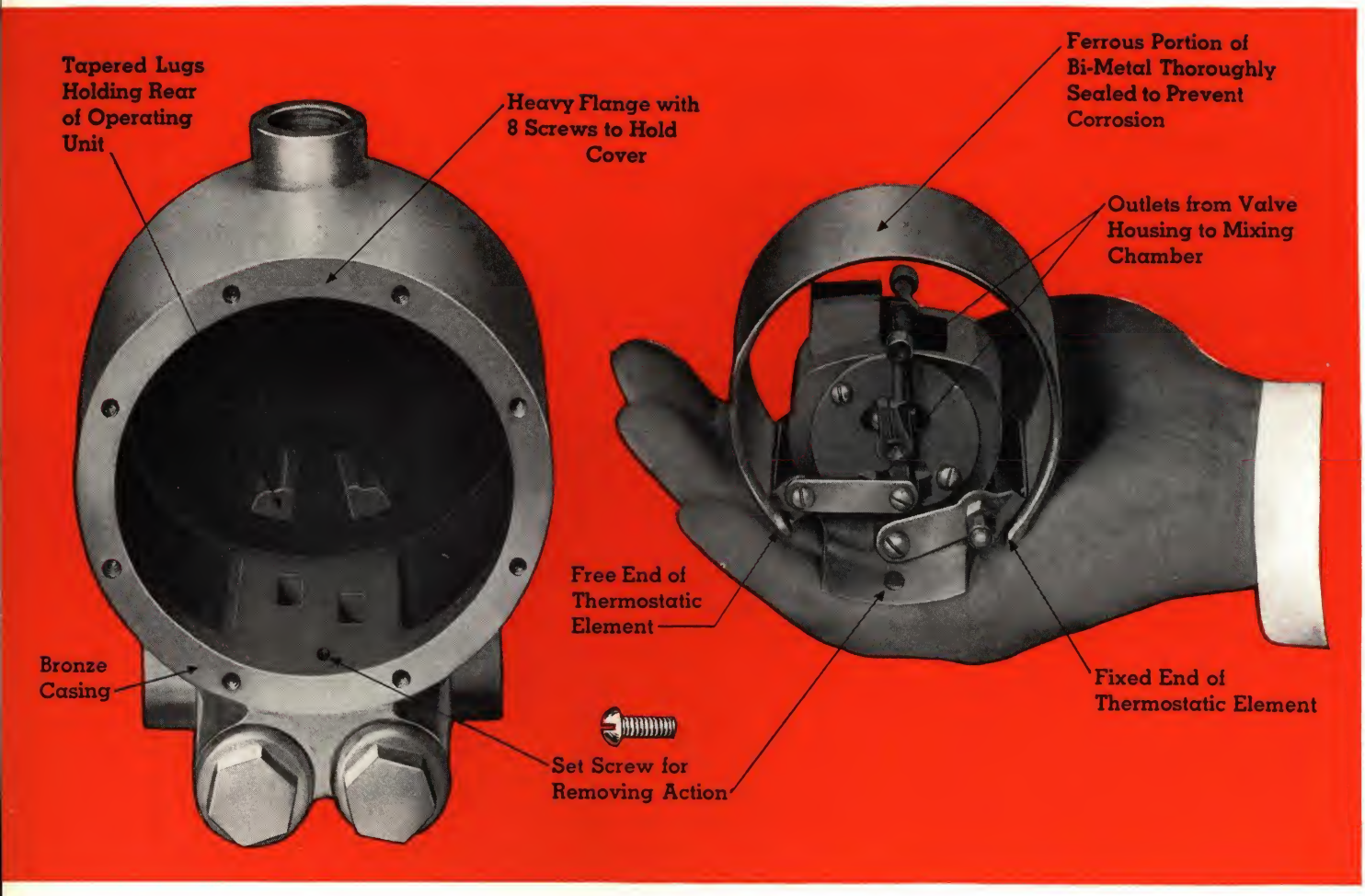


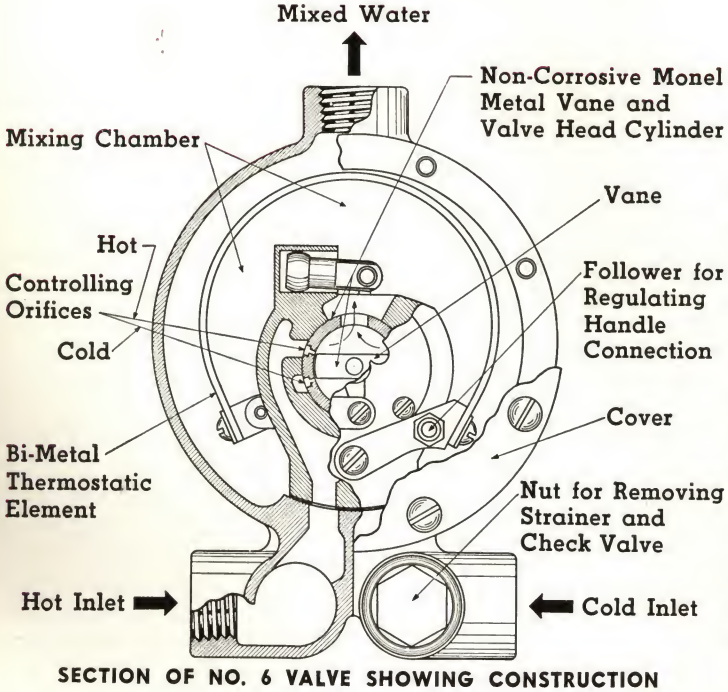
A WELL-EQUIPPED LAVATORY FOR THE MODERN OFFICE BUILDING



EMERGENCY BATH EQUIPPED WITH THERMO-MIX NO. 15 VALVE

SHOWING THE FEW PARTS AND THE





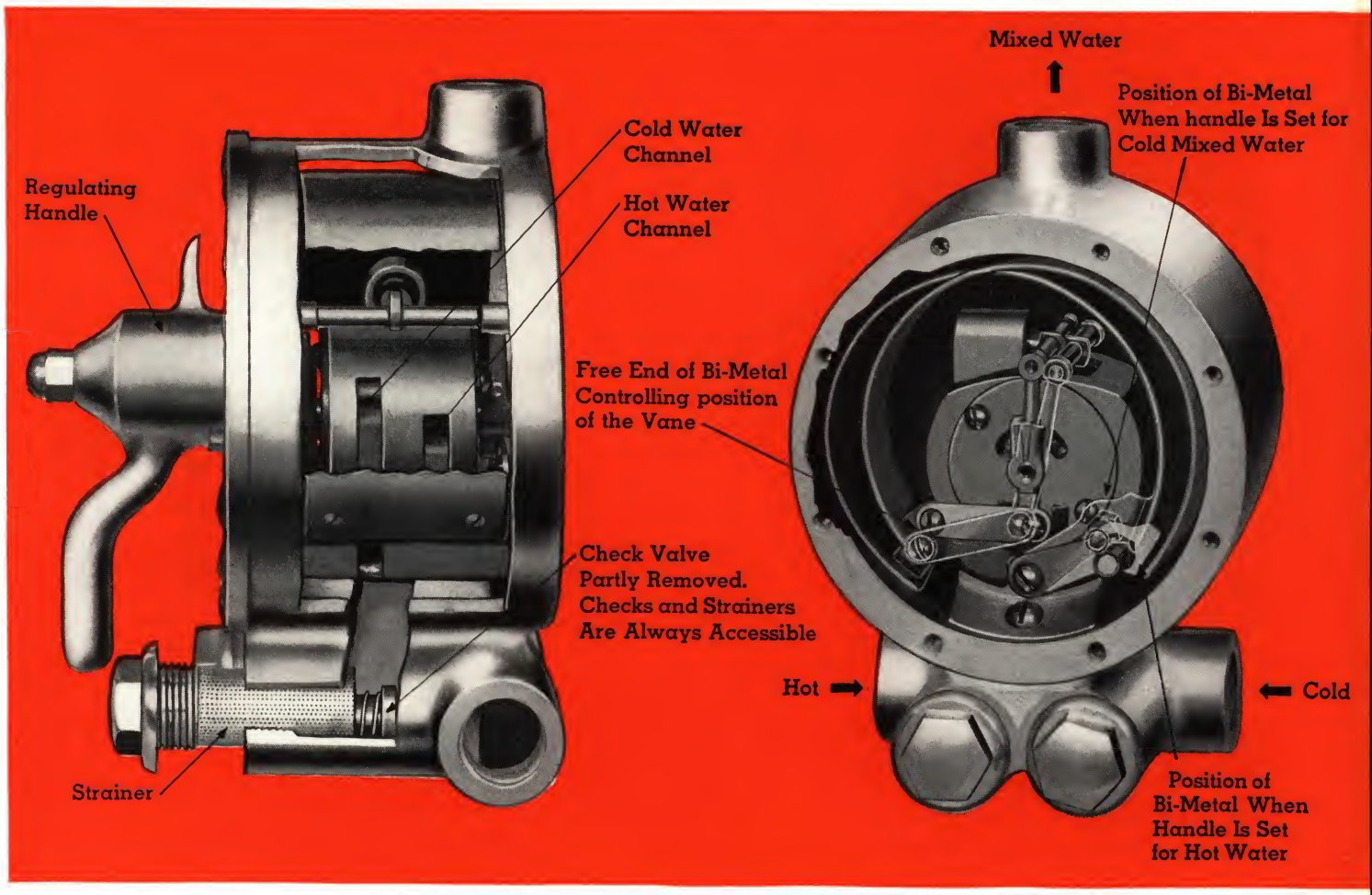
SECTION OF NO. 6 VALVE SHOWING CONSTRUCTION

Simplicity of the

Operation:—

Setting the control handle by the user locates the fixed end of the thermostatic element in the definite position to deliver mixed water at the desired temperature. With the element in this position, both the hot and cold water enters the valve head and passes to two pairs of diametrically located orifices. The passage of water through these orifices is controlled by a vane, the position of which is governed by the movement of the free end of the thermostatic element. Even the slightest variation from the desired mixed water temperature causes the element to move, thus opening or closing the respective orifices and delivering the mixed water at the correct temperature, regardless of pressure or temperature changes in the supply water.

THERMO-MIX RUGGED CONSTRUCTION



Operating Principle

Fast, Positive Action

It will be noted that the water is mixed immediately after passing through the orifices and impinges directly on the thermostatic element. All of the water passes through the mixing chamber, thus making a faster, a more positive acting mixing valve.

Standard Pipe Connections

The pipe connections for the Thermo-Mix Valve are standard female connections in the pipe sizes which are specified for each capacity of mixing valve.

Designed to Eliminate Corrosion

Every portion of the valve is designed to eliminate corrosion. Brass, bronze, copper, and Monel Metal are the only materials with which it is possible for the water to come in contact.

Representative Tests:—

TEST WITH VARIABLE PRESSURES

WHILE VALVE IS DELIVERING MIXED WATER AT 100° FROM A 185° HOT WATER SUPPLY AND A 67° COLD WATER SUPPLY

Mixed Water Temp., Deg. F.	Cold Water Pressure Lbs. per Sq. In.	Pressure Percent Change from Datum	Temp. Percent Change	Hot Water Pressure Lbs. per Sq. In.
100	43	0 %	0 %	43
100	32	25.6%	0 %	43
101.5	20	51 %	1.5 %	43
102.25	15	65 %	2.25%	43

TEST WITH VARIABLE TEMPERATURES

VALVE SET TO DELIVER MIXED WATER AT 100° (PRESSURE 40 LBS. PER SQ. IN.)

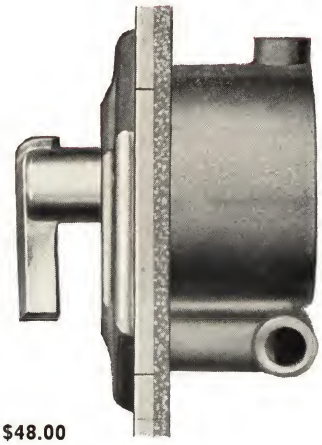
Hot Water Supply Temp., deg. F.	185°	175°	165°	155°	145°	135°
Percent Change	0%	5.4%	10.8%	16.2%	20.8%	27%
Mixed Water Temp., deg. F.	100°	100°	99.5°	98.5°	98°	97°
Percent Deviation from 100°F.	0%	0%	.5%	1.5%	2%	2.5%

INDIVIDUALLY CONTROLLED THERMO-MIX

FOR USE IN RESIDENCES, CLUBS, HOTELS, BEAUTY PARLORS, SURGEON'S BATHS, HOSPITAL LAVATORIES, STEAMSHIPS, PHOTOGRAPHIC DARK ROOMS, ETC.

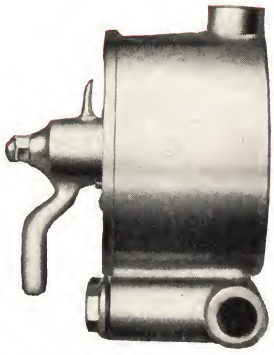
THERMO-MIX MIXING VALVE NO. 6 — CAPACITIES 6 GAL. PER MIN.





CONCEALED TYPE — PRICE $48.00





EXPOSED TYPE — PRICE $52.00

Thermo-Mix No. 6 Mixing Valve is designed to be used to supply one outlet such as a shower, or shower and spray combination, or as a line control for the hot water supply for one large basin or two small basins in office building washrooms, in connection with surgeons' and nurses' lavatory wash-ups, in photographic dark rooms, in beauty parlors and barber shops.

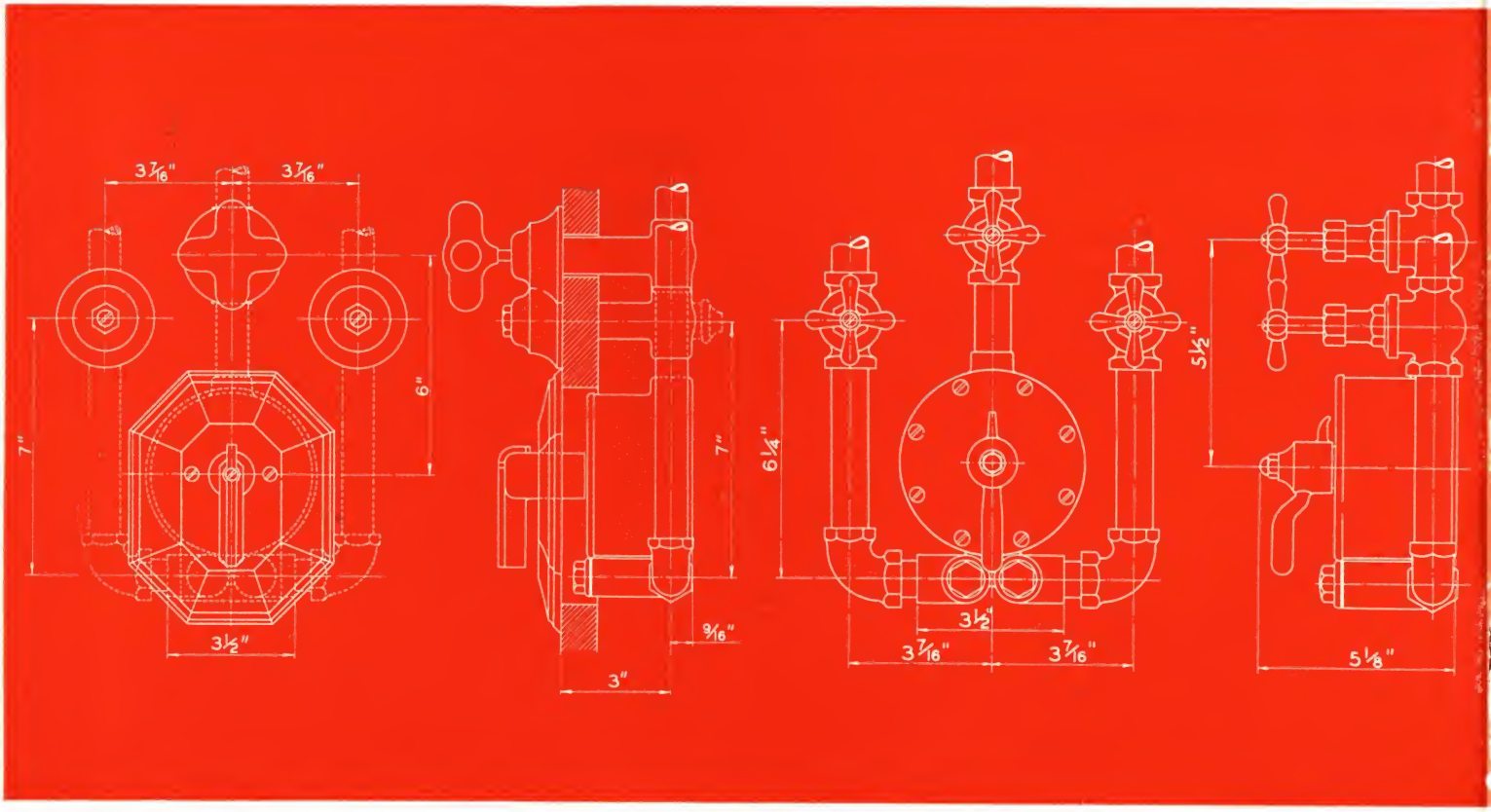
The valve is supplied in two general styles, for concealed plumbing and for exposed plumbing. Suggestions for installation are shown below. The concealed model may be installed with key stop valves reversed, as shown by the dotted lines below, if there is to be a rear access to the general plumbing, although it is not necessary to have them reversed.

Key stop valves should be used in order that the strainers may be cleaned when necessary without turning off the entire water system. ***The company does not furnish stop valves.***

Check valves and strainers are built into all Thermo-Mix valves and no pressure equalizing valves or reducers are required. Pipe connections are standard ½-in. female connections.

The No. 6 valve is furnished in full chromium or nickel plate for exposed plumbing, and in rough bronze with chromium or nickel plated handle and face plate for concealed plumbing. Additional finishes will be supplied at additional cost if specified. Write for further information.

For alternate face plates, see page 7.



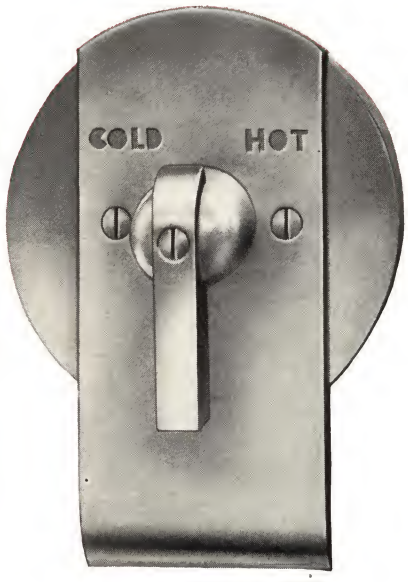
COVER PLATES FOR NUMBER 6 CONCEALED VALVE



ROUND FACE PLATE



OCTAGONAL FACE PLATE



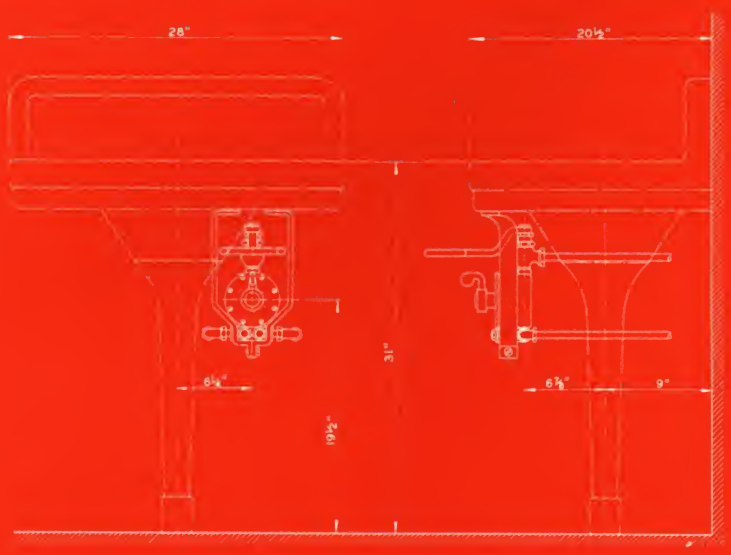
MODERN FACE PLATE

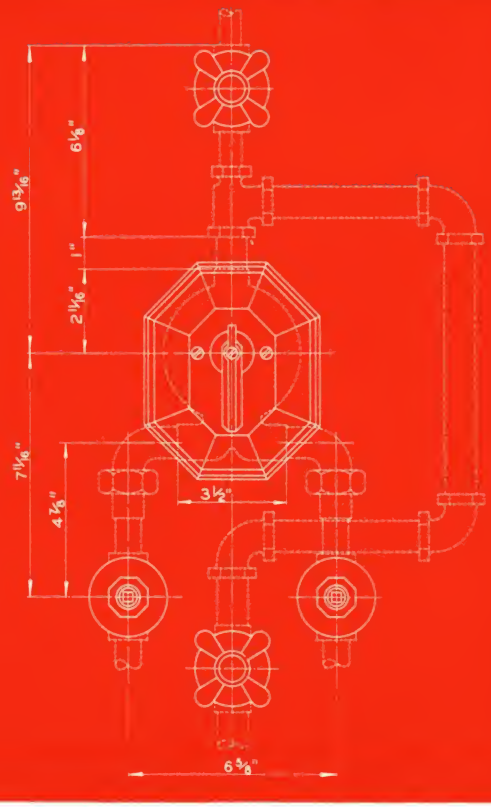
Three face plate designs are available with handles to harmonize with whatever style of plumbing fixtures is used. Any of the face plates and handles shown will be furnished, if specified, at no additional cost. If no particular face plate is specified, the octagonal plate and handle will be furnished.



Inmate Handle

This handle is designed for use in conjunction with the round face plate in prisons and institutional installations. It is so constructed and assembled that the handle or face plate cannot be removed except with special tools. This prevents the possibility of their being removed or bent and used for any malicious or mischievous purpose.





MIXING VALVE—LARGE CAPACITY INDIVIDUAL CONTROL

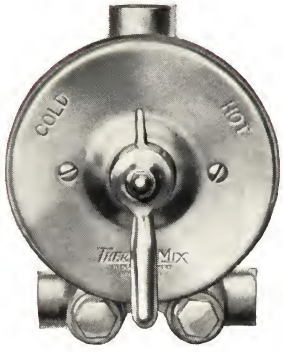
DESIGNED ESPECIALLY FOR HOSPITAL BATHS; WILL ALSO HANDLE TWO OR THREE OUTLETS, SHOWERS OR BASINS

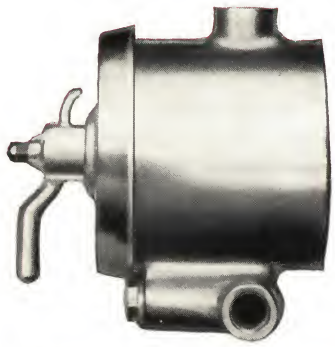
THERMO-MIX MIXING VALVE NO. 15 — CAPACITY 15 GAL. PER MIN.





CONCEALED TYPE — PRICE $65.00



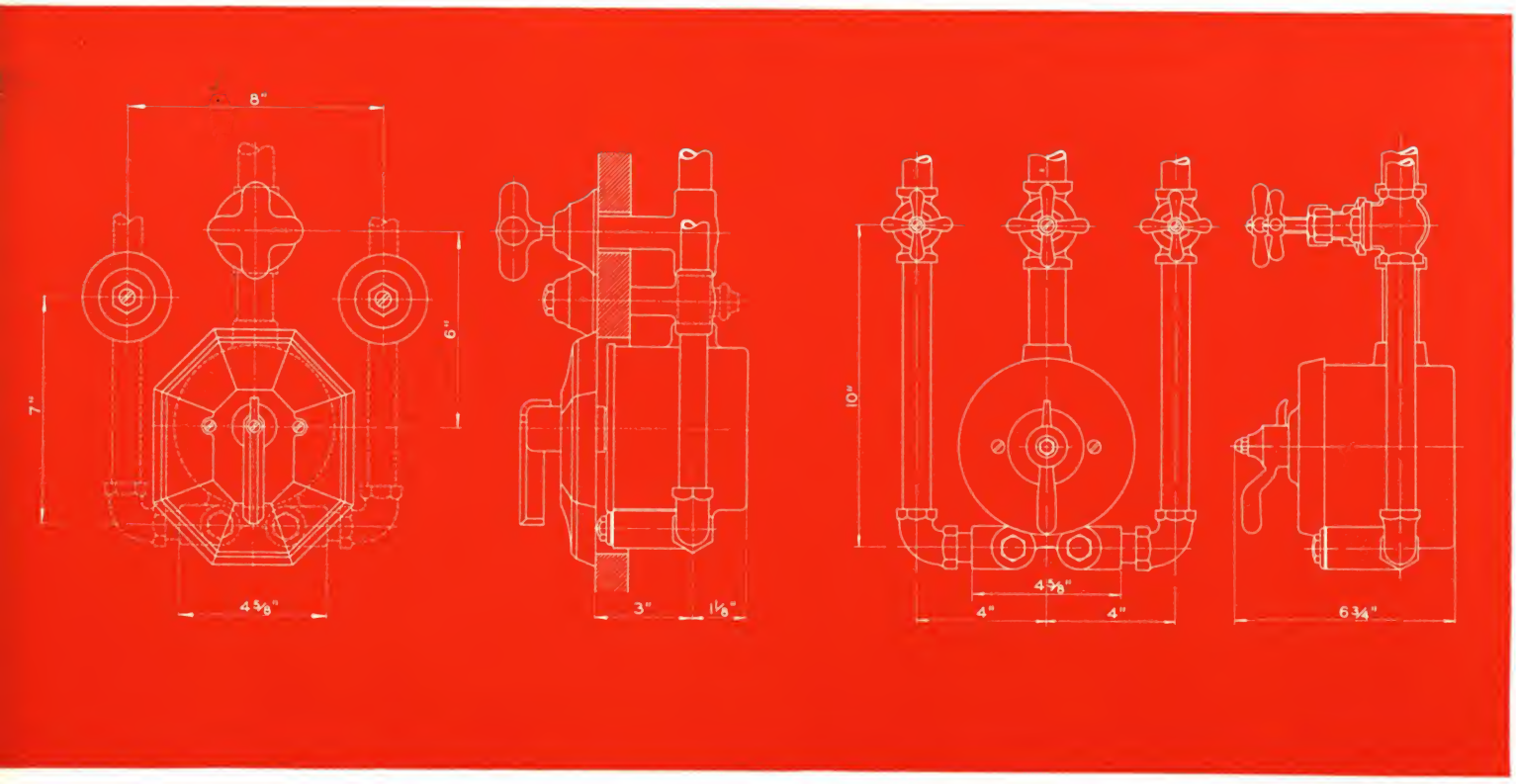


EXPOSED TYPE — PRICE $70.00

The Thermo-Mix No. 15 Valve is designed to meet the need of installations requiring more mixed water, or mixed water at a faster rate of delivery than can be delivered by the No. 6 Thermo-Mix Valve. It is an enlargement in all respects and details of the No. 6 valve.

The No. 15 Valve is furnished for either concealed or exposed plumbing. The concealed model is furnished only with the octagonal face plate, as shown. It is furnished in the same finishes as the No. 6 Valve.

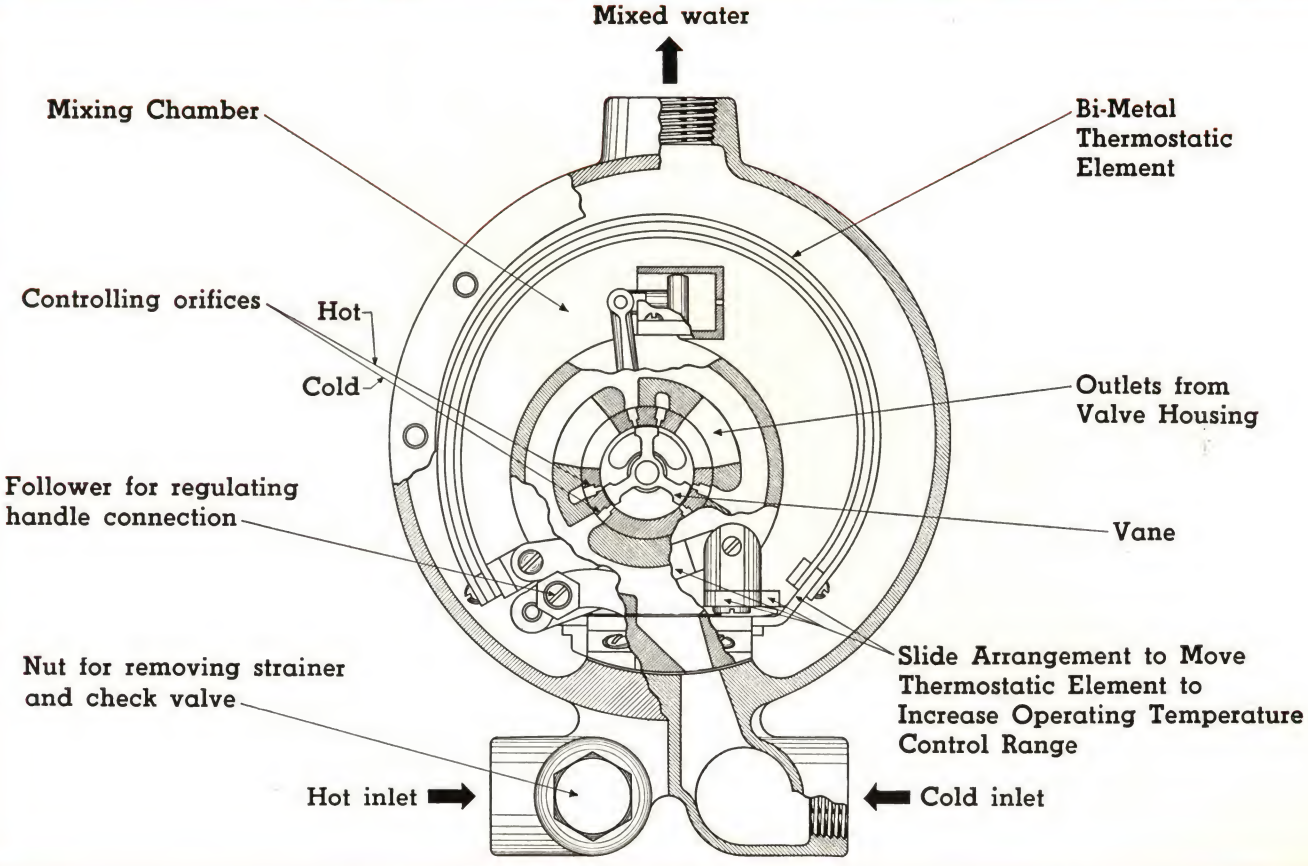
The Thermo-Mix No. 15 Valve meets the particular requirements of two or three shower heads, if used as a gang control, hospital therapeutic emergency baths, or banks of not more than four basins. Check valves and strainers are built in all Thermo-Mix valve casings, and no pressure equalizers or reducers are needed.



THERMO-MIX VALVES FOR GROUP CONTROL

FOR USE IN SCHOOLS, COLLEGES, Y.M.C.A.'s, INSTITUTIONS AND ALL INSTALLATIONS WHERE LARGE QUANTITIES OF WATER ARE DESIRED

THERMO-MIX MIXING VALVES NO. 30, NO. 45, NO. 60 AND NO. 120



GENERAL CONSTRUCTION—The construction of the No. 30, No. 45, No. 60 and No. 120 Thermo-Mix Mixing Valves is the same in principle as the No. 6 and No. 15, except that instead of there being two pairs of diametrically located orifices, one of each pair being for hot and one for cold, there are three or four pairs symetrically located on the interior of the valve head, and the vane has three or four blades instead of two.

Further, these larger size valves have a special patented slide arrangement governed by the control handle to re-locate the thermostatic element, in order that, when the valve is set to deliver at the desired temperature, the thermostatic element will always be in the most effective position.

Check valves and strainers are built into each casing, and no pressure equalizers or reducers are required.

These valves are furnished for exposed plumbing in full chromium or nickel finish, or rough bronze with chromium face plate and handle, or in complete rough bronze, in each case, with a round face plate covering only the front of the body of the valve. The No. 30 Valve is also furnished with an octagonal chromium face plate and handle for concealed plumbing.

Each valve of these sizes is equipped with a graduated scale. Locks may be fitted to these sizes of mixing valves at a slightly additional cost, if specified.

These valves are suited for use on gangs of showers where the master Thermo-Mix Valve is set to a temperature of about 100 to 110° (diagram of such an arrangement is shown on page 11), so that each individual shower will deliver water at a constant temperature suitable for a warm shower. The shower may be adjusted to suit the needs and desires of the user and at the same time positively prevent danger of scalding.

Another method is also shown on page 11. This method is best suited to public baths where the gang of showers is run as a single unit, and the temperature is entirely at the discretion of an attendant.

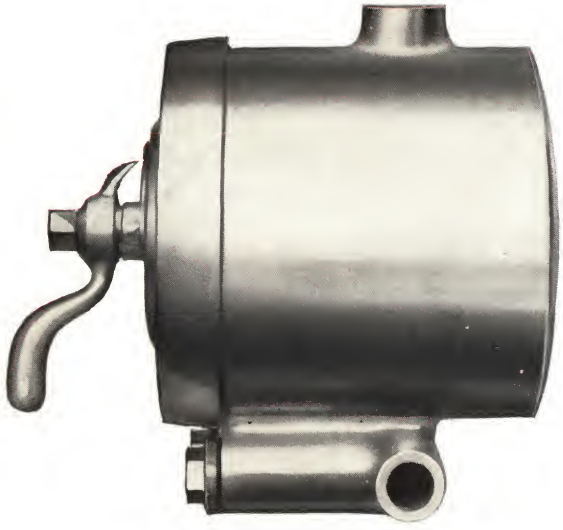
THERMO-MIX VALVES FOR GROUP CONTROL

LARGER CAPACITIES WITH THE SAME ACCURACY AND DEPENDABILITY



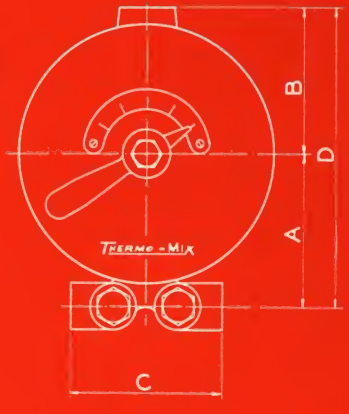
NO. 30—CAPACITY 30 GAL. PER MIN. AT 45 LBS.

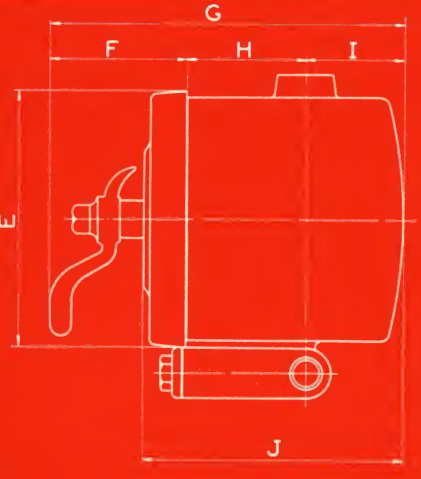
NO. 45—CAPACITY 45 GAL. PER MIN. AT 45 LBS.



NO. 60—CAPACITY 60 GAL. PER MIN. AT 45 LBS.

NO. 120—CAPACITY 120 GAL. PER MIN. AT 45 LBS.





ROUGHING-IN DIMENSIONS IN INCHES

No. of Valve	Approx. Gals. per min. at 45 Lbs.	PIPE SIZES In-let	PIPE SIZES Out-let	A	B	C	D	E	F	G	H	I	J	Approx. Ship. Wt., Lbs.	Full R. B.	Chrome Handle & Face Plate	Full C. P.
15	15	1/2	3/4	3 1/16	3 1/4	4 5/8	6 5/16	5 9/16	2 5/8	6 1/16	2 3/8	1 1/16	5 3/16	17	$ 63	$ 65	$ 70
30	32	3/4	1	4 3/4	4 1/2	4 3/4	9 1/4	7 15/16	4 1/4	10 1/8	3 5/8	3 1/8	8 1/4	30	103	105	115
45	45	1	1 1/4	5	5	6 3/8	10	8 1/16	4 5/16	11 1/16	4 3/4	2 3/4	9 1/8	45	122	125	140
60	61	1 1/4	1 1/2	5 3/4	5 1/2	7 3/4	11 1/4	9 1/4	4 5/16	12 15/16	5 3/4	2 7/8	10 1/4	55	135	140	160
120	—	—	—	—	—	—	—	—	—	—	—	—	—	—	190	200	225

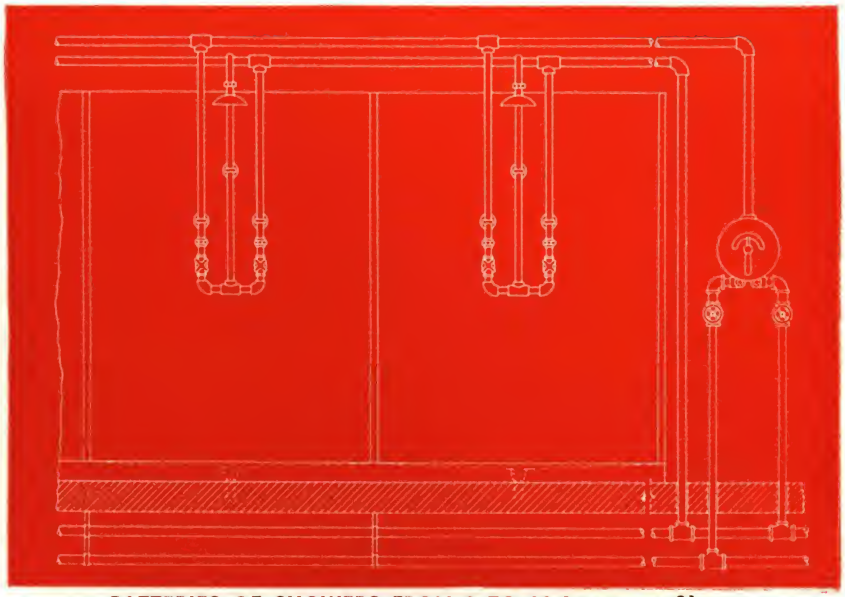
Prices subject to change without notice

Company does not furnish stop valves

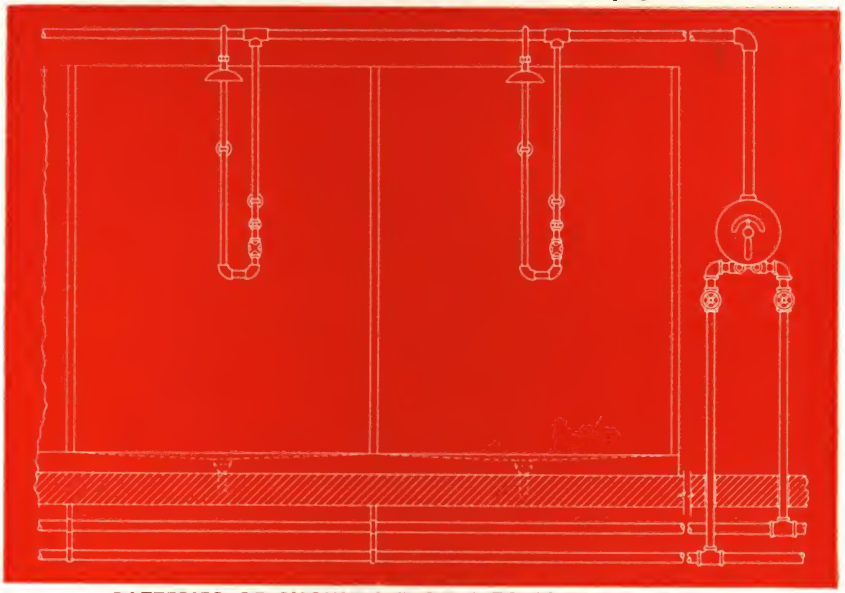
Special Roughing-in Arrangements

Specification by Description

All valves shall be of cast brass body, with Monel Metal, cast bronze, and other non-corrosive metals to be used for all internal parts. The thermostatic element shall be of solid bimetal, having the ferrous side incased to prevent corrosion. The concealed valve shall be rough body with exposed parts polished and chromium plated; exposed models to be completely polished and chromium plated. Strainers and check valves shall be built into both cold and hot water inlets, and these shall be accessible without disturbing piping or working parts of the valve. Under 45 pounds pressure, the minimum capacity of the valve shall be . . . cf. page 10. Minimum temperature range shall be 70°F., with maximum temperature setting at . . . cf. page 3, this setting to be easily and simply adjusted. With a 50% variation in pressure of either the hot or cold water supply, the mixed water temperature variation shall not exceed plus or minus 3 degrees F. Upon failure of either the cold or hot water supply, the valve shall immediately cut off all water.

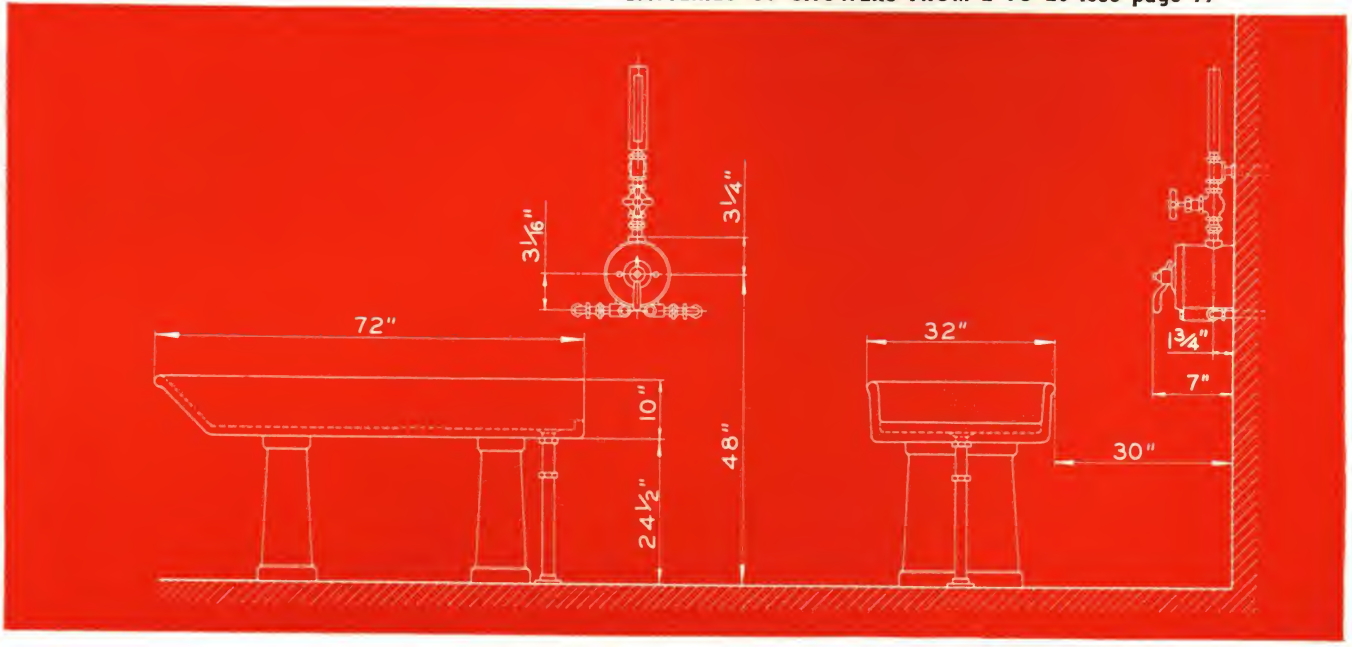


BATTERIES OF SHOWERS FROM 2 TO 30 (see page 9)



BATTERIES OF SHOWERS FROM 2 TO 20 (see page 9)

BELOW:
EMERGENCY BATH WITH THERMO-MIX VALVE NO. 15



A FEW THERMO-MIX INSTALLATIONS

HOSPITALS

Rochester State Hospital, Rochester, N. Y.
Newark Valley State Hospital, Newark Valley, N. Y.
Bloomingdale Hospital, White Plains, N. Y.
Central Islip State Hospital, Central Islip, N. Y.
Hudson River State Hospital, Poughkeepsie, N. Y.
Harlem Valley State Hospital, Wingdale, N. Y.
Middletown State Hospital, Middletown, N. Y.
Pennhurst State School, Pennhurst, Pa.
Farmingdale County Hospital, Farmingdale, N. Y.
Newark State School, Newark, N. J.
New Haven Hospital, New Haven, Conn.
St. Luke's Hospital, Newburgh, N. Y.
Allentown State Hospital, Allentown, Pa.
United States Veterans Hospital, Roanoke, Va.

BEAUTY PARLORS

James A. Hearn, New York, N. Y.
G. Fox Company, Hartford, Conn.

SCHOOLS AND COLLEGES

Middletown, N. Y., Board of Education
New York City Board of Education:
Grover Cleveland High School, Brooklyn, N. Y.
Walton High School, Bronx, New York, N. Y.
Samuel Gompers High School, Bronx, New York, N. Y.
Brooklyn Technical High School, Brooklyn, N. Y.
Vocational High School, Staten Island, N. Y.
Branford High School, Branford, Conn.
Yale University, New Haven, Conn.
The Choate School, Wallingford, Conn.
The Roxbury School, Cheshire, Conn.
Howard Street School, Springfield, Mass.
Mineola High School, Mineola, N. Y.

MISCELLANEOUS

Southern New England Telephone Co.
Long Island Lighting Co., Mineola, N. Y.
Endicott Johnson, Endicott, N. Y.
National Lead Co., Bayonne, N. J.
New Haven C. C., New Haven, Conn.
Gideon Putnam Hotel, Saratoga Springs, N. Y.
Weathersfield Country Club, Weathersfield, Conn.
The News Corporation, New York, N. Y.

THERMO-MIX, INC.

MAIN OFFICE

129 GRAND AVENUE BROOKLYN, N. Y.

REPRESENTATIVES

F. M. IRONSIDE,
509 Fifth Avenue, New York, N. Y.

W. T. PEASE,
15 Thompson Street, Milford, Conn.

C. A. WAGNER,
2402 Market Street, Philadelphia, Pa.

A. A. ANDERSON CO.,
520 No. Michigan Avenue, Chicago, Ill.

For Other Representatives, Write to Main Office

SECTION 27

CONTINUED ⟶

BRADLEY WASHFOUNTAIN CO.

Manufacturers of Group-Washing Equipment
2203 West Michigan Street, MILWAUKEE, WIS.
Representatives in All Principal Cities of the United States, Canada, and Mexico

THERE'S A BRADLEY GROUP-WASHING FIXTURE FOR EVERY GROUP-WASHING REQUIREMENT



An Attractive Bradley-Equipped Industrial Washroom

WASHFOUNTAINS

Bradley Washfountains are specifically designed for modern group-washing requirements and are in use throughout the world, in large washrooms and small, among industrial plants of all kinds, schools, institutions, federal and state establishments, railroads, airports, public buildings, department stores, offices—in fact, wherever it is desired to accomplish group-washing efficiently and economically.

Materials

Precast Marble or Stone—*Marmorite,* marble composition, fully ground and polished; white, tinted or variegated colors. *Granito,* non-porous stone composition, fully ground and polished of a practical and attractive sand shade. *Granito with Unground Exterior,* composition identical to standard Granito, but with interior and rim of bowl only ground. *Bradstone,* similar in construction to Granito, with polished but unground surface, burnt-umber color.

Enameled Pressed Iron—Pressed from sheets ⅛ in. gauge and heavier, reinforced, finished in acid-resisting enamel, white or gray. Roll rim or deep apron models.

Stainless Steel—Bowl solid stainless; pedestal pressed iron enameled to match bowl. Solid stainless pedestal on special order.

Chemical Stoneware—Acid-proof vitreous stoneware. Color, reddish-brown.

Sizes and Equipment

Bradley Washfountains may be had in 54 in. and 36 in. diameter sizes. The 54 in. circular units accommodate 10 users and the 36 in. size, 6 users. The 54 in. semi-circular fixtures serve 6 users and the 36 in. size, 3 users. Fittings are of heavy brass, chromium-plated, satin finished. Standard equipment includes cake soap tray and Bradley manually operated mixing valve.

Outstanding Bradley Advantages

1. Only 3 plumbing connections, 2 supplies, 1 drain.
2. 25% saving in floor space.
3. 70 to 80% saving in water consumption.
4. Improved sanitation because each user washes in running water.
5. Reduced janitor labor.
6. Attractive appearance and long life.

SPECIFICATIONS OF BRADLEY WASHFOUNTAINS

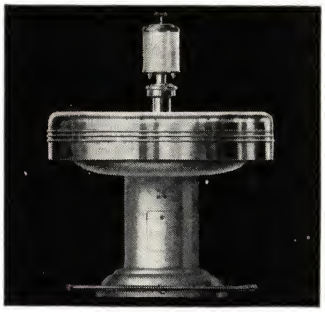
Type		Characteristics	Design	Dia., In.	No. of Users
Hand Operated	Foot Operated				
AH	AF	Supplies and vent from below.	Circular	54 .. 36	10 .. 6
BH	BF	Supplies from above, direct rising vent.	Circular	54 .. 36	10 .. 6
CH	CF	Supplies and vent through wall or floor.	Semi-circular	54 .. 36	6 .. 3
EH	EF	Supplies and vent through wall or floor.	Semi-circular	54 .. 36	6 .. 3
GH	GF	Supplies and vent through wall or floor.	Semi-circular	54	6
HH	HF	Supplies from below, direct rising vent.	Circular	54 .. 36	10 .. 6
OH	OF	Supplies from above, vent from below.	Circular	54 .. 36	10 .. 6



Type "AH" Washfountain in Precast Stone 54-in., 10-Person Size



Type "OH" Washfountain in Enameled Pressed Iron with Roll Rim Bowl



Type "EF" Washfountain in Stainless Steel. Particularly popular for school use. Semi-Circular in design; 36 in. diameter, 3 person size, with apron bowl illustrated. Also available in 54 in., 6 person size, and with roll rim bowl.

New Washfountain Sprayhead

All Bradley Washfountains are now equipped with "self-cleaning" sprayheads, which make it possible to flush or brush out lime deposits and other foreign matter by merely separating the two parts of the head. The head consists of but three main members, top or body, removable ring and renewable valve seat, all constructed of heavy brass, carefully made and machined, with exposed surfaces chromium plated, satin finished.



Bradley Soap Dispensers



Liquid or powdered soap dispensers specially designed for use on Bradley Washfountains are available in lieu of standard cake soap trays if desired. The valves of both fixtures are of the popular push-up type, easily operated with one hand, and dispense soap without waste.

Drinking Fountains

Bradley Drinking Fountains are constructed of the same beautiful, durable materials as precast Bradley Washfountains. They are widely used in buildings of all kinds, as well as in parks, playgrounds and on the sidewalks of city streets. Three models are available: Type S, single side-stream; Type V, single center-stream; and Type M, three vertical streams.

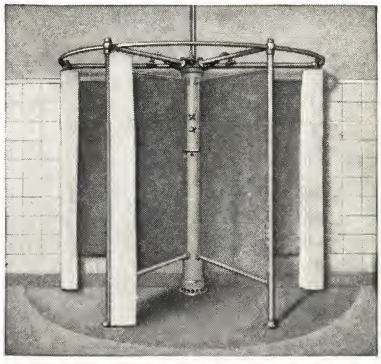


Other Bradley Fixtures

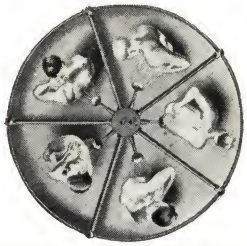
The Bradley line also includes Foot-fountains and Street and Playground Showers. The former provide the ultimate in foot-hygiene and are widely used in orphanages, dormitories and bath houses. Street and Playground Showers afford happy, healthful recreation for children at any hydrant or other water outlet.

GROUP SHOWERS

Bradley Group Showers, like Bradley Washfountains, are expressly designed for the modern group service requirements of industrial plants, schools and institutions of all kinds. They are available in circular and semi-circular models, accommodating five and three users respectively, *each in a separate roomy compartment.*



Semi-circular Bradley "3-In-A-Group" Shower



Overhead View of "5-In-A-Group" Shower in Use

Specifications

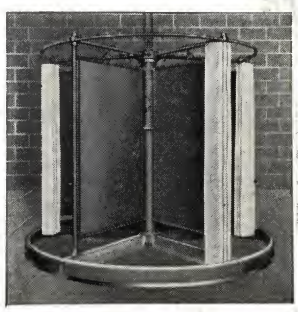
The central column and all frame members of Bradley Group Showers are of cold drawn steel tubing, standard partitions are of stretcher levelled cold rolled 16 gauge steel sheets, and the fixtures are finished in high temperature baked synthetic enamel, artillery grey color. Fittings are of heavy chromium plated brass, satin finished. Standard equipment includes white duck curtains, with waterproof curtains available at extra cost. Partitions of aluminum alloy, stainless steel, slate, stone or structural glass are obtainable and showers with panel and door enclosures in lieu of curtains may be had on special order. Rubber floor mats also may be had.

Group Showers with Dressing Rooms

Bradley Group Showers also are furnished in combination with Dressing-Rooms, 10 Dressing-Rooms for the circular Showers and 6 Dressing-Rooms for the semi-circular units.

Group Shower Receptors

Sectional, precast stone receptors are available for Bradley Group Showers which make the fixtures completely self-contained . . . permit installation on any type of floor, including wood . . . require no floor work aside from setting the single drain . . . improve sanitation by minimizing splash between compartments and outside the shower . . . increase safety by means of an anti-skid standing surface. The receptors are burnt umber in color and are reinforced with steel. They are 5 in. deep and extend approximately 6 in. beyond the circumference of the shower proper.



Circular Shower with Receptors

CENTURY BRASS WORKS, INC.

Manufacturers of Automatic Stream Control Drinking Fountains

BELLEVILLE, ILLINOIS

Century Automatic Stream Control

All the fountains listed are equipped with the *new* No. 700 Century Bubbler Head which completely eliminates the difficulty experienced in drinking from fountains of the ordinary type, because it automatically controls the height of the stream and volume of water used without waste of water, and regardless of water pressure. This new-day bubbler fully meets all the requirements of the American Public Health Association. Every mechanical guard to stop the spread of disease has been incorporated.

Colored Ware

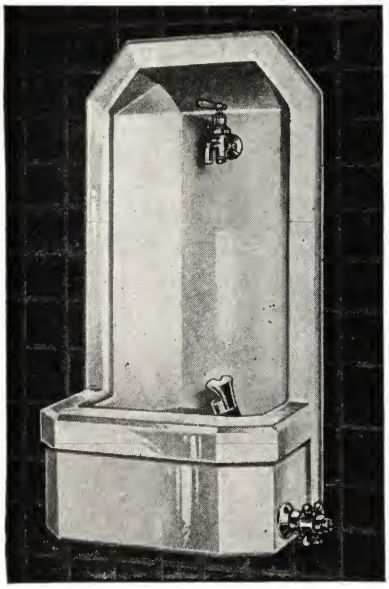
Century Fountains can be regularly furnished in the following stock colors to harmonize with practically any interior finishes; blue, light green, light brown, black, orchid, light buff and old ivory.

Facilities

The twice fired vitreous chinaware and cast iron porcelain enameled ware are made to Century exclusive designs and specifications by two of the country's largest manufacturers—specialists each, in their particular line and nationally known for the high quality of their products. All the metal parts of exclusive Century design are completely made and assembled in the Century plant.

Catalog

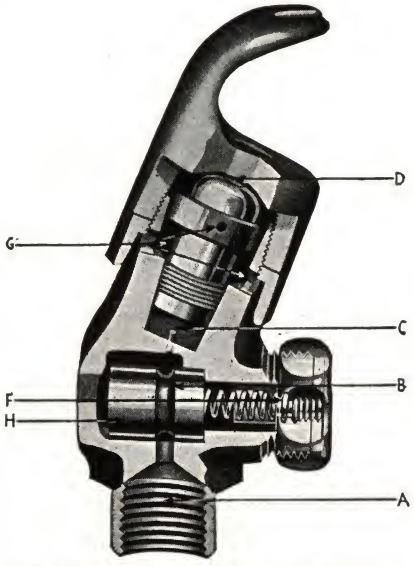
A complete catalog on types not illustrated, sent on request.



No. 6-48-F Semi Recessed Wall Fountain Vitreous China

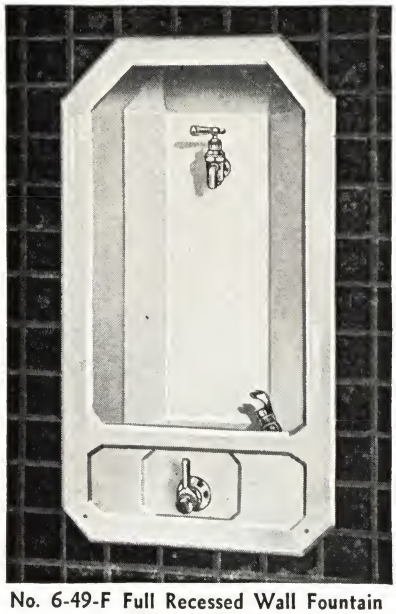
Completely closed integral trap housing, brass strainer, cast brass supply connection with self-closing stop-cock, union connection for ⅜-in. I. P. supply, adjustable cast brass trap with cleanout plug for 1¼-in. I. P. outlet, self-closing lever handle glass filler through back of fountain. All exposed fittings, chromium plated.

Dimensions — Width over all, 15½ in; height over all, 27 in.; recessed depth, 4½ in.; projection from wall, 7 in.



The Century No. 700 Automatic Bubbler

Cross section of the new No. 700 Century Bubbler Head showing how positive prevention of water waste is assured by passing the water through four stages of pressure "A," "B," "C" and "D" controlled by Piston "H." Parts "G" remain open to guard against any opposing pressure on the piston and delivery of water is regulated by adjusting screw "F"



No. 6-49-F Full Recessed Wall Fountain Vitreous China

Cast brass connection for ⅜-in. I. P. supply, loose key stop, 1½-in. New York regulation trap and cleanout plug easily accessible through metal wall flange. Self-closing lever handle, glass filler through back of fountain. All exposed fittings, chromium plated.

Dimensions—Width over all, 17 in.; height over all, 30½ in.; recessed depth, 10½ in.; receptor opening, 13 in. wide by 21 in. long by 9 in. deep.



Left: **No. 6-47-F Vitreous China Wall Fountain**

18-in. integral back and trap housing, glass filling faucet, concealed wall hanger, cast brass connection for ⅜-in. I. P. supply, self-closing stop cock, brass strainer, cast brass trap with cleanout plug for 1¼-in. waste, chromium plated fittings.

Dimensions—Height over all, 18 in.; width, 15 in.; depth of receptor, 3½ in.; wall to stream, 9 in.; wall to front, 12½ in.

Right: **No. 6-47-A Vitreous China Wall Fountain**

12-in. integral back and trap housing, cast brass connection for ⅜-in. I. P. supply, concealed wall hanger, self-closing stop cock, brass strainer, cast brass trap with cleanout plug for 1¼-in. I. P. waste, chromium plated fittings.

Dimensions—Height over all, 12 in.; width, 15 in.; depth of receptor, 3½ in.; wall to stream, 9 in.; wall to front, 12½ in.

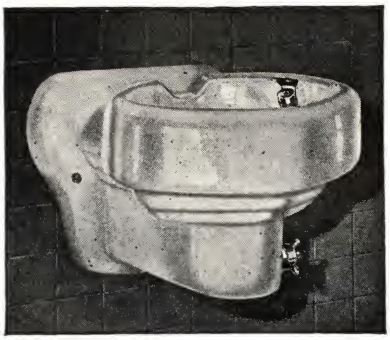




No. 6-41 Vitreous China Wall Fountain

Integral back, concealed wall hangers and bolts, cast brass supply connections with self-closing cocks, ⅜-in. I. P. supplies to wall, loose key stop, brass strainer, 1¼-in. brass P trap and waste to wall, chromium plated fittings.

Dimensions—Depth of trough, 4¾ in.; wall to stream, 9 in.; length over all, 24 in.; wall to front, 14½ in.; height at back, 10½ in.



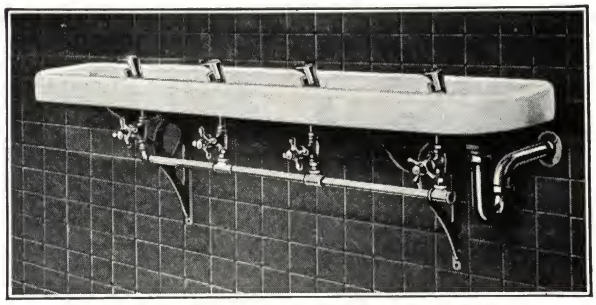
No. 6-42 Vitreous China Wall Fountain

Integral trap housing, concealed adjustable wall hanger, wall bolts, cast brass union connection for ⅜-in. I. P. supply, brass strainer, cast brass trap with cleanout plug for 1¼-in. I. P. outlet, chromium plated fittings.

No. 6-44—Same as 6-42, except with removable metal plate enclosing trap housing to prevent condensation.

Dimensions—Receptor, 13x10 in.; depth of receptor, 3½ in.; width over all, 13 in.; wall to stream, 8 in.; wall to front, 13 in.

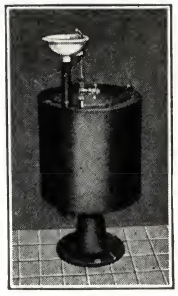
CENTURY PORCELAIN ENAMELED FOUNTAINS



No. 6-67 Wall Fountain with Painted Iron Brackets

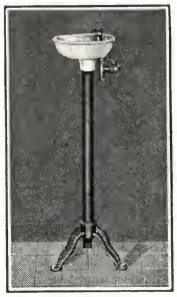
Made with 2, 3 or 4 bubblers, cast brass supply connections, self-closing stop cocks, loose key stop, ⅜-in. I. P. continuous supply from wall, brass strainer, 1¼-in. brass P trap and waste to wall. All exposed fittings chromium plated.

Dimensions—Depth of trough, 2½ in.; wall to drinking stream, 8 in.; width, 30, 44 or 55 in.; wall to front of fountain, 11 in.



No. 6-401 Ice Cooled Fountain

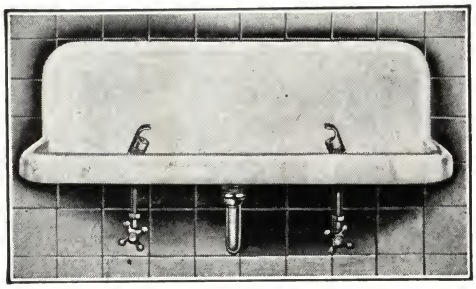
Combination cooler tanks and drinking fountain particularly adapted to buildings where there is no refrigerating plant for cool water supply. Made in various sizes.



No. 6-39 Pedestal Fountain

Self-closing stop cock, brass strainer, 1¼-in. I. P. drain, all exposed brass fittings chromium plated and iron painted gray.

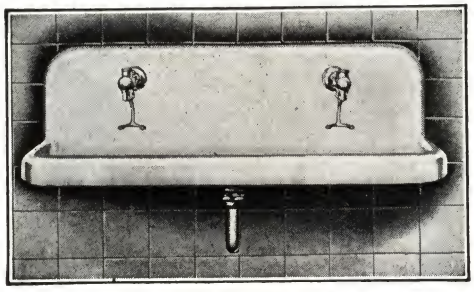
Dimensions—Receptor, 10x7 in.; depth of receptor, 3 in.; height, 36 or 39 in.; base (tripod), 13 in.; base (round), 11 in.



No. 6-60 Wall Fountain with Integral Back

Painted iron brackets and concealed wall hangers, cast brass supply connections with self-closing stop cocks, ⅜-in. brass supply from wall with branches to stops, brass strainer, loose key stop, 1¼-in. brass P trap and waste to wall. All exposed fittings chromium plated.

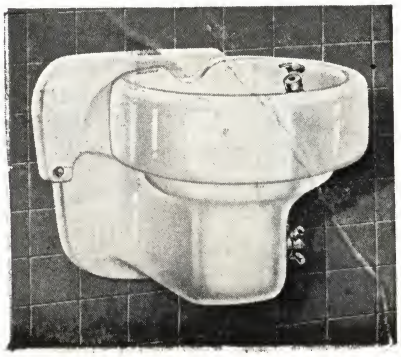
Dimensions—Depth of trough, 2½ in.; wall to stream, 8 in.; width 36 in.; wall to front of fountain, 14¼ in.; height at back over all, 11 in.



No. 6-68 Wall Fountain

Porcelain enameled, cafeteria fountain, with integral back. Equipped with two glass fillers through back, brass strainer, painted iron brackets, regulation 1¼-in. brass trap, with clean-out plug. Concealed wall hanger. All exposed fittings chromium plated.

Dimensions—Length, 36 in.; height of back, 11 in.; wall to front of fountain, 14½ in.



Left:

No. 6-69 Wall Fountain

Cast iron, porcelain enameled fountain with completely closed integral trap housing which is removable for easy access to supply and waste fittings. Equipped with concealed wall hanger, wall bolts, brass strainer, self-closing stop cock, union connection for ⅜-in. supply, cast brass trap with cleanout plug for 1¼-in. I. P. outlet. All exposed parts chromium plated.

Dimensions—Receptor (oval), 13¼x10 in.; depth of receptor, 3½ in.; width over all, 13¼ in.; wall to drinking stream, 8 in.; wall to front of fountain, 13½ in.

Right:

No. 6-18 Wall Bracket Fountain

⅜-in. I. P. supply, brass strainer, self-closing stop cock, brass trap with clean-out plug, 1¼-in. I. P. waste, exposed fittings chromium plated.

Dimensions—Receptor (oval), 10x7 in.; depth, 3½ in.; wall to front, 12 in.; wall to drinking mound, 8 in.



THE EBCO MANUFACTURING CO.

Manufacturers of Ebco Water Coolers
COLUMBUS, OHIO
AGENCIES IN ALL PRINCIPAL CITIES

Products

EBCO DRINKING FOUNTAINS: EBCO ICED WATER COOLERS.

For EBCO Dish Washing Sinks and Steel Toilet Enclosures, see File Index.

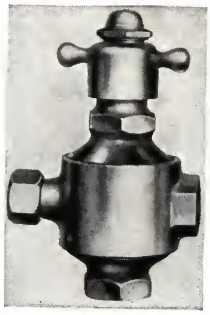
Ebco Water Coolers and Fountains

The modern way of supplying cool, sanitary, and fresh drinking water is economically accomplished by means of EBCO Water Coolers and Fountains. EBCO Fountains feature angle-stream non-squirting bubblers controlled by the automatic stream control valve insuring the convenient and sanitary constant drinking stream. EBCO Fountains meet the specifications of all health and plumbing codes.

EBCO Coolers are modern in design, perfectly insulated and economical to operate. Write for catalog showing entire line of iced type cabinets, also fountains and accessories to meet all requirements.



C-271 Ebco Iced Water Cooler
With C-1300 automatic stream control, self-closing valve and angle stream bubbler



C-1300 Ebco Automatic Pressure Regulating Valve
Over 90% efficient on pressure variations between 25 and 100 lb.



Ebco Model C-112
Equipped with self-closing faucet, waste strainer and tailpiece. Trap to wall. Concealed wall hanger. Width 12 in. Projection 9 in.



Ebco Model 3-1M
Lift top pressure bubbler iced water cooler
Modern in design



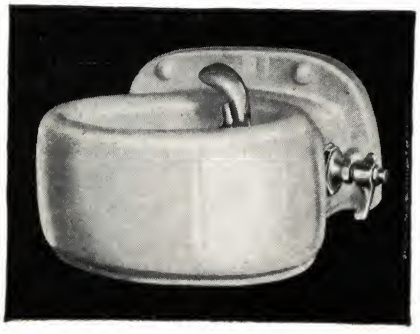
Left:
Ebco Model C-226
Equipped with Pressure Valve, C-1300, angle jet bubbler, guard, waste and supply fittings, and porcelain receptor. Galvanized pedestal and adjustable base
Receptor 5¼ x 10½ in. Heights 30, 36, 42 in.

Right:
C-209 Ebco Vitreous Enameled Pedestal Fountain
Furnished with angle stream bubbler, supply and waste to the floor, and C-1300 automatic stream control valve. Heights 30 and 36 in.



Right:
Ebco Model C-252
Equipped with Pressure Regulating Valve, C-1300 and jet bubbler, guard, waste strainer and tailpiece. Trap to wall. Width 6¼ in. Length 12 in. Projection 12 in.





Left:
C-241 Ebco Vitreous China Wall Fountain
Furnished with angle stream bubbler, C-1400 automatic stream control valve and concealed trap



Left:
Ebco Model C-245
Vitreous enameled wall fountain built to specifications of U. S. Veterans Bureau—concealed trap, angle stream raised bubbler, and pressure control valve are standard equipment

PURO FILTER CORPORATION OF AMERICA

Drinking Water Specialists for Nearly 40 Years

TELEPHONE
SPring 7-1800

440 Lafayette Street, NEW YORK, N. Y.

BRANCHES

ALBANY, BOSTON, CHICAGO, CLEVELAND, DETROIT, LOS ANGELES, MIAMI, NEWARK, YOUNGSTOWN, PHILADELPHIA, PITTSBURGH, ST. LOUIS, SAN FRANCISCO

PURO ELECTRIC WATER COOLERS AND FILTER-PURIFIERS

For Use in Offices, Hospitals, All Types of Commercial Buildings and Homes

PURO ELECTRIC WATER COOLERS

Cabinets

Heavy gauge steel reinforced. Attractively finished in mahogany baked enamel.

PURO WATER ELECTRIC COOLERS



Cooler Models

Faucet type, side bubblers, top bubblers and refrigerator cooler of various sizes and capacities.

Insulation

Covered with 1½ in. x 2 in. of insulation surrounding cooling apparatus, and corners packed tightly with mineral wool.

Cooling Unit

Special Puro design, providing rapid cooling with clean, uncontaminated storage of water.

Lowside

Direct expansion type with thermostatic control built according to Puro specifications.

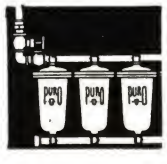
Condensing Unit

Conventional reciprocating type, quiet and efficient.

All parts accessible for service.

China Parts

For bubbler tops, trays and compartments.

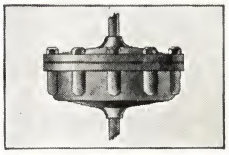


PURO FILTERS

The Puro Filter-Purifiers have been scientifically designed and constructed, and have proved their ability to remove from water all foreign matter causing color, taste and odor.



Filter-Purifier No. 1—Placed inside the Puro Electric Water Coolers, providing consumer with self-contained unit for cold and purified water.



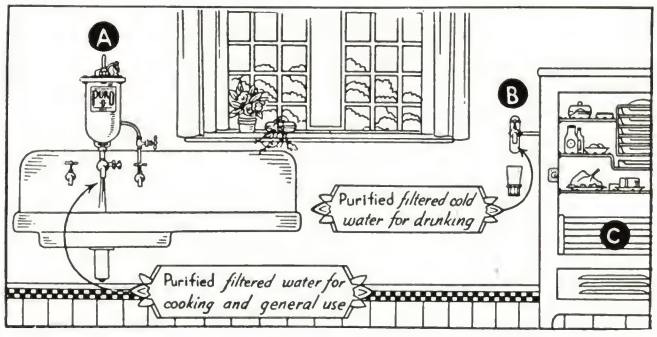
Filter No. 2—This filter eliminates all suspended matter and is especially desirable in fine photographic work.

Filter-Purifier No. 3—Larger capacity and can readily be installed in hotels, restaurants, factories, etc., where purification of greater quantity of water is desired.



All these filters can be joined in series or parallel as shown pictorially at the bottom center of this page.

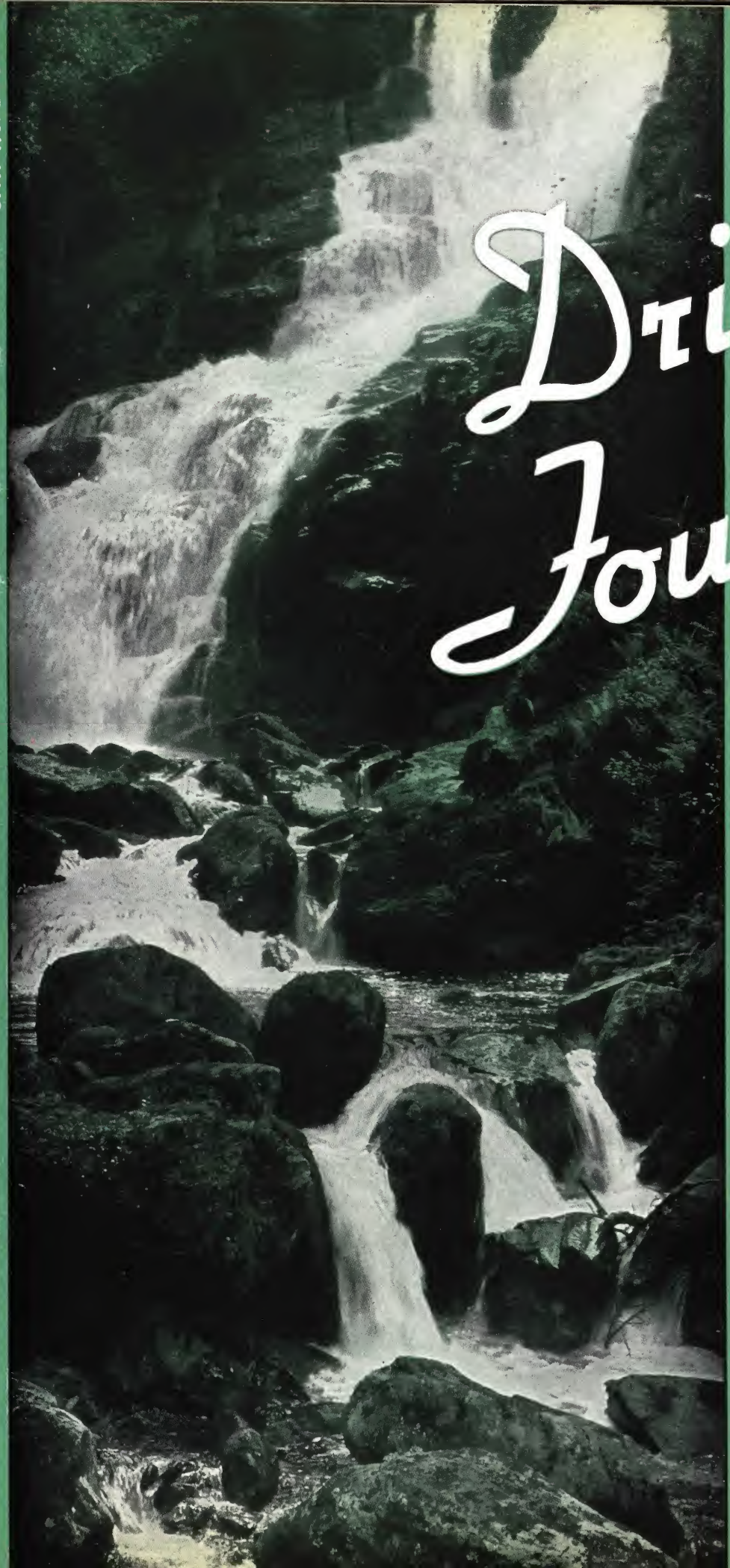
Household Filter-Purifier Installation



For household use No. 1 Filter-Purifier is used installed above kitchen sink, but can be installed at any other location desired. Directly connected with city water supply, and with cooling coils in iceboxes and refrigerators, enabling the consumer to draw cold, purified drinking water from a separate faucet.

MEMORANDA

CAT. NO. 390



Drinking Fountains

by

HALSEY TAYLOR

COLOR

The demand for COLOR in vitreous china fountains to match interior decorative treatments can be met with contrast or harmony by the many colors offered in the Halsey Taylor line. We will gladly send you upon request color tiles to guide you in your choice.













Above colors are approximate. Request color tiles.

Foreword

HALSEY TAYLOR DRINKING FOUNTAINS were introduced long before the Great War. It was during the war, however, that they secured governmental approval for use in cantonments because of their sanitary advantages. From that day to this, Halsey Taylor Drinking Fountains have been continually improved and refined until they are today the most modern fixtures you can buy for the purpose. They are ideal for schools, hospitals, hotels, municipal and public buildings and churches. Architects and builders prefer their specifications because of their exclusive advantages in promoting drinking convenience and sanitation.

IN THE FOLLOWING PAGES you will find the various types of Halsey Taylor Fountains described and illustrated. These fountains embody many patented and distinctive features found in no other make or type. Some of these features are:

(1) *Practical Automatic Stream Control* — An automatic device maintains a constant height in the drinking stream even though the line pressure may vary 50 pounds. The stream is never too high, never too low.

(2) *Ideal Drinking Mound* — The 2-stream projector was designed for and adopted by the Government during the war. This exclusive design makes the side stream really practical, and removes the objections found in ordinary side-stream fountains with their hoselike stream.

(3) *Absolute Sanitation* — The drinking mound is formed by the converging of two streams of water — thus setting up an interference forming a localized drinking mound which makes it impractical to drink from any other point. This is sanitary in the extreme. Fingers or lips cannot come in contact with or contaminate the source of supply. It is absolutely impossible to squirt the water.

GENERAL INFORMATION FOR ARCHITECTS

Heights Recommended — For kindergartens, 24-inch; grade schools, 30-inch; high schools, 30 or 36-inch; factories, 36, 39 or 42-inch. For kindergarten, lever handle self-closing stop will be found much easier for smaller children to operate.

Number of Pupils — Experience teaches that one drinking fountain should be provided for each fifty pupils — however, in no case should one fountain be planned to serve more than seventy pupils.

Continuous Flow — Where it is desired to have continuous flow of water, we can furnish a by-pass valve on most types which will permit a small stream of water to flow continuously and a full stream when the self-closing stop is operated.

Finish — Exposed fittings on all fountains with the exception of fixtures Nos. 501 to 515 are furnished in chromium plate. However, we can furnish nickel plate, bronze or polished brass upon request.

Water Consumption — The amount of water required in different classes of installations will vary and, where the actual amount of water required is not known, the following data will give the approximate demand to be expected.

(1) Heavy manufacturing ¼ gal. per hr. per person
(2) Light manufacturing 1/5 gal.per hr. per person
(3) Office building... ⅛ gal. per hour per person
(4) Transients. 1 gallon per hour per 100 persons
(5) Hotels..... ⅛ gallon per hour per room (maximum 1½ gallons per day)
(6) Restaurants.. 1/10 gallons per person served
(7) Cafeteria..... 1/12 gallons per person served
(8) Theatres..... 1 gallon per hour per 75 seats
(9) Schools..... ⅛ gallon per hour per student
(10) Hospitals.... 1/12 gallon per hour per bed (Plus ⅛ gallon per hour per attendant)

Color — All vitreous china fixtures shown in catalog can be furnished in various colors to match the woodwork, marble, or interior trim.

Marble Fountains — Send for roughing-in measurements of Halsey Taylor fittings for marble or terra cotta wall and pedestal fountains.

Blue Prints — Blue prints giving details will be furnished for any fixtures shown.

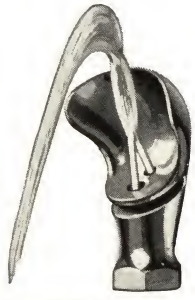


Vitreous China

WALL DRINKING FOUNTAINS

No. 2609

THIS Halsey Taylor Wall Drinking Fountain is made of heavy vitreous china and has integral trap housing. Concealed wall hanger; brass wall bolts; brass strainer; self-closing stop with cross handle; loose key regulator and union connection for ⅜-inch iron pipe supply. Rough brass trap for 1¼-inch iron pipe outlet. *2-stream mound building projector and Taylor automatic stream control.* All exposed fittings chromium plate. Receptor, 10 by 13 inches. Wall to stream, 8 inches.



No. 2298 Projector Used on all Halsey Taylor Fountains.

No. 2605

THIS Halsey Taylor model is also heavy vitreous china and has integral trap housing. Concealed wall hanger; brass wall bolts; brass strainer; self-closing stop with cross handle; loose key regulator and union connection for ⅜-inch iron pipe supply. Rough brass trap for 1¼-inch iron pipe outlet. *2-stream mound building projector and Taylor automatic stream control.* All exposed fittings chromium plate. Receptor, 10 by 13 inches. Wall to stream, 8 inches.

No. 2601

A POPULAR Halsey Taylor Wall Drinking Fountain. Heavy vitreous china. Integral trap housing; concealed wall hanger; brass strainer; self-closing stop with cross handle; loose key regulator and union connection for ⅜-inch iron pipe supply. Brass trap for 1¼-inch iron pipe outlet. *2-stream mound building projector and Taylor automatic stream control.* All exposed fittings chromium plate.

No. 2602

Same as No. 2601—except without trap, but with waste fitting for drain to wall.

No. 2608

Same as No. 2605—except with metal plate trap housing, completely enclosed.

Dimensions . . .

No.	Depth of Receptor, in.	Overall Width, in.	Projection from Wall, in.	Supply, in.	Waste, in.	Weight, lbs.
2609	3½	13	13¼	⅜	1¼	45
2601	3	12	11¼	⅜	1¼	37
2605	3½	13	13	⅜	1¼	41



Halsey Taylor . . . No. 2609



Halsey Taylor . . . No. 2601



Halsey Taylor . . . No. 2605

Recessed and Semi-recessed
WALL DRINKING FOUNTAINS

No. 2646

THIS Halsey Taylor Wall Drinking Fountain is beautifully proportioned. Heavy vitreous china. Brass strainer; self-closing lever handle stop; loose key regulator for ⅜-inch iron pipe supply; 1½-inch New York regulation trap with clean-out and metal wall flange. Equipped with push button glass filling faucet through back. *2-stream mound building projector and Taylor automatic stream control.* All exposed fittings chromium plate. Receptor opening, 12½ by 20¾ inches.

No. 2645

Same as No. 2646—except without Glass Filler.

No. 2647

Same as No. 2646—except with Glass Filler only.

No. 2626

ADAPTABLE to a wide range of uses, this recessed wall drinking fountain is built of heavy vitreous china. Brass strainer; self-closing lever handle stop; loose key regulator for ⅜-inch iron pipe supply; 1½-inch New York regulation trap with clean-out and metal wall flange. Equipped with push button glass filling faucet through back. *2-stream mound building projector and Taylor automatic stream control.* All exposed fittings chromium plate. Receptor opening, 12½ by 20¾ inches.

No. 2625

Same as No. 2626—except without Glass Filling Faucet.

No. 2627

Same as No. 2626—except with Glass Filling Faucet only.

No. 2631

SEMI-RECESSED, this popular Halsey Taylor model is likewise made of heavy vitreous china. Brass strainer; self-closing lever handle stop; loose key regulator and union connection for ⅜-inch iron pipe supply; waste outlet 1½-inch iron pipe (trap not furnished but may be placed in wall if desired). Equipped with push button glass filling faucet through back. *2-stream projector and Taylor automatic stream control.* All exposed fittings chromium plate. Projection from wall, 7 inches.

No. 2630

Same as No. 2631—except without Glass Filling Faucet.

No. 2632

Same as No. 2631—except with Glass Filling Faucet only.

No. 2634

THIS semi-recessed wall fountain is well proportioned in every detail. Heavy vitreous china. Brass strainer; self-closing cross handle stop; positive shut-off loose key regulator and union connection for ⅜-inch iron pipe supply; New York regulation cast brass trap (to be installed in wall). Equipped with push button glass filling faucet through back. *2-stream mound building projector and Taylor automatic stream control.* All exposed fittings chromium plate. Projection from wall, 7 inches.

No. 2633

Same as No. 2634—except without Glass Filling Faucet.

No. 2635

Same as No. 2634—except with Glass Filling Faucet only.

Dimensions . . .

No.	Overall Width, in.	Height, in.	Recessed Depth, in.	Supply, I. P., in.	Waste, I. P., in.	Weight, lbs.
2646	16	29½	10	⅜	1½	72
2626	16	29½	10	⅜	1½	72
2631	14¼	26¼	5¼	⅜	1½	65
2634	14	26	4¾	⅜	1½	70



Halsey Taylor . . . No. 2646



Halsey Taylor . . . No. 2626



Halsey Taylor . . . No. 2631



Halsey Taylor . . . No. 2634

Vitreous China

BATTERY WALL FOUNTAINS



Halsey Taylor . . . No. 2612

No. 2612

DESIGNED with ample proportions but without back, this Halsey Taylor Battery Fountain is sturdily built of heavy vitreous china. Brass strainer self-closing stops with cross handles; loose key volume regulator; 1¼-inch brass trap. Two painted cast-iron wall brackets. *Two 2-stream mound building projectors and Taylor automatic stream control.* All exposed fittings are chromium plated.

No. 2610

THIS popular Halsey Taylor Battery Fountain has integral back and concealed hangers. Heavy vitreous china throughout. Brass strainer; self-closing stops with cross handles; 1¼-inch brass trap. *Two 2-stream mound building projectors and Taylor automatic stream control.* All exposed fittings are chromium plated.

No. 2611

THIS Halsey Taylor combination Battery Drinking Fountain and Glass Filler is built with integral back and concealed hangers. Heavy vitreous china throughout. Brass strainer; self-closing stops with cross-handles; loose key volume regulators; 1¼-inch brass trap. Self-opening and self-closing glass filler faucet. *Two 2-stream mound building projectors and Taylor automatic stream control.* All exposed fittings are chromium plated.

This battery wall fountain can be furnished with any combination of heads, fillers or faucets.

Dimensions . . .

No.	Depth of Receptor, in.	Overall Width, in.	Overall Height of Back, in.	Wall to Drinking Stream, in.	Projection from Wall, in.	Weight, lbs.
2612	3½	24	....	10½	13	60
2610	3½	24	10½	8½	13	75
2611	3½	24	10½	8½	13	75

Supply, ⅜-inch I.P. Waste, 1¼-inch.



Halsey Taylor . . . No. 2611



Halsey Taylor . . . No. 2610

Vitreous Enamel

BATTERY WALL FOUNTAINS



Halsey Taylor . . . No. 2702

No. 2702

BUILT without back, this Halsey Taylor Battery Fountain has a trough and apron of cast iron, vitreous enameled. Brass supply fittings; self-closing supply valves; loose key compression stop; 1½-inch brass P trap with clean-out. Supporting brackets are painted iron. *Two 2-stream mound building projectors and Taylor automatic stream control.* All exposed fittings are chromium plated.

No. 3003

DESIGNED with integral back, this Halsey Taylor Battery Fountain has improved mound building projectors. The entire trough with apron is cast iron, vitreous enameled. Brass supply fittings; self-closing supply valves and loose key compression stop; 1½-inch brass P trap with clean-out. Painted iron supporting brackets. *No. 1728 improved mound building projectors with Taylor automatic stream control.* All exposed fittings are chromium plated. Overall height of back, 7 inches.

No. 2703

THIS popular Halsey Taylor Battery Fountain is designed without back and with supply valves under trough. Entire trough and apron are cast iron, vitreous enameled. Brass supply fittings; self-closing supply valves and loose key compression stop; 1½-inch brass P trap with clean-out. Supporting brackets are painted iron. *Three 2-stream mound building projectors and Taylor automatic stream control.* All exposed fittings are chromium plated.

No. 2704

Same as No. 2702 or No. 2703 — except has four projectors.

Dimensions . . .

No.	Overall Width, in.	Distance between Heads, in.	Projection from Wall, in.	Supply, in., I.P.	Waste, in.	Weight, lbs.
2702	26	19	13	⅜	1½	72
2703	44	17	13	¾	1½	117
2704	55	15	13	¾	1½	135
3003	44½	13	13½	¾	1½	160



Halsey Taylor . . . No. 2703



Halsey Taylor . . . No. 3003

Vitreous China

PEDESTAL DRINKING FOUNTAINS

No. 2615

OCTAGONAL pedestal fountain of heavy vitreous china. 10 x 13-inch receptor. Brass strainer; cast brass supply and waste connection; self-closing stop and loose key volume regulator. Floor screws with cap nuts. *2-stream mound building projector and Taylor automatic stream control.* All exposed fittings chromium plate. Depth of receptor, 3 inches.



Halsey Taylor...No. 2615

No. 2616

HEAVY vitreous china pedestal fountain with round base. 10x13-inch receptor. Brass strainer; cast brass supply and waste connection; self-closing stop and loose key volume regulator at side of pedestal. Floor screws with cap nuts. *2-stream mound building projector and Taylor automatic stream control.* All exposed fittings chromium plate. Depth of receptor, 3½ inches.



Halsey Taylor...No. 2616

No. 2520-600

EXTRA HEAVY Halsey Taylor Pedestal Fountain with heavy vitreous china receptor. 4-inch outside diameter steel tubing standard and heavy cast iron tripod base and cover. Brass strainer; enclosed galvanized supply and waste pipes; self-closing stop; loose key regulator concealed in base. *2-stream mound building projector and Taylor automatic stream control.* All exposed fittings chromium plate. Finished in gray.

By raising base cover, connections can be made without disturbing floor or concrete. After connections are made pedestal is bolted to foundation, stream adjusted, and base cover lowered to proper position, concealing regulator. Height of base cover, 10½ in. All exposed fittings chromium plate. Finished in gray.

No. 2547

PEDESTAL Fountain with heavy vitreous china receptor; self-closing stop; loose key volume regulator; *2-stream mound building projector.* 2⅜-inch outside diameter steel tubing standard with cast iron closed base. Galvanized supply and waste pipes concealed within standard. All exposed fittings chromium plate. Finished in gray.

No. 2548

Same as No. 2547—but with cast iron open base for connections above floor line.

No. 2617

STURDILY built fountain with heavy vitreous china receptor. Brass strainer; 2⅜-inch outside diameter steel tubing standard and cast iron closed base; self-closing stop; loose key volume regulator. *2-stream mound building projector and Taylor automatic stream control.*

No. 2618

Same as 2617—but with cast iron open base for connections above floor line.

Dimensions . . .

No.	Receptor, in.	Heights, in.	Diam. at Floor, in.	Supply, in.	Waste, in.	Weights, lbs.
2615	10x13	30 36	½	⅜	1	85 90
2616	10x13	30	16	⅜	1	85
2547	9½	36 39	9½	⅜	½	35 37
2617	7½x10½	36 39	9½	⅜	1	36 39
2520-600	7½x10½	36 39 42	16½	⅜	1	82 84 86



Halsey Taylor No. 2547



Halsey Taylor No. 2548



Halsey Taylor No. 2617



Halsey Taylor No. 2618



Halsey Taylor No. 2520-600

Vitreous China and Enamel

PEDESTAL DRINKING FOUNTAINS



Halsey Taylor . . . 2618-2

No. 2618-2

PEDESTAL Fountain with two heavy vitreous china receptors. Brass strainers. 2⅜-inch outside diameter steel tubing standard and cast iron open base; self-closing stops; loose key volume regulators and loose key compression stop. *2-stream mound building projector and Taylor automatic stream control.* All exposed fittings chromium plate. Finished in gray. Depth of receptor, 3 inches. Overall width, 28½ inches.

No. 2618-4

Same as 2618-2—except furnished with 4 heads.

No. 2520-68 Anti-Freeze

THIS Halsey Taylor Pedestal Fountain has special anti-freeze feature. Receptor is made from cast iron, vitreous enameled, set in cast iron protecting shield. Heavy cast iron top and base; 4-inch outside diameter steel tubing standard; enclosed galvanized supply and waste pipes; self-closing stop; loose key volume regulator concealed in base. *2-stream mound building projector and Taylor automatic stream control.* Foot operated anti-freeze self-closing stop for various lengths of bury. All exposed fittings chromium plate. Height of base cover, 10½ inches. Finished in gray.

No. 2567

HEAVY cast iron vitreous enameled bowl. 2⅜-inch outside diameter steel tubing standard and cast iron closed base; self-closing valve; loose key volume regulator. *2-stream mound building projector.* All exposed fittings chromium plate. Finished in gray.



Halsey Taylor . . . 2520-68 Anti-freeze

No. 2568

Same as No. 2567—except has cast iron open base for connections above the floor line.

No. 2520-68

RECEPTOR on this fountain is made from cast iron, vitreous enameled, and set in cast iron protecting shield. Heavy cast iron top and base; 4-inch outside diameter steel tubing standard; enclosed galvanized supply and waste pipes; self-closing stop; loose key volume regulator concealed in base. *2-stream mound building projector and Taylor automatic stream control.* All exposed fittings chromium plate. Finished in gray.

Dimensions . . .

No.	Receptor, in.	Overall Height, in.	Base, in.	Waste, in.	Supply, in.	Weight, lbs.
2618-2	7½x10½	36	12½	1½	½	80
2520-68 anti-freeze	6½x9½	36 39 42	16½	1	⅜	100 (app.)
2567	6½x9½	36 39	9½	1 I.P.	⅜ I.P.	32 35
2520-68	6½x9½	36 39 42	16½	1	⅜ I.P.	85



Halsey Taylor
No. 2567



Halsey Taylor
No. 2568



Halsey Taylor
No. 2520-68

Combination

COOLERS AND DRINKING FOUNTAINS

No. 2590

A POPULAR Halsey Taylor combination cooler and Drinking Fountain; cast iron vitreous enameled receptor; brass strainer; brass supply; top hinged for icing; cabinet constructed of steel, spot welded; legs of cast iron; body of tank and coil guard made from galvanized sheet iron; insulation, regranulated cork in sidewalls and pressed cork board in bottom; cooling coil made from ½-in. No. 20 guage brass tubing, tinned inside and out; furnished with self-closing stop and automatic volume regulator.

2-stream mound building projector and Taylor automatic stream control. Finished in gray. Receptor 10 by 13½ in. Dimensions 18 by 18 in. Ice capacity one pound per capita per day.



Halsey Taylor . . . No. 2590

No. 2822

COMBINATION Cooler and Drinking Fountain. Ice capacity, 120 pounds; cooling coil of double length. *2-stream mound building projector and Taylor automatic stream control.* All exposed fittings chromium plate. Finished in gray. Dimensions of ice chamber: 20 inches outside diameter by 30 inches high. Height to top of fountain receptor, 42 inches.

No. 2820

Same as 2822—except with one head.

No. 2580

CAFETERIA Cooler and Drinking Fountain; 15½-inch diameter combination cast iron cover and catch basin. Perforated chrome plated brass drain plate; brass supply and cast iron trap mounted on cooler. Cover, top and base of cast iron and pressed steel. Body of tank, coil, coil guard and insulation same as No. 2800 shown on page 11. Supply and waste pipes concealed between walls of cooler. Catch basin is removed to replenish ice in cooler. Equipped with vitreous china receptor, *2-stream mound building projector and Taylor automatic stream control* and one self-opening, self-closing glass filler. All exposed fittings chromium plate. Finished in gray or white.

No. 2594

Same as 2590—except 120 pounds ice capacity.



Halsey Taylor . . . No. 2822

Dimensions . . .

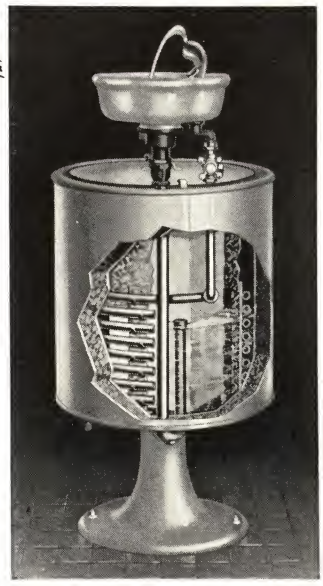
No.	Ice Chamber, in.		Height to Top of Ice Chamber, in.	Height to Top of Receptor, in.	Ice Capacity, lbs.	Weight, lbs.
	Outside Diameter	Height				
2590	18x18	.....	40	40½	80	145
2594	18x18	.....	40	40½	120	170
2820	20	20	32	40	120	185
2822	20	30	42	42	120	195
2580	20	20	32	40	80	155

Supply, ⅜-inch, I. P. Waste, 1-inch I. P.

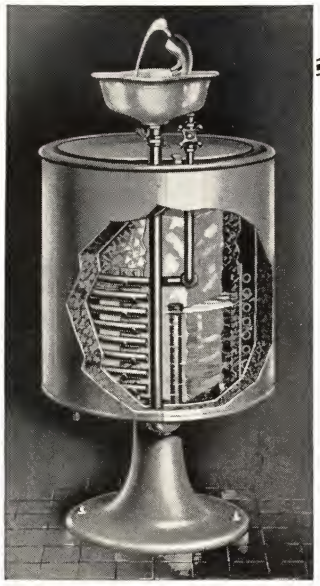


Halsey Taylor . . . No. 2580

Combination
COOLERS AND DRINKING FOUNTAINS



Halsey Taylor . . . No. 2800



Halsey Taylor . . . No. 2570

No. 2800

A POPULAR Halsey Taylor Combination Cooler and Drinking Fountain. Heavy vitreous china receptors. Brass strainer; brass supply and cast iron trap mounted on cooler. Cover, top and base made of cast iron and pressed steel. Body of tank and coil guard made from galvanized sheet iron. Insulation is re-granulated cork in side walls and pressed cork board in bottom and cover of cooler. Cooling coil made from ½-inch No. 20 gauge brass tubing, tinned inside and outside. Supply and waste pipes concealed between walls of cooler; supply pipe furnished with self-closing stop and volume regulator.

2-stream mound building projector and Taylor automatic stream control. All exposed fittings chromium plate. Finished in gray. Receptor, 7½ by 10½ inches. Diameter of base, 14 in. Ice capacity approximately 1 pound per capita per day.

No. 2802

Same as No. 2800—except with two heads.

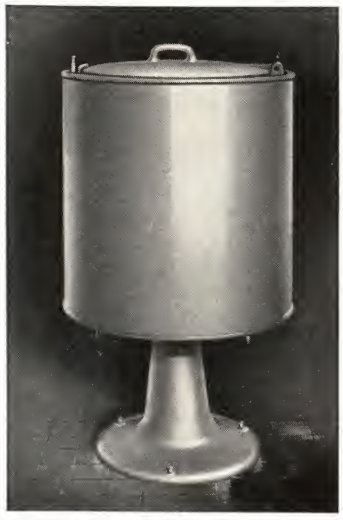
No. 2571

PLAIN Cooler designed for use in connection with drinking fountains already installed or where it is desired to conceal the cooler; also for installation in basement to supply fountains on floors above. Brass supply and waste connections. Cover, top and base made of cast iron and pressed steel. Body of tank and coil guard made of galvanized sheet iron. Insulation is re-granulated cork in side walls and pressed cork board in bottom and cover of cooler. Cooling coil made from ½-inch No. 20 gauge brass tubing, tinned inside and outside. Supply and waste pipes concealed between walls of cooler.

Finished in gray. Ice capacity, 80 pounds.

No. 2572

Same as 2571—except ice capacity is 120 pounds.



Halsey Taylor . . . No. 2571



Halsey Taylor . . . No. 2577

No. 2577

THIS Cafeteria Cooler is equipped with two self-opening, self-closing glass fillers. Combination cast iron cover and catch basin, 15½ inches in diameter, with perforated chrome plated brass drain plates. Brass supply and cast iron trap mounted on cooler. Cover, top and base made of cast iron and pressed steel. Body of tank and coil guard made from galvanized sheet iron. Insulation is re-granulated cork in side walls and pressed cork board in bottom and cover of cooler. Cooling coil made from ½-inch No. 20 gauge brass tubing, tinned inside and outside; supply and waste pipes concealed between walls of cooler.

Catch-basin is removable to replenish ice in cooler. All exposed fittings chromium plate. Finished in gray or white. Ice capacity, 80 pounds.

Dimensions . . .

No.	Ice Chamber, in.		Height to Top of Ice Chamber, in.	Overall Height, in.	Weight, lbs.	Waste, in., I. P.
	Outside Diameter	Height				
2800	20	20	32	40	125	1
2802	20	20	32	40	145	1
2570	20	20	32	40	122	1
2571	20	20	32	35	112	½
2572	20	30	42	42	170	½
2577	20	20	32	42	140	1

Supply, ⅜-inch, I. P.

Miscellaneous

WALL DRINKING FOUNTAINS



Halsey Taylor . . . No. 2607

No. 2607

HEAVY cast iron vitreous enamel all-over wall drinking fountain with integral trap housing. Concealed wall hanger; brass wall bolts; brass strainer; self-closing stop with cross handle; loose key regulator and union connection supply; rough brass trap outlet. *2-stream mound building projector and Taylor automatic stream control.* All exposed fittings chromium plate. Overall height of back, 10½ inches.

No. 2600

WALL Fountain with heavy vitreous china receptor. Brass strainer; cast iron baked gray enameled bracket to wall; self-closing stop; ⅜-inch brass supply; 1¼-inch brass trap and waste pipe. *2-stream mound building projector and Taylor automatic stream control.* All exposed fittings chromium plate.

No. 2623

HEAVY vitreous china wall drinking fountain with integral trap housing. Concealed wall hanger; brass strainer; self-closing stop; loose key regulator and union connection for supply; 1½-inch New York regulation trap with clean-out plug. Equipped with push button glass filling faucet and *2-stream mound building projector and Taylor automatic stream control.* All exposed fittings chromium plate. Overall height, 18 inches.

No. 2622

Same as No. 2623—except without back. Shipping weight, 50 lb.

No. 2624

Same as No. 2623—except with 24-inch back.

No. 2614

HEAVY vitreous china wall drinking fountain with integral back and concealed hanger. Brass strainer; self-closing stops with cross handle; ⅜-inch iron pipe supply; 1¼-inch brass trap. Equipped with push-back glass filler faucets. *2-stream mound building projector and Taylor automatic stream control.* All exposed fittings chromium plate. Overall length, 18 inches.

Dimensions . . .

No.	Receptor, in.	Depth of Receptor, in.	Overall Width, in.	Projection from Wall, in.	Wall to Stream in.	Waste, in., I. P.	Weight, lbs.
2607	10¾x14	3¼	14	14	8½	1¼	60
2600	7½x10½	3	10½	11¼	8	1	22
2623	12x13	3½	13¾	13	10½	1½	60
2614	13x18	3½	18	13	8½	1¼	65

Supply, ⅜-inch I. P.



Halsey Taylor . . . No. 2600



Halsey Taylor . . . No. 2623



Halsey Taylor . . . No. 2614

Non-Automatic
FOUNTAINS



Halsey Taylor . . . No. 2002

No. 2002

FOUNTAIN with push button valve, 2-stream angle jet projector and push button glass filler valve. Cast iron enameled bowl provided with slot to prevent waste water from rising over projector in case of drain stoppage. All exposed fittings *chromium plate.* Overall width, 7 inches. Overall height, 5 inches.

No. 2566

CANTONMENT Type Wall Fountain. Cast iron vitreous enameled all over. Self-closing stop; loose key volume regulator; brass strainer, 1¼-inch brass trap. *2-stream mound building projector.* All exposed fittings *chromium plate.* Projection to drinking mound, 8 inches.

No. 2575

FOUNTAIN Head with cast iron vitreous enamel receptor. Used to replace present unsanitary heads on coolers and pedestal fountains. Self-closing stop and volume regulator. *2-stream mound building projector.* All exposed fittings *chromium plate.*

No. 2540

WALL Fountain with heavy 6-inch vitreous china bowl mounted on cast iron bracket and bowl support. Self closing stop; loose key volume regulator. *2-stream mound building projector.* All exposed fittings *chromium plate.* Finished in gray.

No. 2586

FOUNTAIN Head with vitreous china receptor. Used to replace present unsanitary heads on coolers and pedestal fountains. Brass strainer; self-closing stop with regulator and union connection. *2-stream mound building projector and Taylor automatic stream control.* All exposed fittings *chromium plate.*

No. 2589

FACTORY Type Wall Fountain with heavy 7½ by 10½ inch vitreous china bowl mounted on a galvanized cast iron combination trap and bracket. Brass strainer; self-closing stop; loose key volume regulator. *2-stream mound building projector.* All exposed fittings *chromium plate.* Waste 1½ inches; supply ⅜ inch. Finished in gray.

No. 2542

WALL Fountain with heavy 9½-inch vitreous china bowl mounted on cast iron bracket to wall. Brass strainer; 3¾-inch guard ring; self-closing stop; loose key volume regulator. *2-stream mound building projector.* All exposed fittings *chromium plate.* Finished in gray.

Dimensions . . .

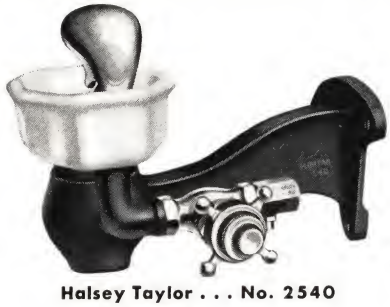
No.	Receptor, in.	Projection from Wall, in.	Supply, I. P., in.	Waste, in.	Weight, lbs.
2002	. . . . .	8½	⅜	⅜	12
2566	6½ x 9½	11½	⅜	1¼	15
2575	6½ x 9½	. . . .	⅜	1¼ or 1½ I.P.	13
2540	6 dia.	12	⅜	1 I.P.	15
2586	7½ x 10½	. . . .	⅜	1¼ or 1½	14
2589	7½ x 10½	12	⅜	1½ I.P.	18
2542	9½	12	⅜	1 I.P.	18



Halsey Taylor . . . No. 2566



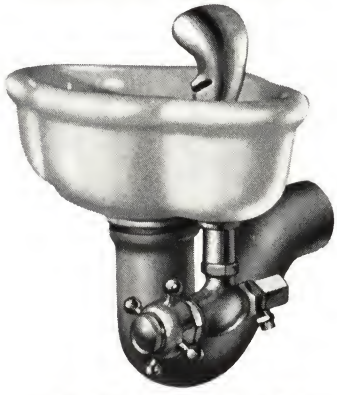
Halsey Taylor . . . No. 2575



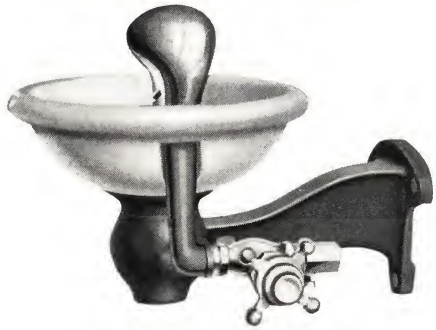
Halsey Taylor . . . No. 2540



Halsey Taylor . . . No. 2586



Halsey Taylor . . . No. 2589



Halsey Taylor . . . No. 2542

THE FIRST NAME IN FOUNTAINS • THE LAST WORD IN SANITATION

HALSEY TAYLOR DRINKING FOUNTAINS

THE HALSEY W. TAYLOR CO.

Largest Manufacturers of Drinking Fountains Exclusively

WARREN • OHIO



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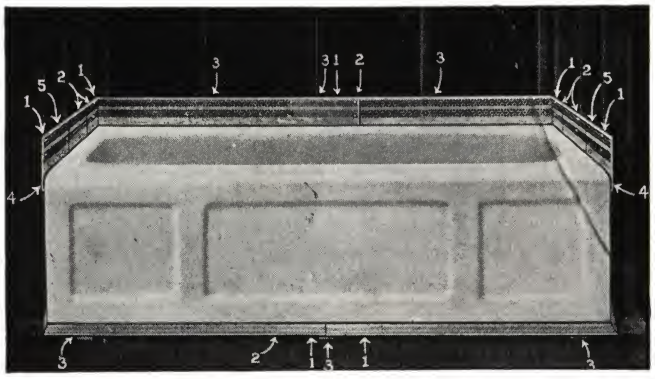
WILLIAM B. LUCKE, INC.

Manufacturer of Lucke Leakproof Hangers
WILMETTE, ILL.

THE LUCKE LEAKPROOF TUB HANGER

Uses

Lucke Leakproof Tub Hangers are designed to fulfill several requirements. Prevents leakage around tub rims by acting as a water seal between any wall and the edge of a built-in tub or shower receptor. Acts as a water seal between the apron of the tub and floor. Prevents bathtubs from settling and thus eliminates unsightly cracks. Saves labor cost for retiling or replastering. This hanger protects against damage to ceilings and walls of rooms below the bathroom and affords free use of shampoo or showers.



Patented in United States and Canada

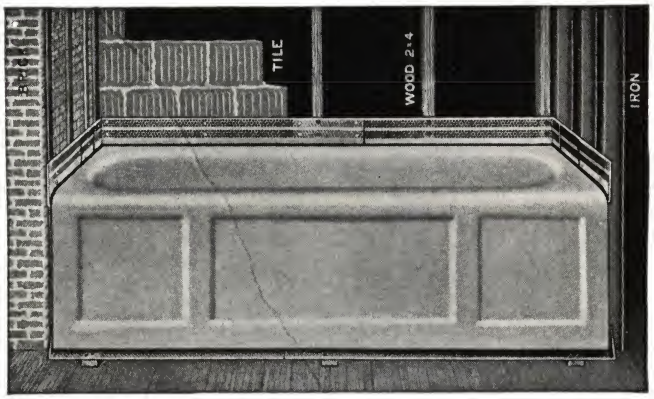
This is how installation looks when ready for lath and plaster or other materials. Figures indicate essential features in construction and installation.

Fig. 1—Bolts in hanger where necessary.
Fig. 2—Filler to seal joints against leaks.
Fig. 3—Two nails, screws or bolts at every stud.
Fig. 4—Filler in groove between tub and hanger.
Fig. 5—Perforation as a base for wall materials.

Specifications

All bathtubs (and shower receptors) shall be hung on Lucke Leakproof Tub Hangers as manufactured by WILLIAM B. LUCKE, INC., Wilmette, Ill. Attachment to wall construction shall be by special nails (or bolts) furnished by the manufacturer; the tubs shall be installed in the Hangers in strict accordance with the directions of the manufacturer, using Lucke Leakproof Filler as a water seal.

Lucke Filler, all necessary nails, bolts and instructions are furnished with Lucke Tub Hangers.



This installation shows a few of the types of wall construction to which the Lucke Tub Hanger is adaptable. First is brick, then tile or terra cotta blocks, wood studdings and channel iron.

Construction and Installation

The Hanger is made of Numbers 12 and 18 Gauge Galvanized Steel. It is fashioned like a trough or gutter with a wide upper strip, part of which is perforated to serve as a base for plaster, cement or any other wall material to key into. The gutter of the Hanger is partly filled with the Lucke Leak-Proof Filler which is easily applied, (See illustration) to protect against water seepage. The Hanger is then pushed up tightly under the tub rim and fastened to the wall partition. The remaining space in the groove of the Hanger between tub and wall is packed solidly with the Lucke Leak-Proof Filler up to and even with the tub rim. Lucke Filler is not affected by extreme temperatures of heat or hold; acid-proof and leak-proof. This renders edges of tub water tight. The base strip sets back about 1" under the bottom flange of the tub and about ⅞" below the apron to allow the cement to be pushed back securely against the Hanger and under apron of tub. The base strip is used primarily with all enameled iron apron front tubs or shower receptors and provides a water seal at base of tub.



Exclusive Lucke Water-Seal, chemically treated compound, is guaranteed leak-proof and permanently to keep its original consistency.

The installation of the Hanger builds the tub into the wall causing the tub to settle as a complete unit with the building. The installation is simple. Complete instructions are furnished with every hanger. If it is not "Lucke" it is not "Leak-Proof."

Adaptability

The Lucke Hanger is flexible in its physical properties as it can be adjusted to any length or width and can be made for any special installation. The Hanger is also adaptable to any type of wall construction, such as brick, tile or terra cotta blocks, wood and channel iron. Concrete wall, cinder and gypsum blocks are also adaptable for Lucke Hangers. Is strong and durable, weighs about 30 pounds and is tested to support a weight of 8,000 pounds and over.

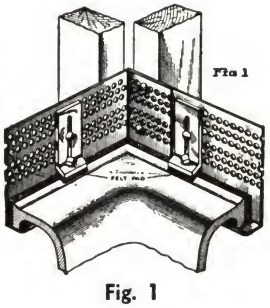


Fig. 1

Hanger Clamps



Fig. 2

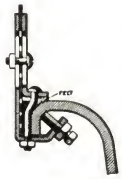


Fig. 4

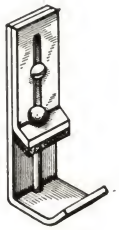


Fig. 3
Full View
Clamp

Clamps as shown in Fig. 1 are used on all corner tubs to prevent tilting or sagging of diagonal corner of tub. A complete installation of a corner tub always includes these clamps. Rigid tests have been made with these clamps on both the apron and tile-front type tub. The tests have failed to budge the tubs from their position. A different type of clamp is used for tile-front tubs (Fig. 4). The bottom bolt in this clamp is used to hold the tub tight against the wall. Clamps are used only on Corner tub installations. Felt pads are provided to protect enamel on tub.

HIGGIN PRODUCTS, INC.

Access Panels

NEWPORT, KENTUCKY

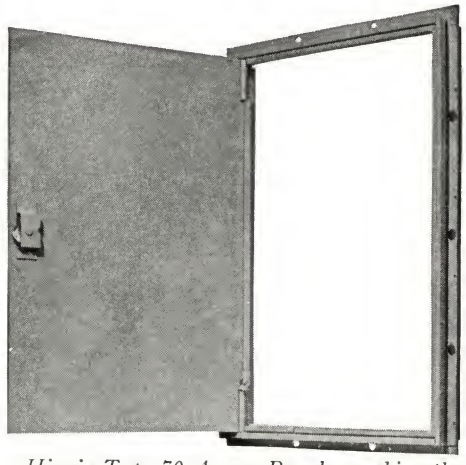
AGENCIES IN PRINCIPAL CITIES

For Metal Frame, Wood Frame and Rolling Screens, Venetian Blinds, Lightproof Shades and Weatherstripping, see our pages in File Index

HIGGIN METAL ACCESS PANELS

HIGGIN ALL METAL Access Panel

Higgin Metal Access Panels are of a design to provide quick and convenient access to hidden valves, joints and other critical places in heating, plumbing, refrigerating and air conditioning systems. They save materially in maintenance and entirely eliminate tearing down walls to get at parts requiring repairs. They fit flush with plastered surfaces (Type A) and may be papered or decorated over. Five stock sizes are available and special sizes can be had to order.



Higgin Type 70 Access Panels combine the features of a hinged and a lift-out door. Normally pivot hung, doors may be quickly removed with a screwdriver by loosening one screw and drawing back the operative pivot.

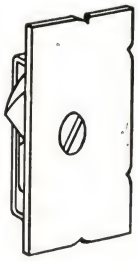
SPECIFICATION

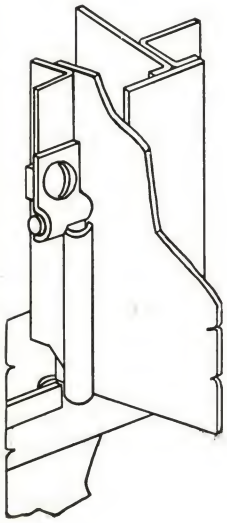
Access doors shall be Higgin Type 70 as manufactured by Higgin Products, Inc., Newport, Kentucky. Frames shall be of 16-US-gauge galvanized steel with fastening key, or facing flanges of proper type for wall construction (see details below). Doors shall be 14-US gauge leveled steel, pivot hung to frame and removable. Each Access Door shall have automatic back out lock with bronze cam. Doors 30 in. or more in height shall have two cams and doors shall be reinforced with stiffeners on the concealed side. Access Panels shall be given a shop coat of paint baked on before leaving factory. Doors shall fit flush with frames. Key locks can be furnished when required.

INFORMATION FOR ORDERING

Symbol	K	M	P	R	S
Frame sizes.....	7½" x 11½"	12½" x 16½"	14½" x 18½"	18½" x 24½"	18½" x 30½"
Opening size recommended	8" x 12"	13" x 17"	15" x 19"	19" x 25"	19" x 31"
Approximate shipping weights....	6 lbs.	10 lbs.	13-14 lbs.	19-25 lbs.	23-30 lbs.
Number to crate..	20	20	12	10	10

Specify type flange—A, B or C (See illustrations).





To the left is shown bronze cam lock with flush steel screw head bolt. Turning the cam in one direction locks the access door securely and turning in the opposite direction backs the lid out from the frame.

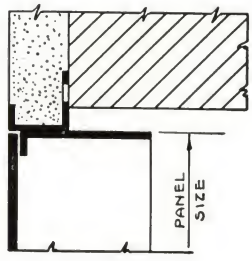
Lower illustration shows operative concealed pivot. The screw shown when slightly loosened permits the pivot to be drawn clear and door removed. Door may swing to 140 degrees.

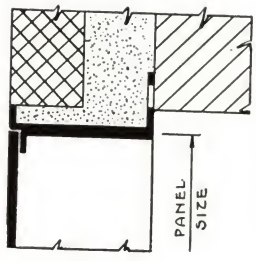
INSTALLATIONS

John Shillito Co., Cincinnati, Ohio
Carew Tower, Cincinnati, Ohio
Marshall Field Building, Chicago, Ill.
Morrison Hotel, Chicago, Ill.
Board of Trade Building, Chicago, Ill.
Jean LaFitte Hotel, Galveston, Tex.
J. L. Hudson Stores, Detroit, Mich.
Floridian Hotel, Tampa, Fla.
First National Bank, Oklahoma City, Okla.
City Hospital, Springfield, Ohio
Notre Dame University Dormitory, South Bend, Ind.
Ohio Bank Building, Toledo, Ohio
Good Samaritan Hospital, Cincinnati, Ohio
Foshay Tower, Minneapolis, Minn.
Alamo National Bank, San Antonio, Tex.
Lerner Stores
Indiana Bell Telephone Co.
Illinois Bell Telephone Co.
Southern Bell Telephone Co.
Baltimore Trust Co., Baltimore, Md.
Penobscot Building, Detroit, Mich.
International House, Chicago University

SECTIONAL DETAILS

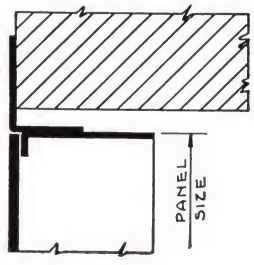
The plastered wall is the most common. The plaster key flange here measures over all in depth ⅝ in., the normal thickness of three-coat plaster work. We call this flange "A."





For walls faced with marble or tile where a thick cement ground is necessary, this (left) Type "B" flange is a requirement. The key flange is 1½ in. from face of door.

Occasionally it is necessary to have an access panel in a brick wall either unfinished or of glazed type. The "C" type flange (1 in. wide) fits this requirement.



MILCOR STEEL COMPANY

MILWAUKEE, WIS. CANTON, OHIO

CHICAGO, ILL. KANSAS CITY, MO. LA CROSSE, WIS. NEW YORK, N. Y. ROCHESTER, N. Y. ATLANTA, GA.

SALES OFFICES IN PRINCIPAL CITIES

For Our Catalogs on Milcor Fireproof Products, Ventilators and Steel Decks, see File Index

MILCOR METAL ACCESS DOORS

Milcor Metal Access Doors permit key points in plumbing, heating, electrical and refrigeration systems to be reached conveniently and easily. The expansion wing feature is important in preventing cleavage and cracking of plaster around openings, although door is available without expansion wing, if desired. Each side of the housing is shaped from a single piece of metal and the door itself fits flush with the frame and finished wall.

Ready access to valves, fittings, etc., is provided at the turn of a screw. Doors with invisible hinges furnished if desired. Expansion wing is made of 20 gauge metal and is 3 in. wide, but may be cut down where necessary.

Furnished with Key-lock at slight additional charge.



Note Double Reinforcement of Expanded Metal at Corners, Where Plaster Cracks Often Develop





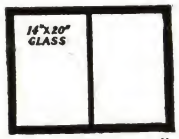
Milcor Metal Access Door Without Expansion Wings

Easily placed where desired and requires no special framing. Strong, yet reasonably priced. Write for literature

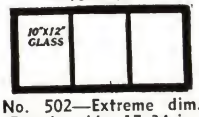
CATALOG NUMBERS, SIZES, WEIGHTS

Catalog No.	Panel size, in.	Weight with expanded metal wings, lbs.	Weight without expanded metal wings, lbs.	Catalog No.	Panel size, in.	Weight with expanded metal wings, lbs.	Weight without expanded metal wings, lbs.
80	7½x11½	4¾	3¾	86	23½x35½	35½	35½
81	12½x16½	10	8¾	90	7½x 7½	3¼	3¼
82	14½x18½	11	10	91	11½x11½	5½	5½
83	18½x24½	17¼	16	92	15½x15½	11	11
84	18½x30½	21	19¼	93	23½x23½	24½	24½
85	23½x30½	30	28				

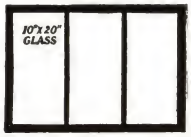
Gauges of Material: Door—No. 14 Ga. Housing—No. 16 Ga. on all sizes.



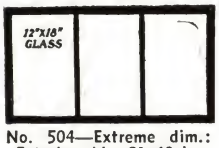
No. 501—Extreme dim.: Exterior side, 23x31½ in. Interior side, 26x34½ in. Mas. opening, 30⅞x22⅜ in.



No. 502—Extreme dim.: Exterior side, 15x34 in. Interior side, 18x37 in. Mas. opening, 33¼x14⅜ in.



No. 503—Extreme dim.: Exterior side, 23x34 in. Interior side, 26x37 in. Mas. opening, 33¼x22⅜ in.



No. 504—Extreme dim.: Exterior side, 21x40 in. Interior side, 24x43 in. Mas. opening, 39⅛x20⅜ in.

MILCOR ONE-PIECE BASEMENT WINDOWS

Frame—Milcor One-Piece Steel Basement Window is stamped from a solid sheet and formed without a joint. An integral flange projects from the jambs, sill and head into the masonry for anchorage and weathering.

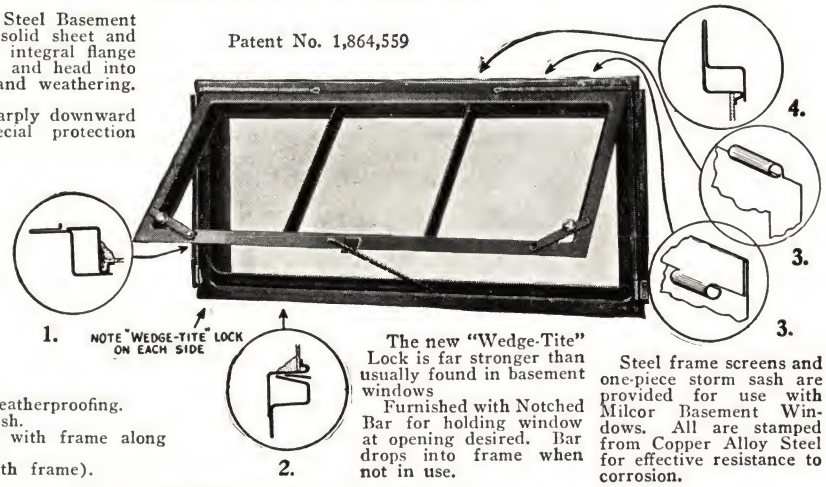
Sill—Sill section slopes sharply downward and outward providing special protection against driving rain.

Sash—Formed in one piece including hinge sections. Glazing bars spot welded in place. Putty bed rests on channel formed when stamping sash. Glazing is done from inside.

Details of construction shown in circles are (left to right):

1. Two-point contact of sash with one-piece frame of jamb, insuring weatherproofing.
2. Sill detail of frame and sash.
3. Two-point contact of sash with frame along head piece.
4. Hinge details (integral with frame).

Patent No. 1,864,559

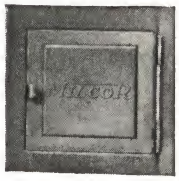


The new "Wedge-Tite" Lock is far stronger than usually found in basement windows

Furnished with Notched Bar for holding window at opening desired. Bar drops into frame when not in use.

Steel frame screens and one-piece storm sash are provided for use with Milcor Basement Windows. All are stamped from Copper Alloy Steel for effective resistance to corrosion.

Milcor Flue or Clean-out Door—Milcor Milk and Package Receiver

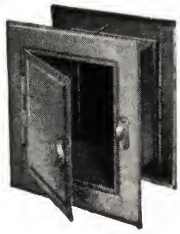


Stamped from heavy copper alloy sheet steel. Hinges are integral with frames and doors. No rivets or welding. Packed in cartons of six and twelve. Note sizes, shipping weights, etc., below.

In the Milk and Package Receivers two frames and doors are connected by an adjustable body which fits walls 5 to 14 in. thick.

Sizes	Shipping weight per carton of 6	Shipping weight per carton of 12
8x8 in.	20 lbs.	40 lbs.
8x10 in.	25 lbs.	50 lbs.
10x12 in.	30 lbs.	60 lbs.

For wall thickness adjustable body	Wall opening	Shipping weight, each
5 to 8 in.	9x11 in.	17 lbs.
8 to 14 in.	9x11 in.	17 lbs.



MEMORANDA

WALSH-SPENCER COMPANY

DISTRIBUTORS OF

Way "Loctor" Access Panels

TELEPHONE
KEnmore 6776

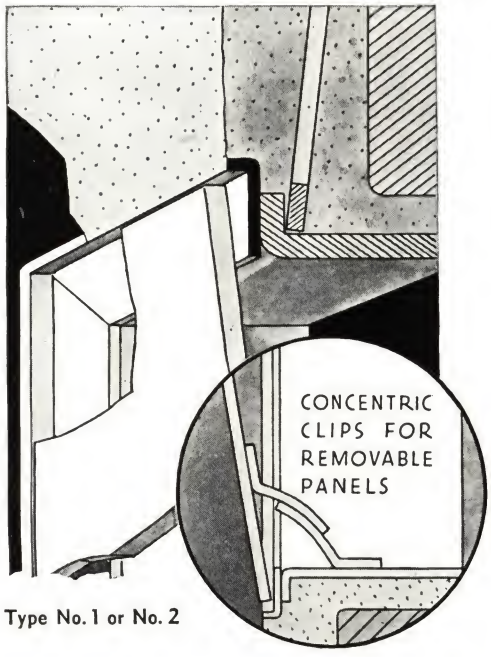
420 Boylston Street, BOSTON, MASS.

WAY "LOCTOR" ACCESS PANELS

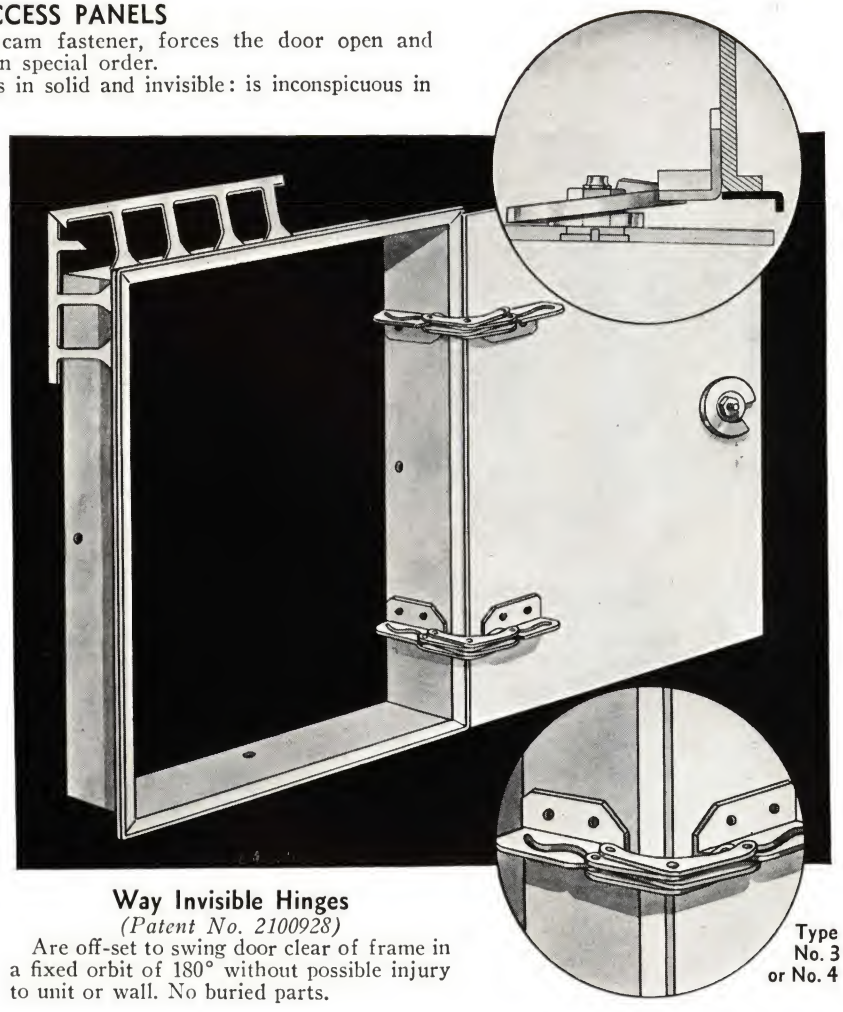
THE LOCTOR, Patent No. 1876115, a two-way cam fastener, forces the door open and closed. KEY-LOCTOR or other locks can be used on special order.

The shallow frame, (patent applied for), plasters in solid and invisible: is inconspicuous in masonry.

Our panel is specially adapted for use with air-conditioning work.



Type No. 1 or No. 2



Type No. 3 or No. 4

Way Invisible Hinges

(Patent No. 2100928)

Are off-set to swing door clear of frame in a fixed orbit of 180° without possible injury to unit or wall. No buried parts.

Way Flush Panels

Type 4—Hinged type has Way invisible hinges, Way "Loctor," and plaster-bond.

Type 3—Same as Type 4, omitting plaster-bond.

Type 2—Removable type has concentric clips at bottom, Way "Loctor" at top, and plaster-bond.

Type 1—Same as Type 2, omitting plaster-bond.

Caution: Panels for ceilings should be hinged—either type No. 3 or No. 4.

Note: Plaster-bond (if used) is adjustable to thickness of plaster.

Standard Door Sizes

8 x 8 in.	14 x 18 in.	18 x 24 in.
8 x 10 in.	16 x 16 in.	18 x 30 in.
12 x 12 in.	16 x 20 in.	24 x 24 in.
12 x 16 in.		

Above sizes carried in stock in Type 4 only. Other sizes and types on order.

Rough opening should be same size as door. Clear opening is 1 in. less than door. Doors 12-gauge cold rolled steel. Over sizes reinforced.

Special Panels

The No. 20 Way Panel for use with acoustic material, and No. 17 for use in tile walls are recommended where it is desirable to have the surface of the panel the same as the surrounding surface.

The Way "Loctor" lift-out floor cover for tile, terrazzo, and granolithic floors.

Special steel laundry chute doors.

Send for full size details of the above.

RECENT INSTALLATIONS

BUILDING	ARCHITECT
Philips Exeter Academy, 6 buildings	Cram & Ferguson
Yale University, 4 buildings	
Taunton State Hospital, Massachusetts	Kendall, Taylor & Co.
New England Baptist Hospital	Kendall, Taylor & Co.
Burbank Hospital, Fitchburg, Mass.	James Purdon
Hanchett Memorial Building, Lowell, Mass.	Appleton & Stearns
Boston City School	John M. Gray
Worcester City Hospital	Stevens, Curtin & Mason
Wellesley Senior High School	Perry, Shaw & Hepburn
Y. M. C. A. Building, Worcester, Mass.	Frost, Chamberlain & Edwards
Suffolk County Courthouse (Boston)	Desmond & Lord
Hemenway Gymnasium, Harvard University	Coolidge, Shepley, Bulfinch & Abbott
Mt. Vernon Public Library, Mt. Vernon, N. Y.	Cross & Cross and Alfred Morton Githens
New York Historical Museum, New York, N. Y.	Walker & Gillette
Memorial Hospital, New York, N. Y.	James Gamble Rogers
400 Park Avenue, New York, N. Y.	Walker & Gillette
Wayne Johnson Residence, Worton, Md.	Cross & Cross
Piedmont Driving Club, Atlanta, Ga.	Hentz, Adler & Shutze
Southern New England Telephone Co., Administration Building, New Haven, Conn.	R. W. Foote and Douglas Orr
Medical and Surgical Buildings, Howard, R. I.	E. O. Eckman
Sacred Heart Hospital, Manchester, N. H.	Wilfred E. Provost
State Teachers' College, Slippery Rock, Pa.	W. G. Eckles Company
Fidelity-Philadelphia Trust Building C. Robert Cheyney, Operating Manager	
New House Office Building, Washington, D. C.	David Lynn
Chapman Memorial Library, Milwaukee, Wis.	Allen, Collens & Willis
The Dayton Company Store, Minneapolis, Minn.	A. L. Weidt
State Capitol, Salem, Ore.	Trowbridge & Livingston, and Francis Keally, Associate
Pratt Diagnostic Hospital, Boston, Mass.	Coolidge & Carlson

ESTABLISHED 1908

COLUMBIA METAL BOX CO.

TELEPHONE
MOtt Haven 9-4240

260 East 143rd Street
NEW YORK, N. Y.

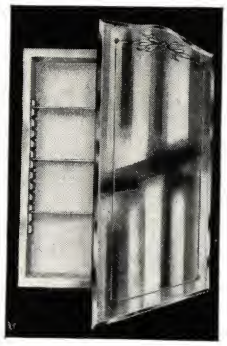
STRUCTURAL FEATURES OF COLUMBIA-QUALITY STEEL CABINETS

Heavy gauge furniture sheet steel, electrically spot-welded. Doors hung on unusually strong hinges and when closed, present a solid front; no cracks or crevices for dust. Shelves are bulb edge clear glass, adjustable every ¾ in. Ornamental glass knobs; nickel knobs on Venetian mirror and chromium frame cabinets; catch of bullet type. Exposed parts finished with a permanent smooth white enamel. Other colors furnished in quantity.

COLUMBIA STANDARD CABINETS



No. 11 or 21



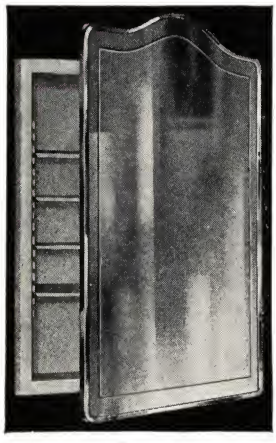
Venetian



All-mirror Front



No. 10, 20 or 30

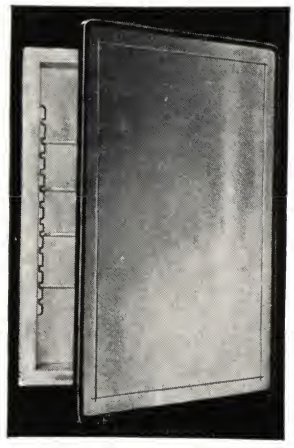


Chromium Frame Venetian

COLUMBIA-QUALITY STEEL CABINETS

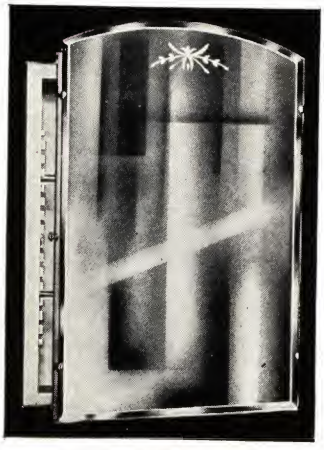
Cat. No.	Over all, in.	Wall opening, in.	Mirror, in.	Cat. No.	Over all, in.	Wall opening, in.	Mirror, in.
01622CV	16¼x22¼	14 x18 x3	16 x22	†10A	16⅝x20⅝	14½x18½	12x16
11724CV	17⅜x24	14½x18½x3	17⅛x23¾	10B	16⅝x20⅝	14½x18½	12x16
21926CV	19⅜x26	16½x20½x3	19⅛x25¾	*10P	16⅝x20⅝	14½x18½	12x16
31928CV	19⅜x28	16½x22½x3	19⅛x27¾	†20A	18⅝x22⅝	16½x20½	12x16
42130CV	21⅝x30¼	19 x25 x3	21⅛x30	20B	18⅝x22⅝	16½x20½	12x16
01620CS	16¼x20¼	14 x18 x3	16 x20	20C	18⅝x22⅝	16½x20½	14x18
11722CS	17⅜x22	14½x18½x3	17⅛x21¾	30B	20⅝x26⅝	18½x24½	16x22
21924CS	19⅜x24	16½x20½x3	19⅛x23¾	†11A	16⅝x26⅝	14½x24½	12x16
31926CS	19⅜x26	16½x22½x3	19⅛x25¾	11B	16⅝x26⅝	14½x24½	12x16
42128CS	21⅝x28¼	19 x25 x3	21⅛x28	21B	18⅝x28⅝	16½x26½	12x16
01622BV	16¼x22¼	14 x18 x3	16 x22	21C	18⅝x28⅝	16½x26½	14x18
11724BV	17⅜x24	14½x18½x3	17⅛x23¾	†10AW	16⅝x20⅝	Surface mounting	12x16
21926BV	19⅜x26	16½x20½x3	19⅛x25¾	10BW	16⅝x20⅝		12x16
31928BV	19⅜x28¼	16½x22½x3	19⅛x27¾	†01216AW	14 x18		12x16
42130BV	21⅝x30¼	19 x25 x3	21⅛x30	11216AW	16 x20		12x16
01620BS	16¼x20¼	14 x18 x3	16 x20	11628V	16 x28	14 x24	16x28
11722BS	17⅜x22	14¼x18½x3	17⅛x21¾	21830V	18 x30	16 x26	18x30
21924BS	19⅜x24	16½x20½x3	19⅛x23¾	32032V	20 x32	18 x28	20x32
31926BS	19⅜x26	16½x22½x3	19⅛x25¾	01624V	16 x24	14 x20	16x24
42128BS	21⅝x28¼	19 x25 x3	21⅛x28	01628V	16 x28	14 x24	16x28
				01622AM	16 x22	14 x20	16x22

Key explanation: V—Venetian; BV—Black frame Venetian; CV—Chromium Venetian; CS—Chromium straight; AM—All-mirror front.
*Plain plate glass mirror. †Plain mirrors: not plate glass.
Key explanation: A, plain mirror; B and C, beveled mirror; W, surface mounting.
***Note:** Styles CV, CS, BV, BS, V and AM can be furnished with Perfectlite Adjustable Mirror—add letter P to catalogue number if desired.*



Black Frame Imperial Venetian

COLUMBIA "ECONOMY" CABINETS



Venetian

This new line of Columbia Venetian Cabinets meets the demand for cabinets of conservative design, rich appearance, the utmost utility—and remarkably low cost. The plain Venetian model has beveled edges and the mirror is affixed to the door with four small chromium plated clips. On the framed model, the mirror is mounted in a narrow one-piece channel frame. This frame comes in either chromium (over brass) or black enamel (over cold rolled steel).

Recess type has 1⅜-in. return flange and slot for disposal of used razor blades. Wall type has a one-piece full return. Adjustable shelf supports allow for adjustment of glass shelves every ¾ in. Doors are removable to facilitate installation. Baked white enamel finish. Figure numbers in table use same key as table above.

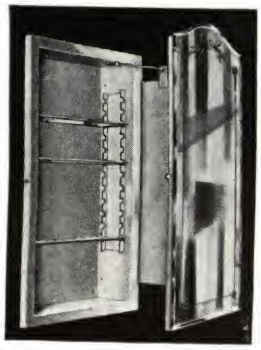
Cat. No.	Over all, in.	Wall opening, in.	Mirror, in.
1600V	16¼x22¼	14½x18½	16x22
1600VW	16¼x22¼		16x22
1600BV	16¼x22¼	14½x18½	16x22
1600BVW	16¼x22¼		16x22
1600CV	16¼x22¼	14½x18½	16x22
1600CVW	16¼x22¼		16x22



Black Frame Venetian

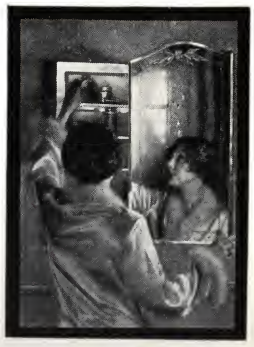
COLUMBIA PERFECTLITE CABINET

With Adjustable Mirror



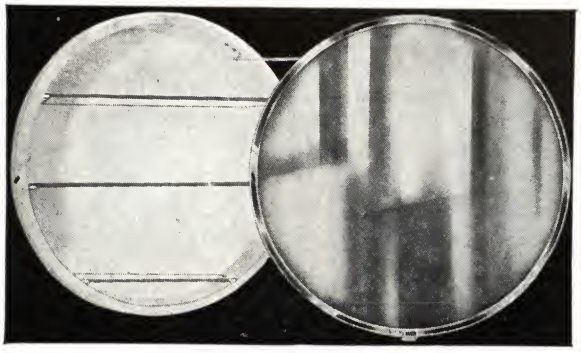
Mirror can be swung to any angle to suit convenience of user. The extended hinge arrangement, on which mirror swings, is concealed when door is closed; it is sturdily built and cannot get out of alignment. Access to the cabinet is possible with the mirror in use.

***Note:** Styles CV, CS, BV, BS, V and AM can be furnished with Perfectlite Adjustable Mirror—add letter P to catalog number if desired.*

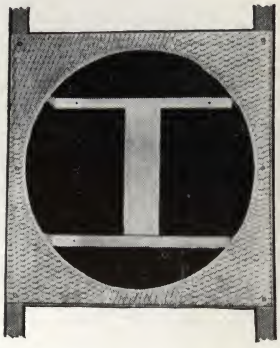


COLUMBIA CIRCULAR CABINET

This new circular model embraces a revolutionary idea. It is unusually handsome and durable, and, at the same time, offers many utilitarian properties. Mirror is 20 ins. in diameter and encased in a one-piece chromium plated brass frame.

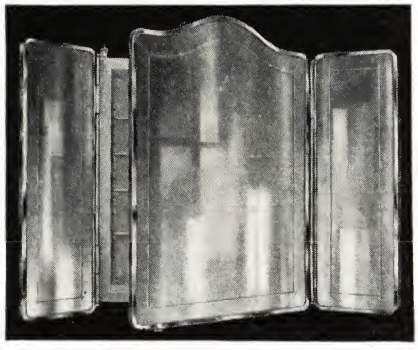


Catalog number: 20 CM. Outside flange diameter: 19½ in. Inside diameter: 18 in. Cabinet may be surface mounted by means of metal adapter.



In order to facilitate installations, the circular model is accompanied by a 20-gauge steel installation buck to which is welded wire lath, the over-all measurement of which is 21x21 in. The wire lath outer shell is fastened to studding as illustrated. Plaster or tiling is brought flush to edge of circular opening.

COLUMBIA WING MIRROR CABINET



Mirror arrangement is ideal for shaving, hair dressing, make-up, etc. Shelves are adjustable every ¾ in. and accommodate a large quantity of drugs and cosmetics. Center mirror can be furnished mitre-lined or with a floral design.

In table at left: "C" denotes chromium frame; "B" denotes black frame.

Wing Mirror Cabinet

Cat. No.	Over all, in.	Wall opening, in.	Mirror, in.	Wings, in.
2-WM-C	36x26	18x20½x3½	19x25½	8x23¾
2-WM-B	36x26	18x20½x3½	19x25½	8x23¾
0-WM-C	33x22½	15x17½x3½	16x22	8x20
0-WM-B	33x22½	15x17½x3½	16x22	8x20

COLUMBIA FRAMED WALL MIRROR



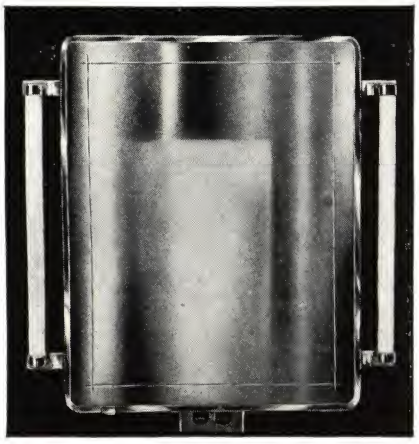
Of heavy plate glass and mounted in one-piece channel frame. Frames have a heavy steel back drilled with special holes for mounting and are finished chromium plated or black.

In table at right: *Mirrors can be furnished either mitre-lined or with floral design. **Furnished in plain plate glass only. †Mirrors furnished with mitre-line only.

Framed Mirror for Wall Mounting

Venetian top		Straight top	
Cat. No.	Mirror, in.	Cat. No.	Mirror, in.
*1622V	16x22	**1620S	16x20
*1724V	17x24	†1722S	17x22
*1926V	19x26	†1924S	19x24
*1928V	19x28	†1926S	19x26
*2130V	21x30	†2128S	21x28

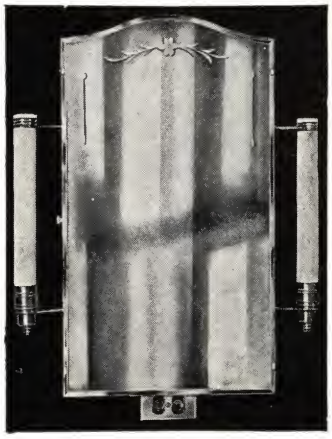
LIGHTING FIXTURES FOR COLUMBIA CABINETS



Attractive lighting fixtures with switch and convenience outlet can be furnished on all Columbia Cabinets—except the Perfectlite models.

At left is a chromium frame Imperial Venetian cabinet featuring Columbia's newest achievement in cabinet lighting—lumiline lighting fixtures. At the right, a Venetian cabinet is shown with tubular lighting fixtures.

All wires are entirely enclosed by an angle frame around the inside of the cabinet flanges. The outlet box is welded to the front channel so that when the receptacle plate is mounted it will come flush with the finished tile or plaster wall. Make standard wall opening for cabinet selected and cut additional opening centered at bottom, 3¼ in. high x 4 in. wide.



FARIES MANUFACTURING CO.

"Edge-Lite" (Patented) Bathroom Cabinets, Mirrors and Vanities

DECATUR, ILL.

Individualized BATHROOM LIGHTING

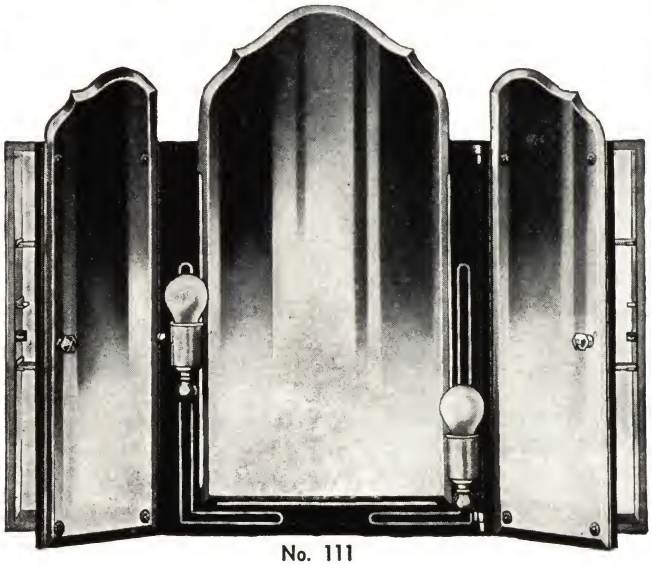


No. 222

A beautiful period cabinet with spacious shelf room and removable plain beveled plate glass mirror. Door frame is die cast. Box is heavy gauge steel electrically welded. Two bulb edge glass shelves. Wired complete.

STANDARD FINISHES
Black Door with White box
Chromium Door with White box
Ming Green Door with White box

Style	No. 222
Mirror size incl. frame	16½x27½
Inside box dimensions	14x18x4½
Wall opening required	14½x18½x4¾



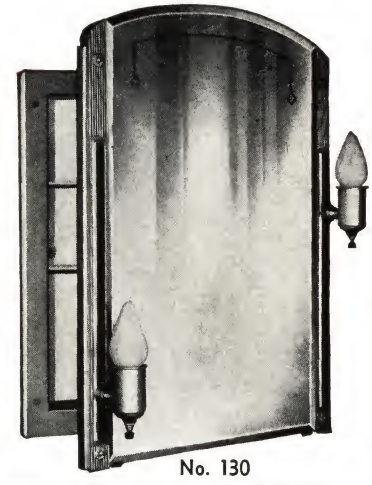
No. 111

This model has large center cabinet, auxiliary compartments on both sides and adjustable wing mirrors that conceal auxiliary cabinets when closed. Furnished in two sizes with either the Villa Venice style mirrors shown above or Moderne style mirrors. Door frame is die cast. Cabinets are heavy gauge steel electrically welded. Chrome plated light fixtures slide in channel up and down sides and across bottom of center door. Each compartment has two bulb edge glass shelves, six shelves in all. Wired complete.

STANDARD FINISHES
Black Door with White boxes
Chromium Door with White boxes
Ming Green Door with White boxes

Number	No. 111	No. 124
Mirror style	Villa Venice	Villa Venice
Center mirror with frame	16½x27½	19¼x29½
Wing mirror size	8x24	8x25½
Over-all dimensions	34¼x27½	37x29½
Inside center box dimensions	14x18x4½	16¾x20x4½
Inside auxiliary box dimensions	7¾x19¼x4½	7¾x21¼x4½
Wall opening required	33¾x19½x4¾	36½x21½x4¾

Number	No. 125	No. 126
Mirror style	Moderne	Moderne
Center mirror with frame	16½x25½	19¼x29½
Wing mirror size	8x24	8x25½
Over-all dimensions	34¼x25½	37x29½
Inside center box dimensions	14x18x4½	16¾x20x4½
Inside auxiliary box dimensions	7¾x19¼x4½	7¾x21¼x4½
Wall opening required	33¾x19½x4¾	36½x21½x4¾



No. 130

This cabinet has a gracefully etched or plain, beveled plate glass mirror. Mirror frame has die cast slides. Box is heavy gauge steel, 4½ in. deep with 1-in. return flange and 1⅜ in. front flange. Two bulb edge glass shelves, Chrome plated light fixtures slide in channel up and down both sides. Wired complete.

STANDARD FINISHES
Black Door with White box
Chromium Door with White box

Number	130
Mirror size incl. frame	18¼x24
Inside box dimensions	14¼x17½x4½
Wall opening required	14½x18½x3¾

Edge-Lite Features

Enables you to put light exactly where you want it.

Provides shadowless light in mirror for shaving or application of cosmetics.

Economical as they combine cabinet, mirror, brackets and lighting fixtures into one unit.

Installation is simple. Unit is complete—slide it into opening, attach to studding with four nickel plated screws furnished—connect wires to house line—and job is done.

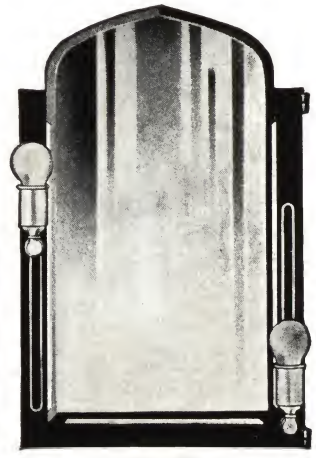
Mechanically and electrically fool-proof. Approved by Underwriters Laboratories and National Board of Fire Underwriters.

All Edge-Lite cabinets and mirrors can be equipped with convenience outlet for electric razor, curling iron, etc.

All Edge-Lite cabinets can be furnished in any special finish to match tile.

All Edge-Lite cabinets are furnished in baked enamel finishes, which will not chip off.

Send for our Catalog No. 7 showing complete line of Edge-Lites, also Plain Cabinets and Tube-Lites.

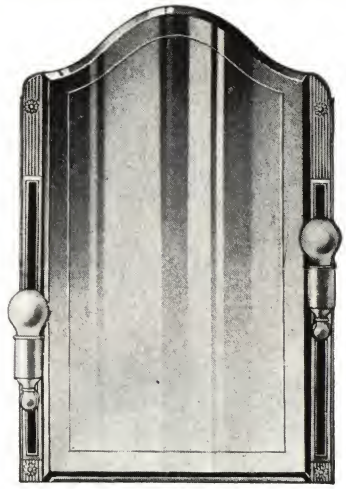


No. 120

An attractive mirror of graceful lines. Door frame is die cast. Box is heavy gauge steel electrically welded with two bulb edge glass shelves. Chrome plated light fixtures slide in channel up and down both sides. Wired complete.

STANDARD FINISHES
Ivory Door with White box
Chromium Door with White box
Ming Green Door with White box

Number	120
Mirror size incl. frame	16½x25½
Inside box dimensions	14x18x4½
Wall opening required	14½x18½x4¾



No. 136

A new cabinet with attractive, gracefully etched mirror. Mirror frame has die cast slides. Box is heavy gauge steel electrically welded, 4½ in. deep with 1-in. return flange and 1¾-in. front flange. Has two bulb edge glass shelves. Supplied with candle cups, arms and switches as on No. 130. Wired complete.

Number	136
Mirror size incl. frame	18¼x26
Inside box dimensions	14¼x17½x4½
Wall opening required	14½x18½x3¾

Fairfacts

BATHROOM ACCESSORIES VITREOUS CHINA LINE "CHINACHROME" LINE



The Fairfacts Company

INCORPORATED

234 WEST FOURTEENTH ST.

NEW YORK, U. S. A.

CABLE ADDRESS
"FAIRFACTS"
CODE ABC, 6TH EDITION
AND BENTLEY'S

PLANT
FAIRFACTS ST.
TRENTON, N.J.

CATALOGUE No. 39

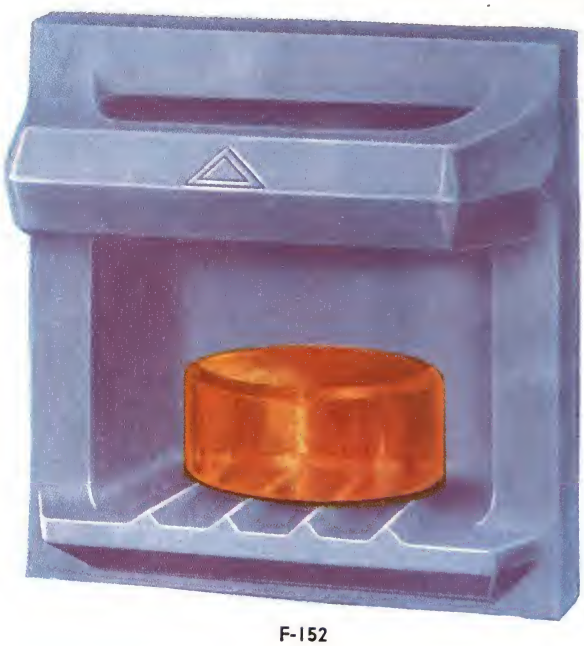
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Fairfacts

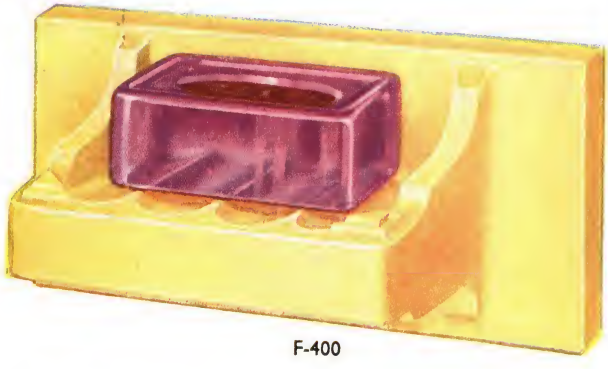
"ETERNITE" COLORS

We call our colors "Eternite Colors" because of their extreme durability. These colors are fired into genuine vitreous china and are available on short notice. Many shades are made—also special colors to order from your samples.

Regular glazes are white, black and "Mellotone White." This "Mellotone White" is a beautiful, soft light cream that goes well with the usual white tile and with colors that harmonize with light cream.



F-152



F-400

THE DOUBLE TRIANGLE

A small triangle, superimposed on a larger one, now appears on the exposed surface of Fairfacts Accessories; an attractive identification of a fine product. This symbol is our "Hall Mark" . . . and your guarantee.

Special Note

Fairfacts Accessories are set by the tile contractor, and for this reason should be included in the tile contract.

MADE IN U. S. A.

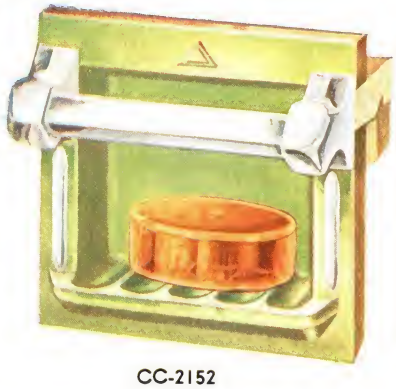
THE 6 LINES OF Fairfacts VITREOUS CHINA BATHROOM ACCESSORIES

Vitreous china — white, black or colors — manufactured into bathroom accessories produces a strong, durable product, impervious to most acids and easily cleaned. It does not tarnish or discolor—but retains its original finish for the life of the building.

"CHINACHROME" Line

Fairfacts "Chinachrome" Bathroom Fixtures are, in reality, Fairfacts China Accessories trimmed with chromium plated metal. A decided innovation. White, black and colors

Page 3



CC-2152

"ROYAL" Line • De Luxe

A conservative modernistic design recommended for the finest and most modern bathrooms. No finer accessories of china have ever been produced. Finishes: white, black and colors. Also our special mellotone finish, a decidedly superior satin finish that is unusually attractive; it harmonizes nicely with white tile and looks well with colors that harmonize with very light cream. Patented July 21, 1938; Sept. 22, Nov. 3, Nov. 10, 1931.

Page 4

"F" Line • The Original Line

With a new design with more attractiveness. The first recessed china accesssories made in the world. Patented Feb. 13, Aug. 21, Aug. 28, Sept. 11, Oct. 23, 1917; Feb. 12, May 28, July 16, Apr. 15, July 29, 1919; Dec. 29, 1931; April 12, 1932. Large details of this new design are shown on this page Page 5

"FLANGED" Line

Recessed — with a thin bevel flange to cover edge of wall opening. For any type wall adaptable to a recessed fixture Page 8

"ATTACHO" Line

Attachable china accessories that fasten to wall with metal slide fasteners

Page 14

"SAMSONCHINA" Line

A unique line of china accessories that are attached to the wall with concealed screws Page 15

Vitreous China Drainboards

Built of Fairfacts Drainboard Sections and Sink Trim. For kitchen and pantry sinks. Very durable, attractive Page 11

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FAIRFACTS "Chinachrome" LINE

. . . AN ATTRACTIVE AND INTERESTING COMBINATION OF FAIRFACTS CHINA ACCESSORIES AND CHROMIUM-PLATED METAL TRIMMING

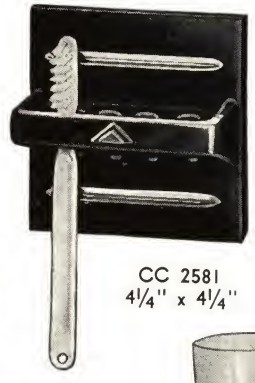
A selection of Fairfacts China Accessories in white, black or in colors is available to harmonize with the tile . . . while the chromium-plated metal decoration carries out the chromium motif of the plumbing fixtures. Thus is presented a decorative scheme in accessories that is most attractive, practical and inexpensive.

CC 2152 CC 2195
Soap holder is china; grip, supporting posts and decorative strips are heavy brass Chromium Plated.

CC 2152AC CC 2195AC
Soap holders and grips are china



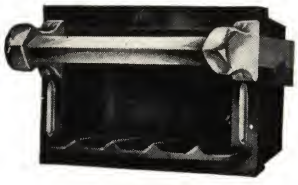
CC 2160
6" x 6"



CC 2581
4¼" x 4¼"



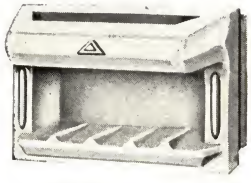
CC 2152
6" x 6"



CC 2195
6" x 4¼"



CC 2331
Dowel Back



CC 2195AC
6" x 4¼"



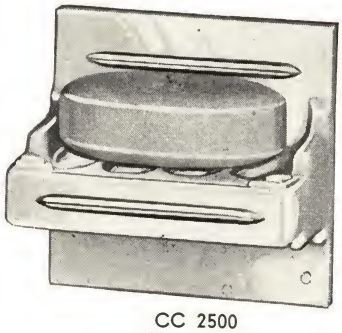
CC 2317
Dowel Back



CC 2517
4¼" x 4¼"



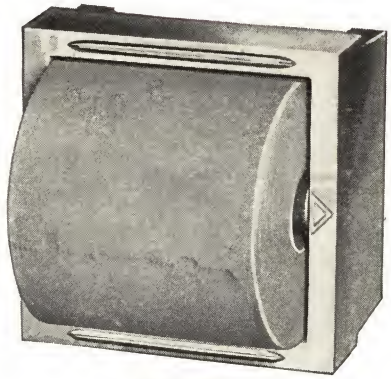
CC 2152AC
6" x 6"



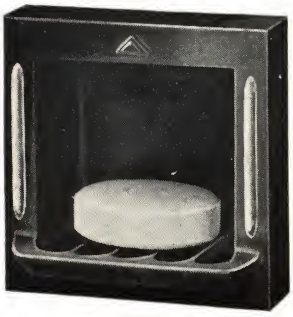
CC 2500
4¼" x 4¼"



CC 2503
4¼" x 4¼"



CC 2002
6" x 6"



CC 2115
6" x 6"



CC 2130
Dowel Back



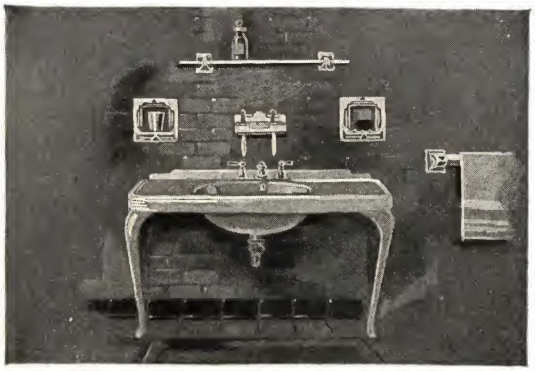
CC 2300 Dowel Back

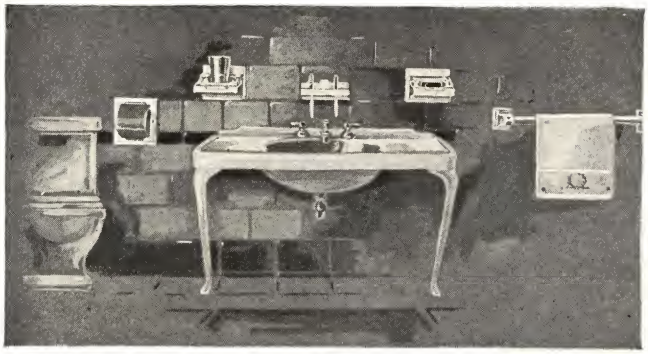
Look for the  *Double Triangle*

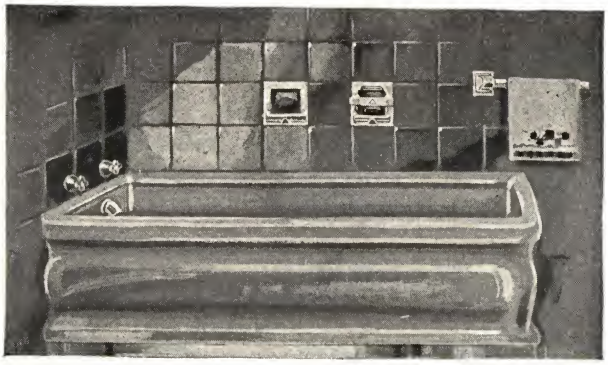
Fairfacts

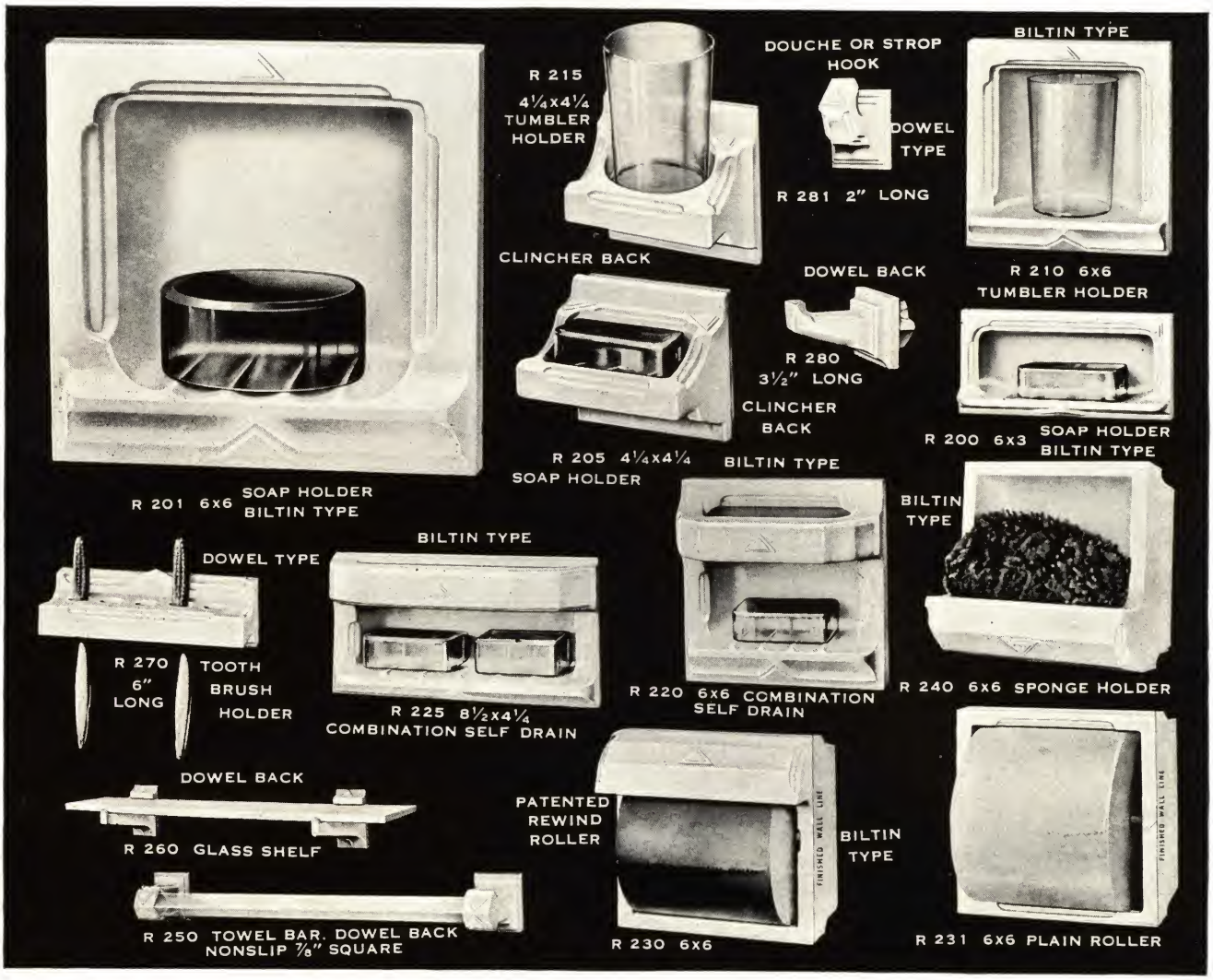
"ROYAL" LINE • De Luxe

ROYAL LINE De Luxe Elaborate and Ornamental China Bathroom Accessories available in White, Black, Colors . . . or "Mellotone", a very light cream satin, a decidedly superior finish that is unusually attractive, a good match for white tile, and a finish that looks well with colors that you would use with a very light cream.









Look for the  *Double Triangle*

Fairfacts "F" LINE • Regular Line • New Designs



The following fixtures (not illustrated) with drain spouts can be furnished:
6" x 3" Recess Soap Holder (F 109); 12" x 6" Double Soap Holder and Grip (F 169); 12" x 6" Double Soap Holder (F 139).

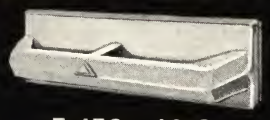
SPONGE TOOTH BRUSH AND RAZOR BLADE HOLDERS HOOKS, DOORSTOPS, GRIPS AND ELECTRIC LIGHT FIXTURES


F 331 6x3 DOWEL BACK


F 525 4¼x4¼

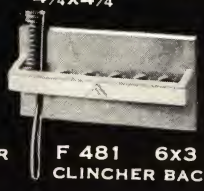

F 425 3x3

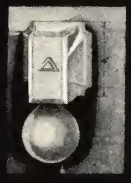

F 450 6x3 CLINCHER BACK

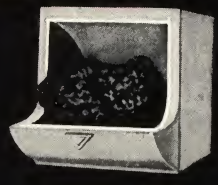

F 452 12x3 CLINCHER BACK

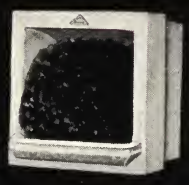

F 550 8½x4¼ CLINCHER BACK


F 581 4¼x4¼ CLINCHER BACK


F 481 6x3 CLINCHER BACK


F 710 4x4


F 170 6x6


F 175 6x6


F 700 3x3

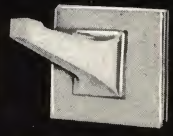

F 805


F 800 F 810


F 342 DOWEL BACK


F 341 DOWEL BACK


F 340 DOWEL BACK


F 590 4¼x4¼ CLINCHER BACK


F 490 6x3 CLINCHER BACK


F 343 DOWEL BACK


F 344 DOWEL BACK

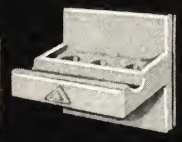
MISCELLANEOUS COMBINATION FIXTURES


F 317 DOWEL BACK


F 417 6x3 CLINCHER BACK

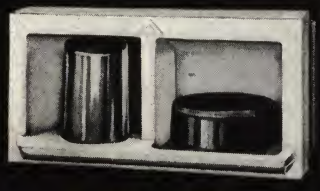

F 404 9x3 CLINCHER BACK

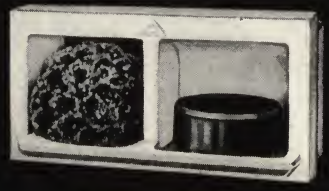

F 405 6x3 CLINCHER BACK

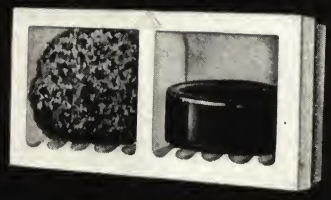

F 505 4¼x4¼ CLINCHER BACK


F 504 8½x4¼ CLINCHER BACK


F 517 4¼x4¼ CLINCHER BACK


F 119 12x6

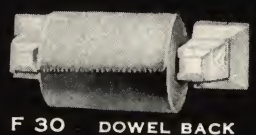

F 171 12x6


F 172 12x6

PAPER HOLDERS


F 60 6x10 CLOSED

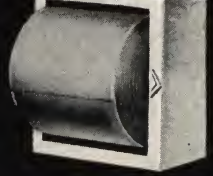

F 27 6x3

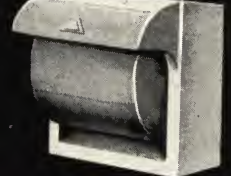

F 30 DOWEL BACK

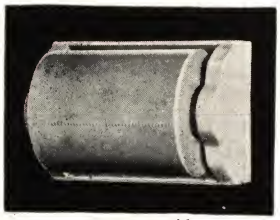

F 60 6x10 OPEN


F 25 6x6


F 26 6x6


F 2 6x6


F 1 6x6


F 5 6x4¼ Paper Holder


F 329 Glass Shelf "Dowel Back" Holds 8 Tooth Brushes, 1 Tumbler and Soap

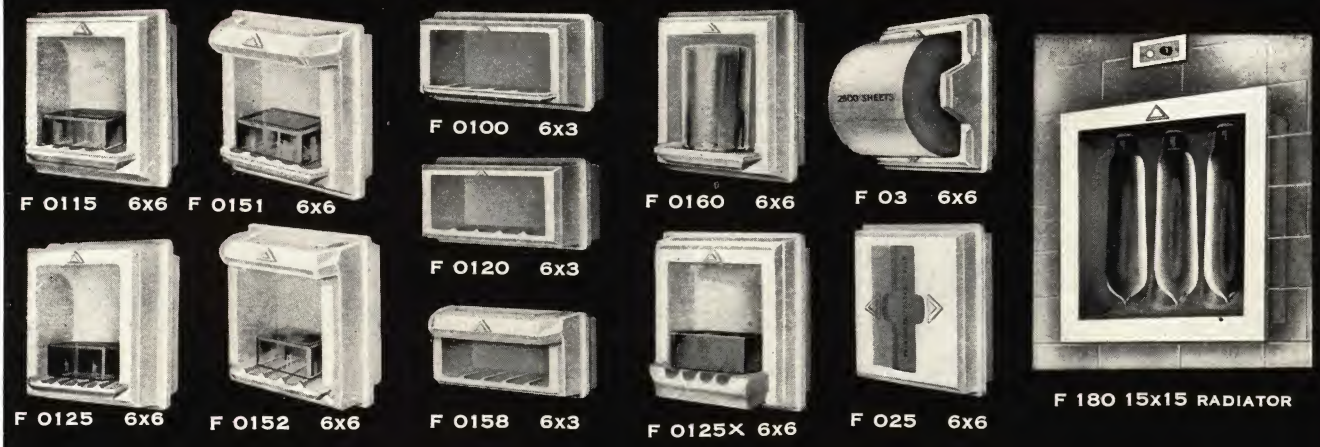

F 379 Glass Shelf "Dowel Back" Holds 2 Tooth Brushes and 2 Tumblers


F 28 Surface Type Paper Holder

Look for the *Double Triangle*

Fairfacts Fixtures

SEMI-RECESS FIXTURES



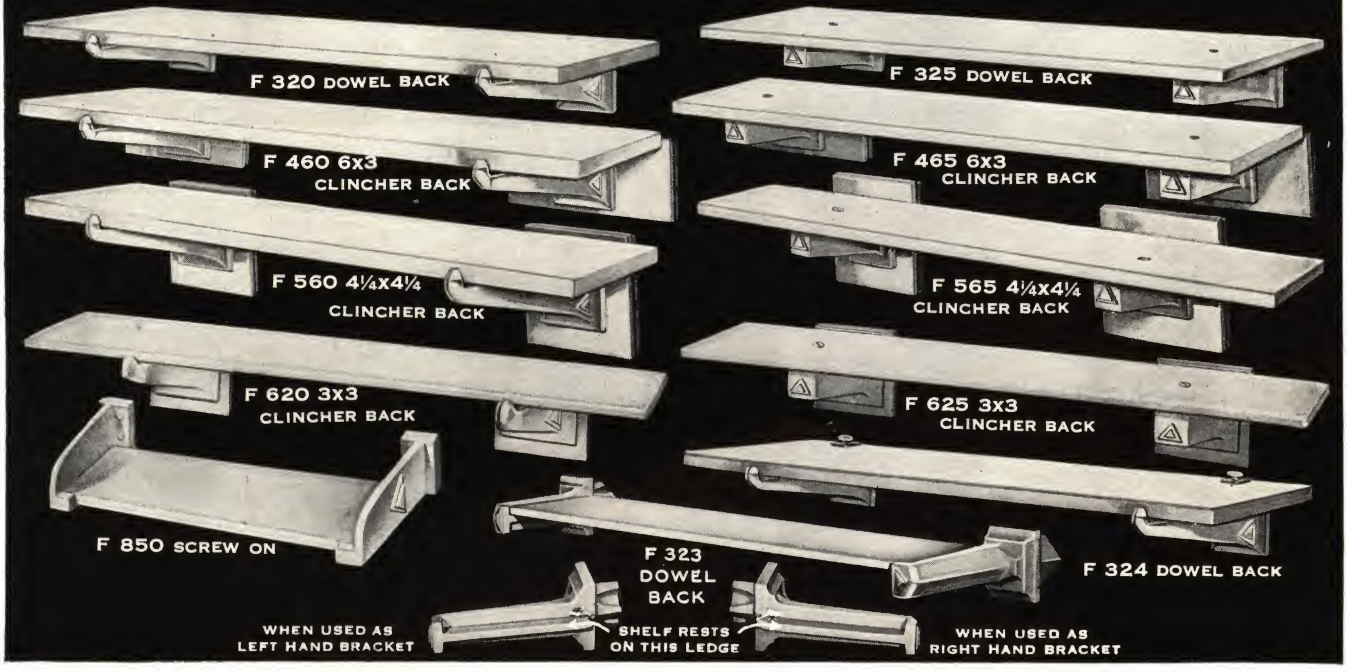
ROUND TOWEL BARS

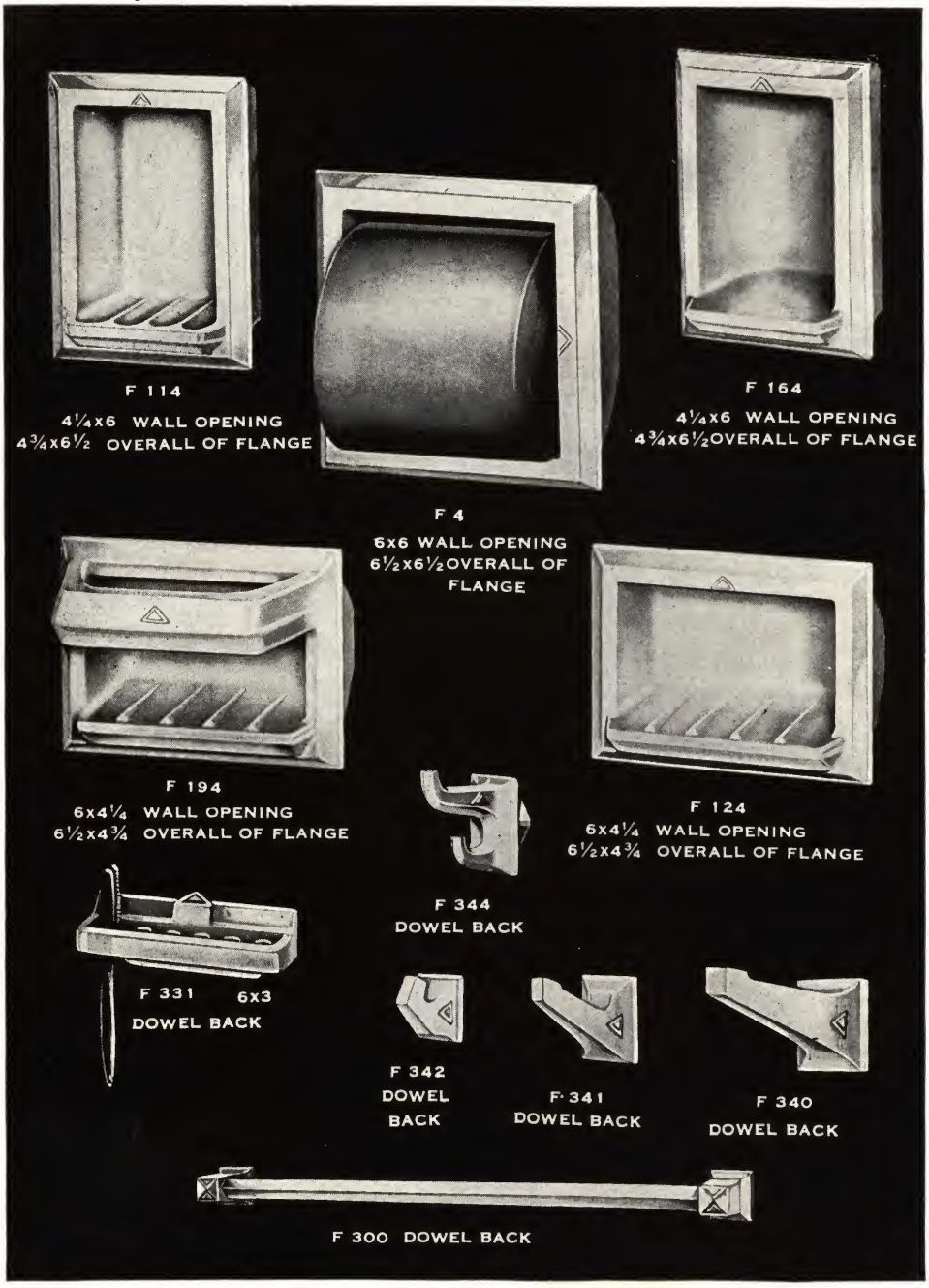


SQUARE TOWEL BARS



GLASS SHELVES

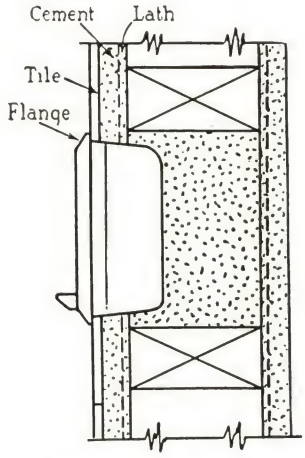




THIN BEVELED FLANGE

THESE well proportioned accessories have a thin beveled flange that covers the edge of the wall opening. They are adaptable to any type of wall where recessed accessories can be used.

The sectional drawing below shows how the "Flanged" Line is installed . . . and how neatly the flange covers the wall opening.



How the "Flanged" Line Covers the Edge of the Wall Opening

The smaller accessories to the left . . . toothbrush holder, hooks, towel bar . . . have dowel backs and are likewise designed with flanges. They are suggested for installation with the larger flanged accessories.

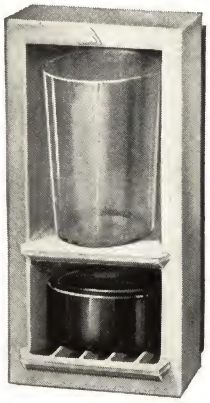
RECESSED TOOTHBRUSH HOLDER AND COMBINATION TUMBLER AND SOAP HOLDER

The F 147 recess toothbrush holder is patterned after the old fashioned umbrella stand: The toothbrushes are put in place and there they stay out of the way.

This toothbrush holder is only 1½" deep and can be set more easily than a deeper fixture especially if a pipe or stud is in the way. The F 146 tumbler and soap holder is full depth. Use the shallow piece where the obstruction is.



Toothbrush Holder
F 147
8½x4¼x1½



Combination Tumbler and Glass Holder
F 146
8½x4¼x3

Fairfacts Fixtures Should Be Included in the Construction Work and Mentioned in the Tile Specifications

Used with Any Type of Wall Construction or Surface Finish

Interior Construction	Bond	Wall Finish
Wood stud	Metal lath	Tile
Terra cotta or hollow tile	Wood lath	Plaster
Brick	Plaster board	Keene's cement
Gypsum block	Sheetrock	
Metal stud walls (thin)		

Made in tile sizes—select proper size to fit the tile.

Fairfacts Accessories are made to fit these unit sizes or their multiples, namely, 6x3, 6x6 and 4¼x4¼ in.

Types of Fairfacts Fixtures and Methods of Installation

BILTIN OR RECESSED TYPE—These are recessed almost entirely into the walls, and cemented in place when the tile or other wall finish is put on. Greatest depth required in the wall is 3¼ in., except F-180 radiator, which needs 5 in. When used on tiled walls they should be included in the tile contract.

Recessed fixtures that are 6x3, 6x6, 6x9 and 6x12-in. require little cutting of tile when set in 6x3 or 6x6-in. tile. These fixtures can be set in 4¼x4¼-in. tile, but require more cutting. All 4¼x4¼, 6x4¼ and 8½x4¼-in. recessed fixtures are used with 4¼x4¼-in. tile.

SEMI-RECESS TYPE—Recessed into the wall but 1 in. Are set like recess type and are used in thin partition, or where piping or or other obstructions are found in walls. Are cemented in place and have a flange that overlaps the aperature.

PROJECTING TYPES—Have special backs or wall attachments cementing to wall.

These backs are of two kinds: "Dowel Back Type" and "Clincher Back Type."

DOWEL BACK FIXTURES—Depth required in wall is 1 in. Dowels are heavy and strong and make a substantial wall attachment.

When Set in Tile Walls—Usually set after the tile is in place. A hole of size and depth of dowel, but slightly larger, is made in wall. Dowel is covered with rich cement or plaster of paris and fixture pushed into place.

Note: Make holes in tile preferably at intersection of tile joints. Be sure hole is not too large to be concealed by fixture.

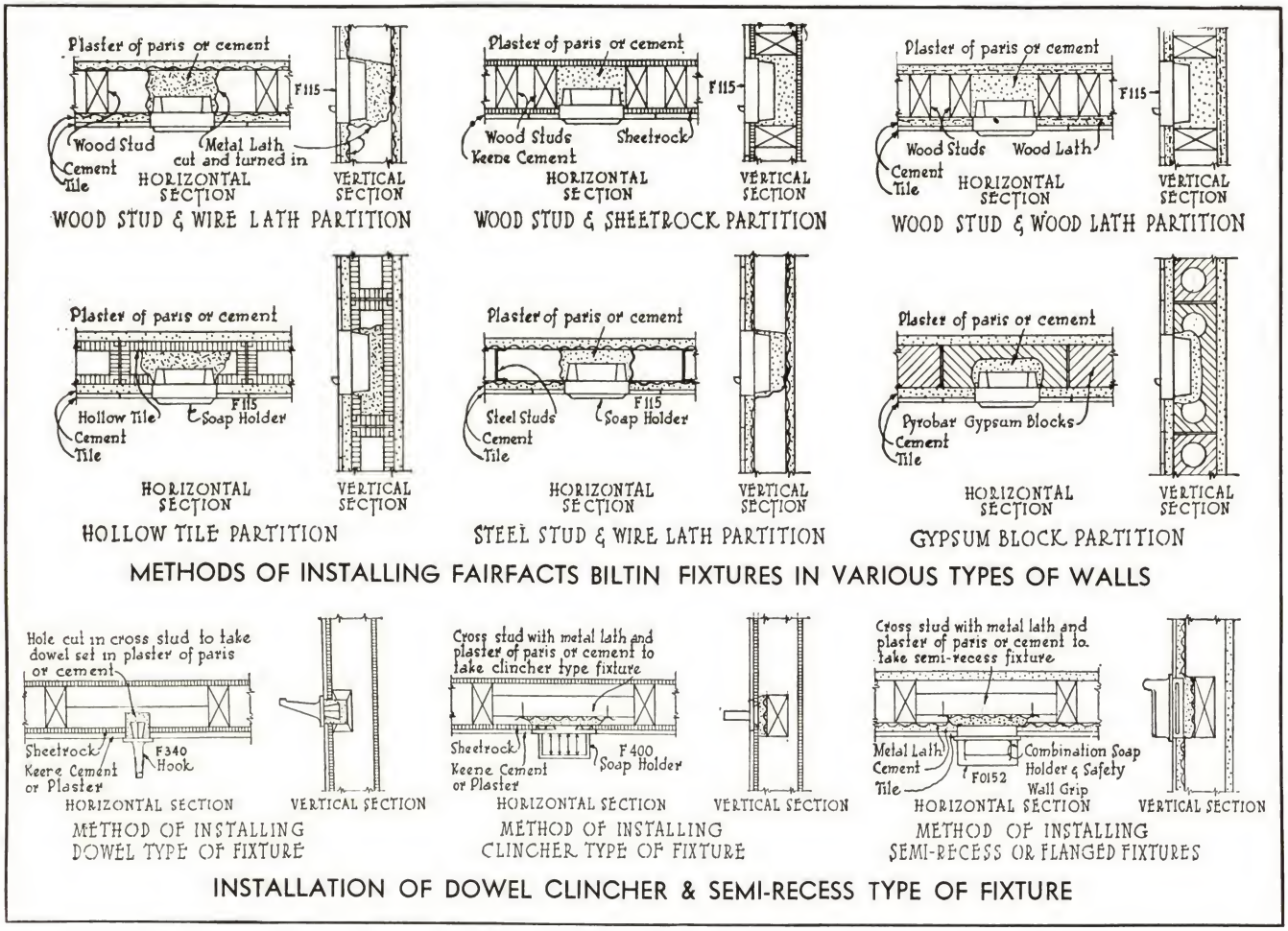
When Set in Keene's Cement or Plaster Walls—Hole is cut in wall and fixture pushed into place as for tile wall, but it is desirable that pieces of studding with their wide sides towards front be nailed to studs (flush with face of studs) and hole cut in the pieces of studding (see illustration).

CLINCHER BACK FIXTURES—Made in tile sizes to avoid cutting the tile. Depth needed in wall is ¾ in.

When Set in Tile Walls—Installed when setting tile or opening of right size is left in tile work and fixtures set later. Make openings deep enough for liberal quantity of rich cement or plaster of paris and also cover the back of fixtures and fill the clinchers with the cement. Then tamp fixtures into place until glazed surface is flush with the finished wall.

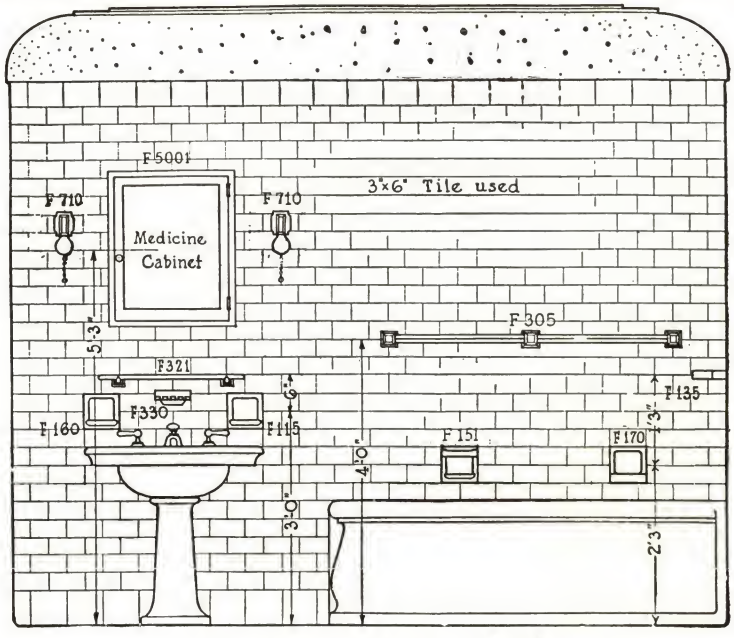
When Set in Keene's Cement or Plaster Walls—Set fixtures before applying finish coat to wall. Expose the lath where fixtures are to go and set as for tile walls.

Note: For walls with wood stud interior and sheetrock or plaster board bond, see illustration for method of preparing opening. After opening is prepared set fixtures as described for "When set in Tile Walls." See page 10 for more installation data.

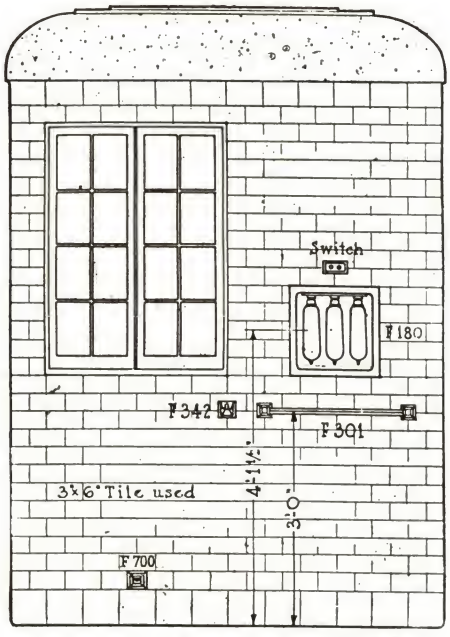


TYPICAL BATHROOM . . . Showing FAIRFACTS "F" LINE ACCESSORIES

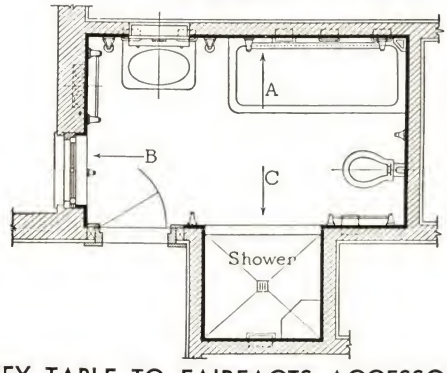
"Royal" Line Fixtures of Same Type Take Same Locations

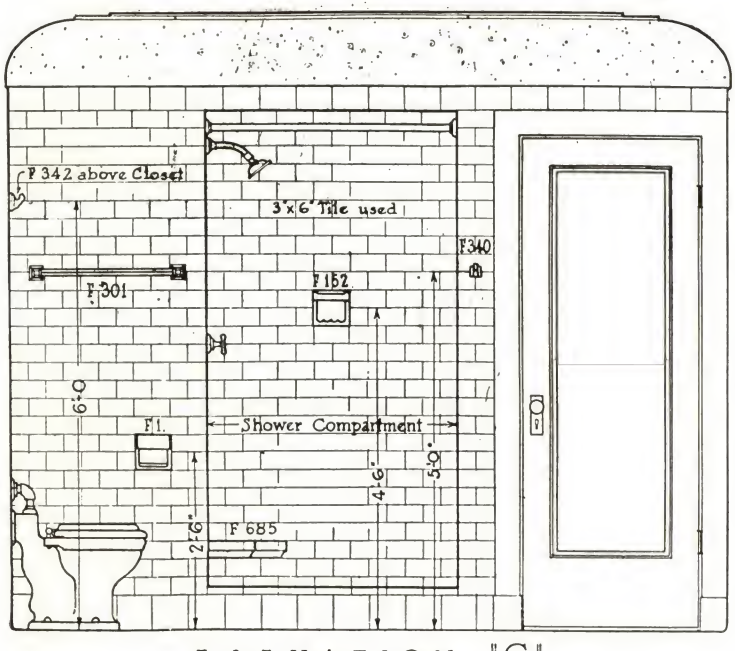


ELEVATION "A"



ELEVATION "B"





ELEVATION "C"

KEY TABLE TO FAIRFACTS ACCESSORIES

Cat. No.	Article
F-1	Biltin China Roll Paper Holder
F-115	Biltin China Soap Holder
F-135	China Soap, Sponge or Brush Holder
F-151	Biltin China Combination Soap Holder and Wall Grip
F-152	Biltin China Combination Soap Holder and Wall Grip
F-160	Biltin China Tumbler Holder
F-170	Biltin China Sponge Holder
F-180	Biltin China Electric Bathroom Radiator
F-301	Nonslip Towel Bar with China Posts (24 in. long)
F-305	Nonslip Towel Bar with China Posts (48 in. long)
F-321	White Glass Shelf with China Brackets (24 in. long)
F-330	China Tooth Brush Holder
F-340	China Hook for Robes, etc. (4½ in. long)
F-342	China Hook for Strop, Douche, etc. (2 in. long)
F-685	China Bathroom Seat
F-700	China Stop
F-710	China Light Fixture
F-5001	Medicine Cabinet

Fairfacts Towel Bars with China Posts—See Page 7

Bars are of several kinds, i. e.—⅞ in. square set edge up, called "non-slip" because towels do not slip off.

Made in pyralin finish, white, black and colors and in glass white, black and crystal.

1-in. round bars are also furnished in pyralin and glass, otherwise as above mentioned.

Regular lengths center to center of posts are: 18, 24, 30, 36, 42 and 48 in., the last two having also a center post. Other lengths to order.

See illustrations page 7, all of substantially same design but with different wall attachments and having designating numbers. Specifications should include quantity, plate number and type, length and color, thus: 24—F-300 non-slip pyralin bars, 18 in. long white, or 12—F-600 round glass bars 30 in. long crystal.

No. F-300—Dowel back type.
No. F-430—Clincher back type, 6x3 back.
No. F-530—Clincher back type, 4¼x4¼ back.
No. F-600—Clincher back type, 3x3 back.
No. F-307—Dowel back type has two ⅝-in. square bars, pyralin finish only, and in the same regular lengths up to 36 in.

Fairfacts Glass Shelves with China Brackets—See Pages 5, 6 and 7.

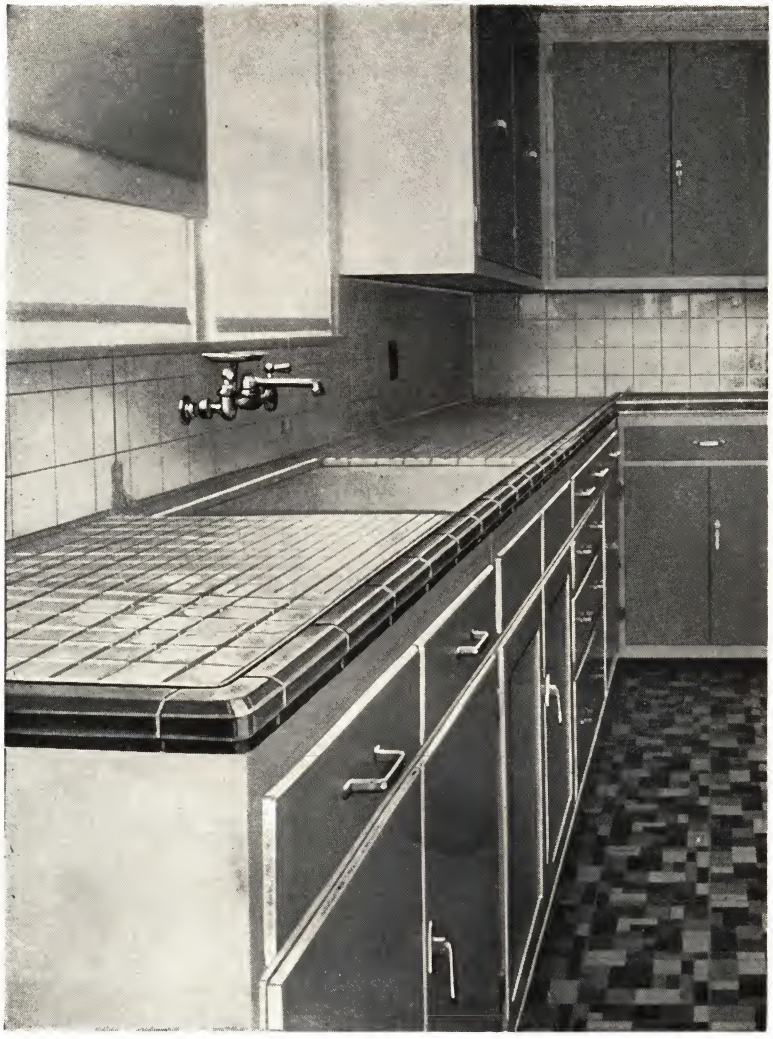
Glass can be furnished in white, black and crystal.

Shelves are 5 in. wide. Those with serial number ending in 0 rest on the brackets. Those with serial number ending in 5 are bolted to brackets.

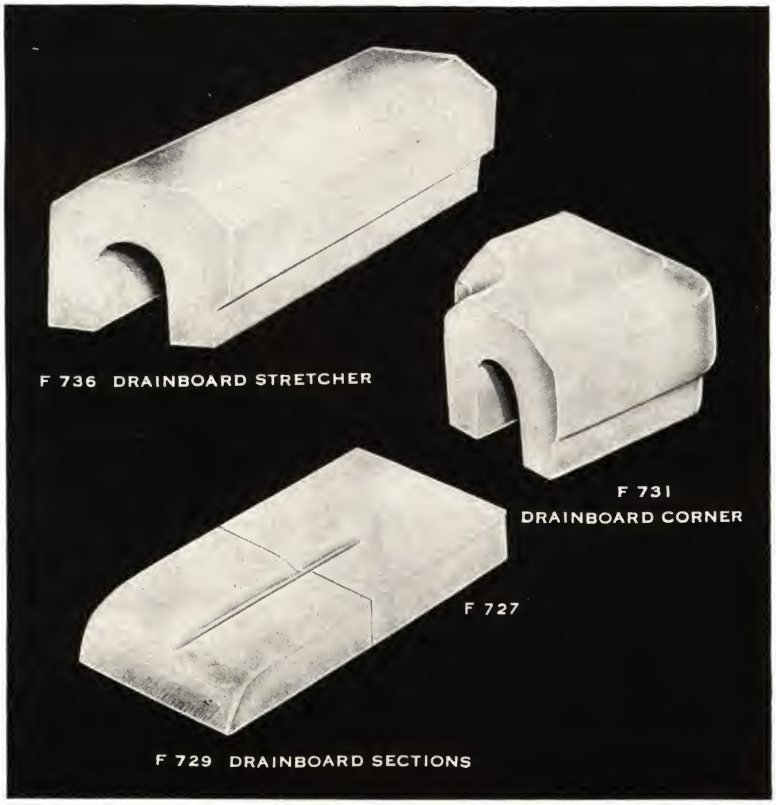
Length, in.	Dowel back type	Clincher back type		
	F-320	6x3	4¼x4¼	3x3
18, 24, 30, 36	F-324	F-460	F-560	F-620
20, 24, 30, 36	F-325	F-465	F-565	F-625

Note: F-324 is like F-320, except that shelf is held in place by metal clamps and set screws at back of shelf.

Look for the  *Double Triangle*



Installation of complete drainboard built with Fairfacts Sink Trim (black) and Fairfacts Drainboard Sections (white).



To Build the Sink to the Kitchen · · · USE

Fairfacts

HARD GLAZED VITREOUS CHINA

DRAINBOARD SECTIONS and SINK TRIM

WITH the ingenious Fairfacts "section" construction, drainboards for kitchen sinks can now be built in any size to fit the layout of the kitchen. No longer is it necessary to detail the kitchen to fit the sink.

This construction uses grooved sections and beveled trim—both made of the same hard-glaze vitreous china as Fairfacts Bathroom Accessories. These sections are laid to form a drainboard of any width or depth — and to drain into the sink. They are framed with heavy beveled trim.

OTHER IMPORTANT FEATURES

Given reasonable use, drainboards built of Fairfacts Sections should withstand years of hard wear — without any sign of marring or scratching. They are impervious to most acids and are unusually easy to clean. They are sold, built and installed by the tile contractor.

The sections and trim are available in black, white—or, on short notice, in many colors. They offer wide opportunity for effective color combinations.

●

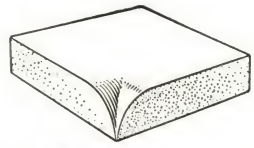
The upper illustration shows a typical installation of a Fairfacts Drainboard — completely built of Fairfacts Sections (white) and Fairfacts Sink Trim (black).

The lower illustration shows a close-up view of the Grooved Section, the Trim (stretcher) and a Corner Unit. For details see the following pages.

27
92 IMPORTANT FEATURES OF FAIRFACTS SOLID VITREOUS CHINA DRAINBOARD SECTIONS AND SINK TRIM

Hard Viterous glazed top surface
Not easily scratched or marred
Grooved to drain into sink
Do not discolor

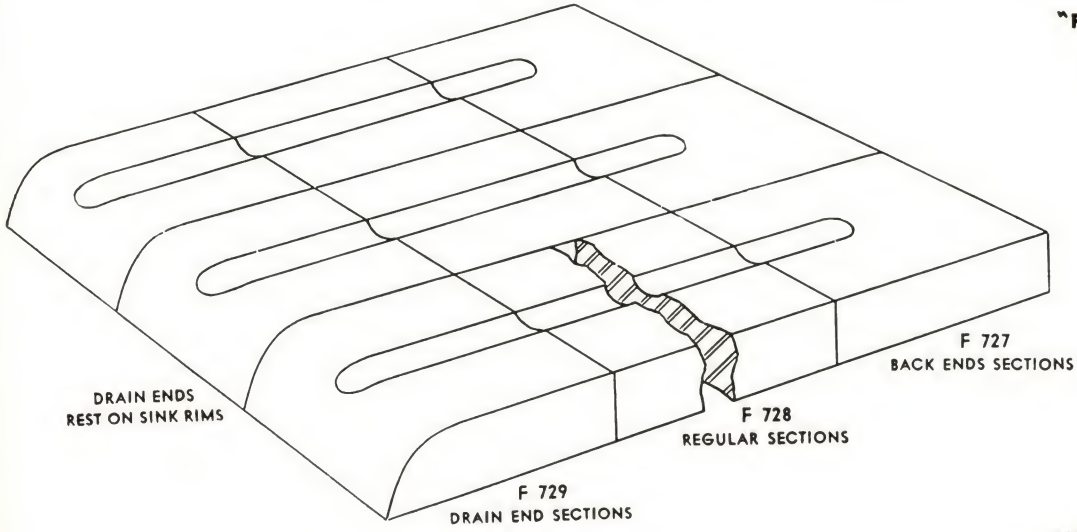
Impervious to dirt and grease
Easy to keep clean—without polishing
Last a lifetime — no deterioration with reasonable use
Decidedly modern in appearance



Drainboard Section
Corner
F 724

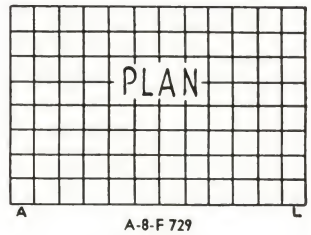
With Fairfacts China Drainboard Sections and Sink Trim, everything is solid china except the sink. There are no limitations to the size and shape of the drainboard. Both the sink and the drainboard can be fitted to the room . . . instead of the room to the sink and the drainboard.

DETAILS OF FAIRFACTS DRAINBOARD SECTIONS



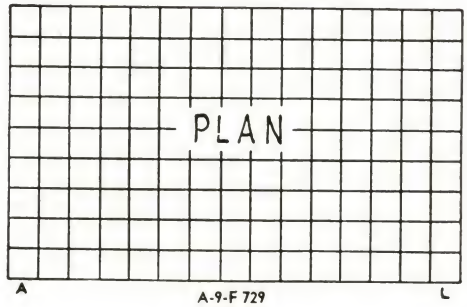
"**FAIRFACTS** DRAINBOARD SECTIONS"
SOLID VITREOUS CHINA
GLAZED ON TOP SURFACE ONLY
2-1/16 x 2-1/16 x 5/8" THICK
WHITE — BLACK — COLORS
DURABLE GLAZES

DRAINBOARD APPROXIMATELY 18 x 24

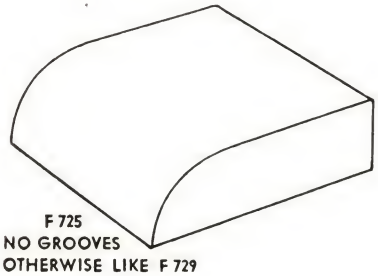


A-8-F 729
L-8-F 727
BALANCE F 728

DRAINBOARD APPROXIMATELY 20 x 30



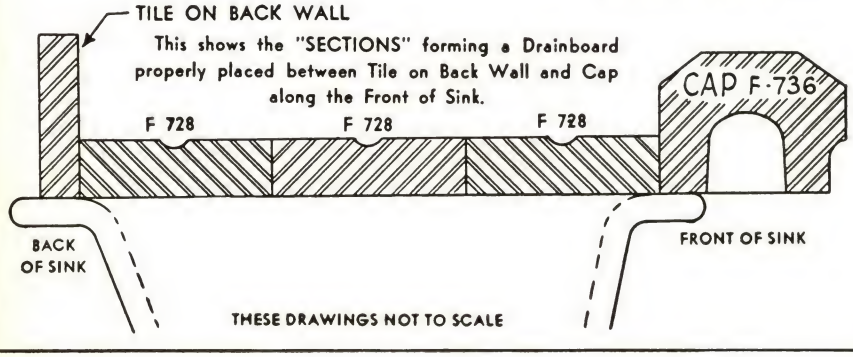
A-9-F 729
L-9-F 727
BALANCE F 728

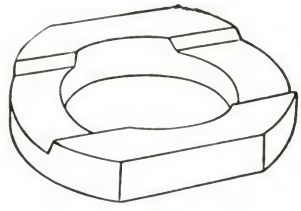


F 725
NO GROOVES
OTHERWISE LIKE F 729



F 726
NO GROOVES
OTHERWISE LIKE F 727
FOR USE AT END OF
DRAINBOARD OR ON WALL
ABOVE DRAINBOARD





F 740
CHINA RING WITH
5" HOLE FOR
UNDERNEATH
WATER CLOSET

DETAILS OF

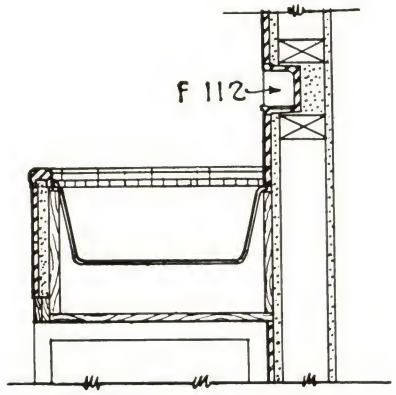
Fairfacts

SINK TRIM

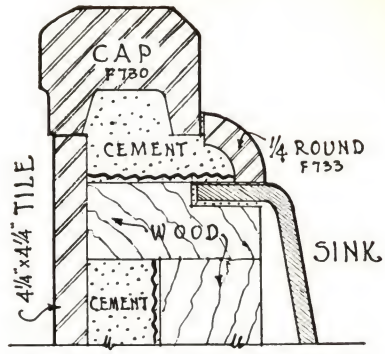
Showing styles, sizes and application of Fairfacts solid vitreous china Trim . . . for kitchen and pantry sinks and their drainboards.

This Trim can also be used for swimming pools.

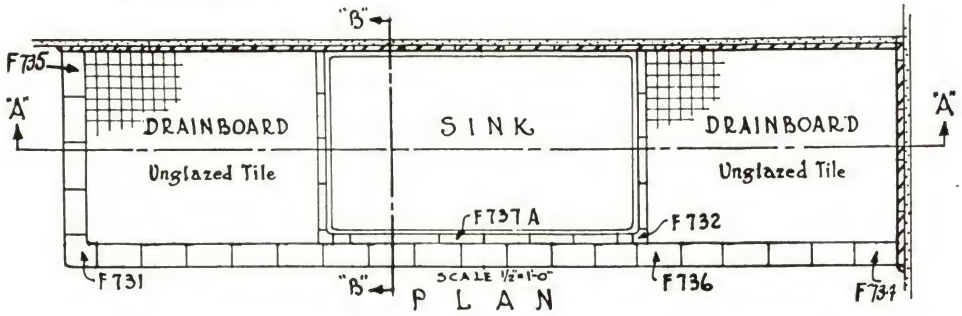
Furnished in white, black and colors.



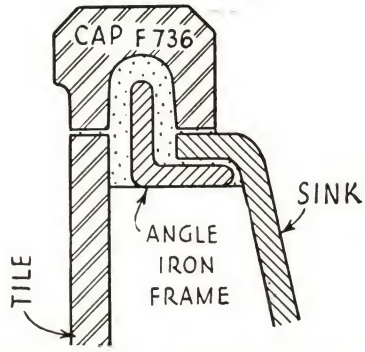
SECTION B-B
SCALE 1½"=1'-0"



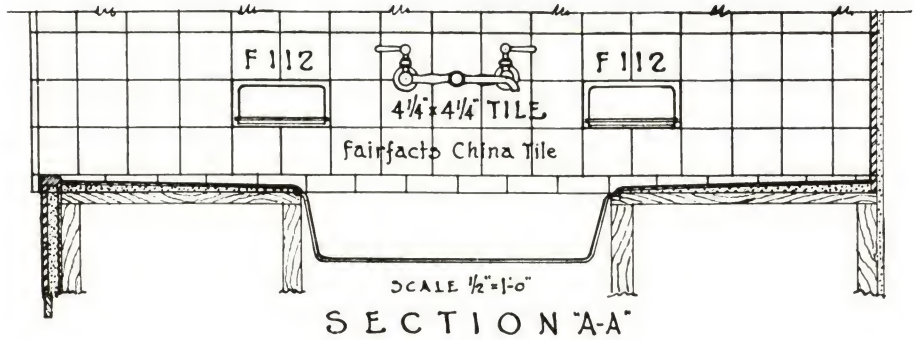
DETAIL OF SINK FRONT
SCALE 3"=1'-0"



SCALE ½"=1'-0"
PLAN



DETAIL ALONG FRONT OF SINK
WHEN F-749 BULLNOSE IS USED
AT SINK ENDS OF DRAINBOARDS

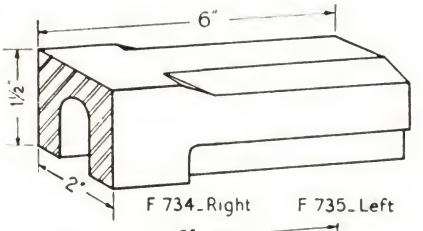


SCALE ½"=1'-0"
SECTION "A-A"

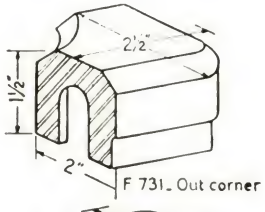
PLAIN COMPETITIVE TYPE SOLID VITREOUS CHINA SINK TRIM



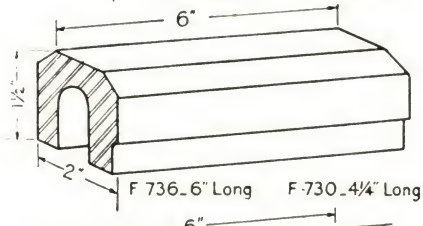
F 772 2" x 2" Reversible Cap Angle



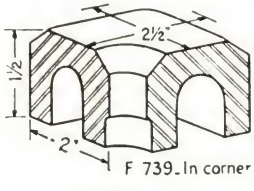
F 734_Right F 735_Left



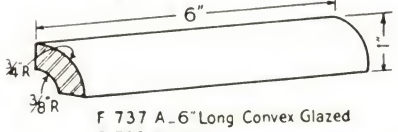
F 731_Out corner



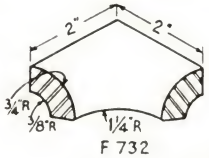
F 736_6" Long F 730_4¼" Long



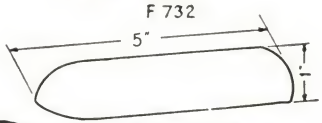
F 739_In corner



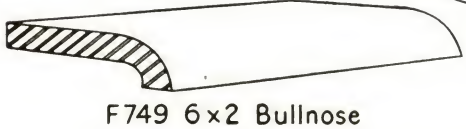
F 737 A_6" Long Convex Glazed
F 733 A 4¼" " " "
F 737 B 6" Long Reverse Glazed
F 733 B 4¼" " " "



F 732



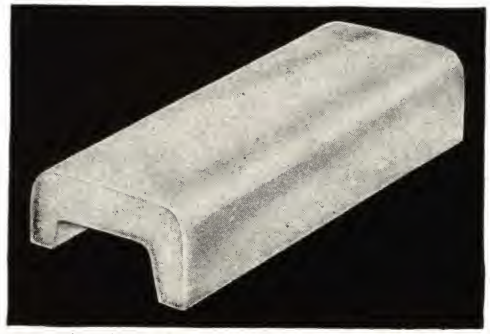
F 738 A_Convex Glazed
F 738 B_Rev Glazed



F749 6x2 Bullnose



F 771 6" x 2" Box Cap Stretcher Full U Shape



F 770 6" x 2" Cap Stretcher, One Long, One Short Side

Fairfacts "ATTACHO" LINE

ATTACHABLE BATHROOM ACCESSORIES

THIS new line of full size, attachable china bathroom accessories is reasonably priced—and available in white, black and colors. The various pieces, as shown below, have a distinct "family" resemblance and are pleasingly balanced in size—to insure complete harmony wherever installed.

The plain, simple design of these "Attacho" Accessories makes cleaning easy. Note, for example, the smooth ridges and valleys of the soap holder. (Note, too, their ample room for large cakes of soap.)

The shelf brackets, due to their new design, are simple to install. They hold the glass shelves securely in the grooves and prevent them from being knocked loose.

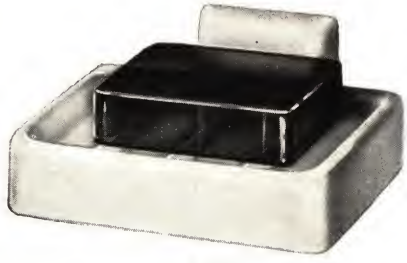
The toothbrush holder and the combination toothbrush and tumbler holder holds six brushes each.



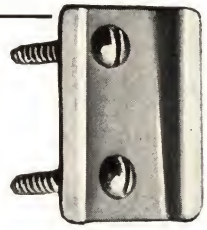
A70
With Drainholes



A 71



A 70

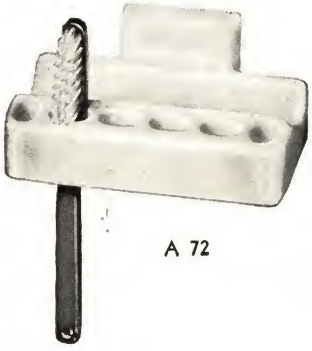


The "ATTACHO" Metal Slide Fastener

This ingenious slide fastener makes installation of the "Attacho" Line to any type wall simple and easy. It fits in the concealed groove on the back of each fixture—and holds it firmly on the wall.



A 73



A 72



A 78



A 79



A 77



A 75



A 76



A 74

"SAMSONCHINA"

BATHROOM ACCESSORIES

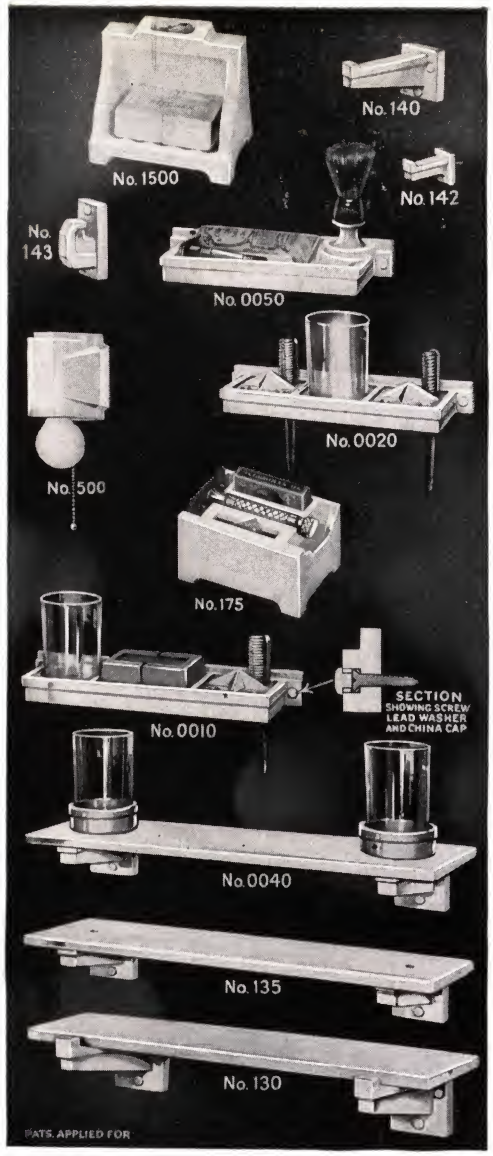
Easily Applied to the Wall with Screws

CHINA CAPS COVER THE SCREW HEADS
. . . AND MAKE THEM INVISIBLE

Of particular interest in "Samsonchina" Accessories is their uniformity of design: each unit in this extensive line matches every other unit. Consequently, any combination selected to meet individual requirements has a distinct "family" resemblance.

Then, too, "Samsonchina" Accessories have other important features: They are SANITARY, unpollutable, easily cleaned. They are DURABLE, built of strong vitreous china. And their simple, clean-cut design enables them to harmonize with the major fixtures of the bathroom.





"Samsonchina" Accessories are made in black, white and colors. They are moderately priced. Wood screws or bolts, lead washers, china caps and plaster of paris are furnished with all pieces requiring them.

SIZES OF PIECES (Overall In Inches)

Arranged—Width, Height, Depth

SINGLE HOLDERS

No.	Sizes
1 Soap	5¾x1⅜x3⅜
2 Soap, Large	10⅞x1⅜x4
10 Tumbler	4½x1⅜x3⅜
20 Tooth Brush	4⅝x1⅜x3⅜
30 Sponge	7⅝x3⅜x5½
160 Small Tray	8⅞x1⅜x3⅝
165 Large Tray	10⅞x1⅜x4
170 For Used Razor Blades	3⅜x3x1¾
190 Grab Rail	7½x3½x3
500 Light Fixture	4x4x2⅞

CORNER TYPE HOLDERS

No.	Sizes
40 Soap	4⅜x1¾x4⅜
50 Tumbler	4x1¾x4⅛
60 Tooth Brush	4x1¾x4⅛
70 Sponge	5½x3⅞x6¼

HOOKS

No.	Sizes
140 Towel	2¼x2¼x5
142 Robe	1⅛x1½x2¼
143 Strap	1⅛x3⅛x1⅞

COMBINATION HOLDERS

No.	Sizes
01 Double Soap	10x1⅜x3⅜
010 Soap & Tumbler	8¾x1⅜x3⅜
020 Soap & Tooth Brush	8¼x1⅜x3⅜
030 Double Tumblers	8½x1⅜x3⅜
040 Tumbler & Tooth Brush	7⅝x1⅜x3⅜
050 Tooth Brush & Paste	7¼x1⅜x3⅜
060 Soap & Cleanser	10⅞x1⅜x4
195 Grab Rail & Soap	7⅜x3⅞x3⅝
0010 Soap Tumbler & Tooth Brush	11⅞x1⅜x3⅜
0020 Tumbler & Double Tooth Brush	10¾x1⅜x3⅜
0050 Shaving Set	9x1⅜x3¾

PAPER HOLDERS

No.	Sizes
180 For Roll Paper	9⅜x2¾x4
181 For Roll Paper	6½x5½x4¾
182 For Sheet Paper	9x4x2¾
183 (Post) for Roll Paper	3x3x6⅝
184 For Folded Sheet Paper	4¾x5¾x2⅜
(181 Holds Roll of 1000 Sheets only)	

PORTABLE HOLDERS

No.	Sizes
1111 Portable Soap	4½x3¾x3
175 Cabinet, White China, for Razor & New & Old Blades	3⅝x2⅛x2⅜
176 Cabinet, Colored China, for Razor & New & Old Blades	4::2x2¼
1500 Portable Soap with Ring Cup	5½x4¾x3⅜

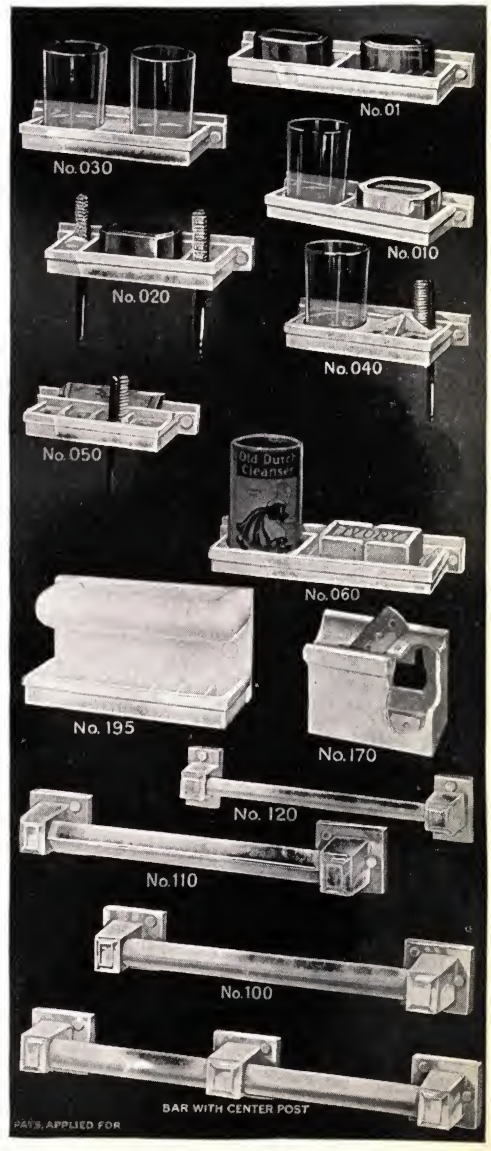
TOWEL BARS

No.	Over-all Length 20½ 26½ 32½ 38½ 44½ 50½
100 1" Round White Glass	
101 1" Round Celluloid	
110 ⅞" Square Celluloid Can Supply No. 110 with ⅞" Square Glass Bar	
121 ⅝" Round Celluloid	19½" 25½"

SHELVES

White Glass, 5" Wide with China Posts

No.	Lengths 20"	24"	30"
130			
135 Shelves Bolted on			
0040 With Tumbler Holders			



Fairfacts

BATHROOM ACCESSORIES

VITREOUS CHINA LINE
"CHINACHROME" LINE



The Fairfacts Company
INCORPORATED
234 WEST FOURTEENTH ST.
NEW YORK, U.S.A.

CABLE ADDRESS
"FAIRFACTS"
CODE ABC. 6TH EDITION
AND BENTLEY'S

PLANT
FAIRFACTS ST.
TRENTON, N.J.

CATALOGUE No. 39

GERITY-ADRIAN MFG. CORP.

320 Logan Street, ADRIAN, MICHIGAN

GERITY BATHROOM ACCESSORIES

THE COMPANY—ITS FACILITIES—The Gerity-Adrian Mfg. Corp. has been continuously in the plating business for a period of 50 years. They produce annually millions of pieces of plated die castings for the automotive industry and the better brass manufacturers. All castings are made in the latest type of machines. The production capacity of the plant for both castings and plating is ample to meet the most exacting demands in both quality and quantity.

A COMPLETE LINE OF BATHROOM ACCESSORIES—The Gerity Bathroom Accessories comprise a complete line of both surface and recessed fixtures made of die cast Zamak Alloy No. 3 finished in chromium plate. Each item has been carefully designed from both an artistic and practical point of view. They are sturdy and strong with a superior finish guaranteed not to crack, peel, or check—a finish requiring only occasional wiping to keep it in its original condition. The surface types are attached firmly to the wall with a patented concealed hanger—no unslightly surface screws to mar their beauty.

The metal contained in Gerity Bathroom Accessories and the finish applied thereon comply with United States Government Specifications—Navy: 46-2-2; Procurement Department: QQ-M-151a; Army: 57-93-2.

ACCESSIBILITY—Gertity Bathroom Accessories are obtainable nationally through the better wholesale hardware and plumbing supply jobbers.

REASONABLE COST—Gerity Bathroom Accessories have been designed and manufactured to put them within easy reach of every individual desiring modern design with a superior finish and who considers first cost in conjunction with permanence. Prices will be found to be surprisingly low when compared to merchandise of equal quality and design.

ADVANTAGES OF DIE CASTINGS—Die casting is the art of producing accurately dimensioned parts by forcing molten metal under pressure into steel moulds or dies. Its advancement is largely due to the development of new metal alloys, special machines and a new technique. These three factors make it possible to produce intricate designs with increased speed which materially lowers costs and at the same time produces perfect castings whose smooth, dense surfaces are ideal for accepting superior finishes of lifetime beauty.

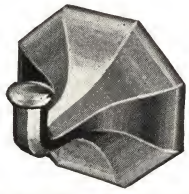
ADVANTAGES OF ZAMAK ALLOY NO. 3—All Gerity Bathroom Accessories are manufactured from Zamak Alloy No. 3. This alloy developed over a period of 17 years by the New Jersey Zinc Co. contains approximately 96% of pure zinc. The alloy is non-corrosive, has great structural strength though light in weight, and possesses the peculiar important attribute of surface fusion with plated finishes. Finishes applied to Zamak Alloy No. 3 so fuse or bond with the metal that the finish is inseparable from the casting under the severest use and exposure. Complete strength data and physical properties of Zamak Alloy No. 3 will be furnished on request.

THE GERITY PROCESS OF MANUFACTURE—After die casting the fixture of Zamak Alloy No. 3, all "flash" is removed by a trim die which leaves the piece free of any excess metal. Each piece is carefully inspected so that none but perfect castings are passed for plating. Next, any necessary machining is completed, such as drilling and topping for set screws or screw holes. The casting is then polished and buffed, leaving the surface of the raw material as bright and clean as though already plated.

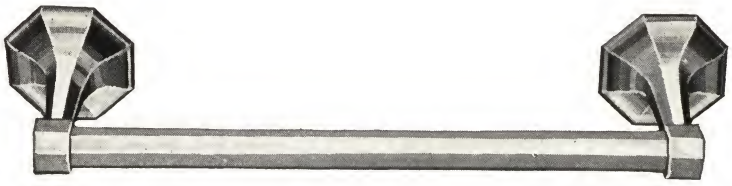
One of the outstanding features of Gerity products is the weight or thickness of the plating. Over the casting is first plated a heavy coat of copper, because copper has the unique attribute of definitely fusing with the zinc alloy, over which it is applied, and also with nickel, which is applied over it. Thus the casting and plating are homogeneous. Over the copper is plated a heavy coat of nickel which is first buffed to a bright finish and then heavily over-plated with chrome. Ordinarily a total plating thickness of .0003 in. is considered good practice. Gerity Bathroom Accessories are plated to a total thickness of .00102 in. (copper, .0004 in.; nickel, .0006 in.; chrome, .00002 in.). Chrome, one of the hardest metals known, brilliant and non-corrosive applied in this substantial thickness, assures a lifetime of severe service without deterioration.

GERITY CONCEALED WALL FASTENERS—All Gerity surface type of bathroom accessories are secured to the wall with a patented concealed fastener eliminating the usual unsightly face screws (see details, page 2). The fastener consists of an inverted steel saucer which is either screwed to the wall or furnished with a back spud to be secured in plaster of Paris or cement. On the inside of the wall flange or base of the fixture is cast a hook which fits over the top of saucer flange. On each side are resting lugs and in the bottom of the base is drilled and tapped a hole into which fits a cone-pointed set screw which secures the fixture rigidly to the saucer. Since the saucer is circular, the fixture can be rotated in its contact and always secured permanently plumb and true with the base flush with the wall surface.

GERITY SURFACE TYPE BATHROOM ACCESSORIES



F1819G Robe Hook

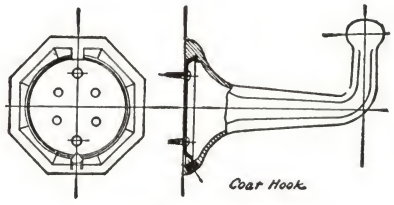


Towel Bars

F3412—12″ Bar
F3415—15″ Bar
F3418—18″ Bar
F3421—21″ Bar
F3424—24″ Bar
F3427—27″ Bar
F3430—30″ Bar
F3436—36″ Bar



F16G Toothbrush Holder

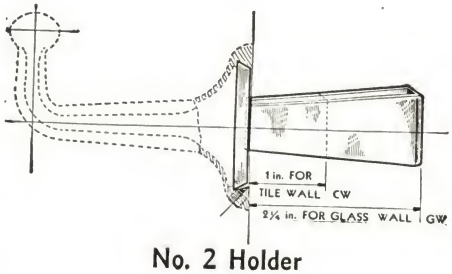


No. 1 Holder

CONCEALED FASTENERS

NO. 1 HOLDER—This holder consists of a circular inverted steel saucer designed to be face screwed to a ground set back of the plaster or attached with toggle or expansion bolts. A cast hook on the back of the fixture base fits over the top edge of the holder and a cone-pointed set screw secures the base at bottom.

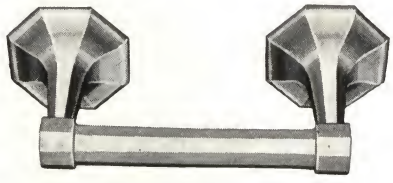
NO. 2 HOLDER—The inverted steel saucer is here provided with a back spud to be secured in plaster of Paris or cement.



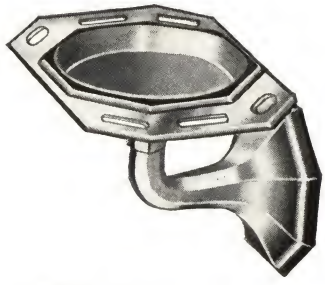
No. 2 Holder



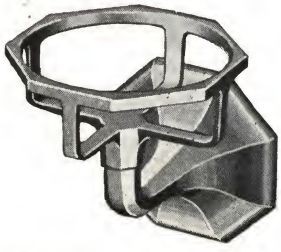
F15G Soap Holder
F14G Soap Holder
With Drain



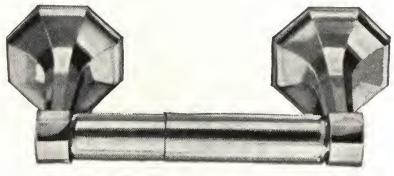
F348G Grab Rail



F129G Toothbrush and Tumbler Holder

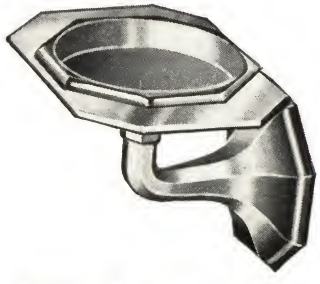


F12G Tumbler Holder

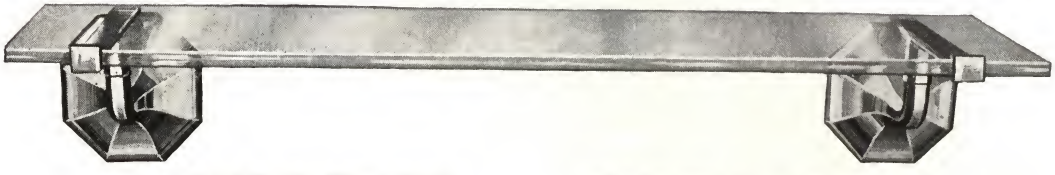


F1115G Toilet Paper Holder
Chrome Roll

F1011G Toilet Paper Holder
Wood Roll



F128G Tumbler Holder



F118G 18″ Glass Shelf

F124G 24″ Glass Shelf

SEE PAGE 3 FOR RECESSED TYPES

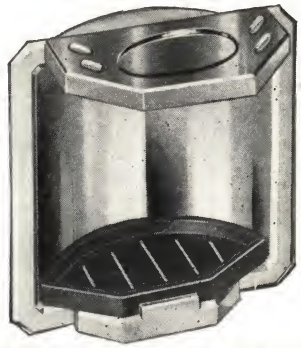
GERITY RECESSED TYPE BATH ROOM ACCESSORIES



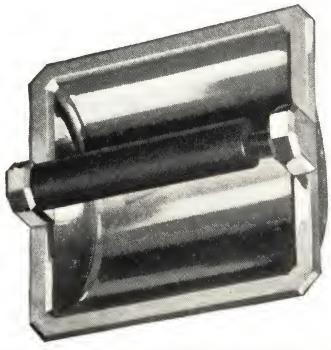
300G Toilet Paper Holder
Wood Roll



310G Soap Holder
With Rubber Tray



325G Tumbler, Toothbrush and Soap Holder
With Rubber Tray



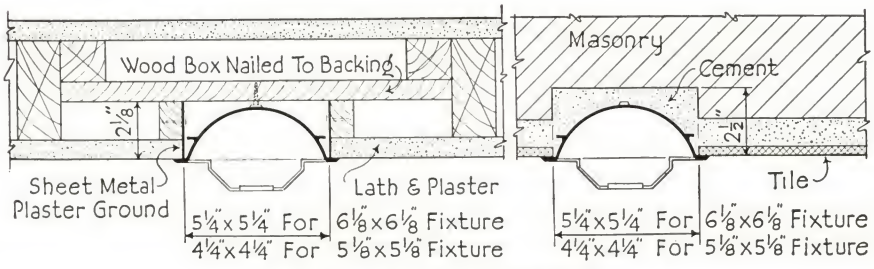
305 G Toilet Paper Holder
Chrome Roll

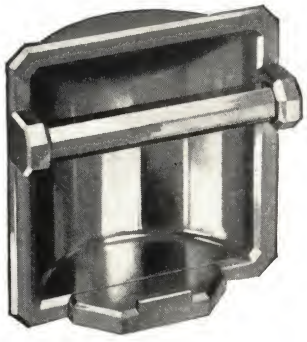
Recessed fixtures illustrated are size 6⅛"x6⅛" overall for 5¼"x5¼" rough-in dim. The following fixtures are available in size 5⅛"x5⅛" overall for 4¼"x4¼" rough-in dim.

311G—Soap Holder, with Rubber Tray
321G—Tumbler Holder
331G—Soap Holder, with Grab Rail and Rubber Tray

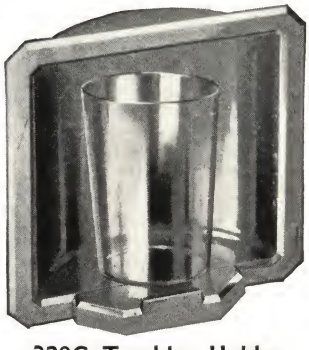
INSTALLATION DETAILS

Below are shown details of two typical installations of the recessed fixtures, one in a standard wood frame partition and the other set in cement in a masonry wall.





330G Soap Holder
With Grab Rail and Rubber Tray



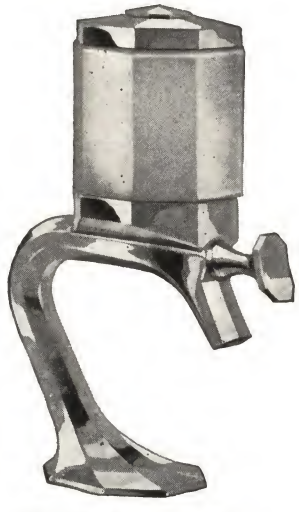
320G Tumbler Holder

SEE PAGE 2 FOR SURFACE TYPES

SOAP DISPENSERS



F400G Wall Type



F450G Pedestal Type

MEMORANDA

BATHROOM ACCESSORIES AND SEAMLESS MEDICINE CABINETS

CATALOG No. 38

HALL-MACK

HALLENSCHEID & McDONALD

FACTORY AND GENERAL OFFICES
LOS ANGELES
1344 West Washington Boulevard

FACTORY BRANCH
SAN FRANCISCO
1159 Howard Street

FACTORY BRANCH
CHICAGO
743 N. Wells Street

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J. W. Dollman
3264 Daytona Avenue, Cincinnati, Ohio

F. L. Farrell
1140 Broadway, New York, N. Y.

George R. Manson
Santa Fe Building, Unit No. 2, Dallas, Tex.

F. J. Leonard
111 15th Street, Denver, Colo.

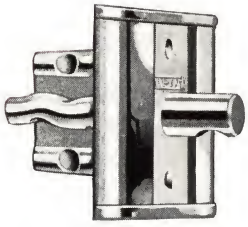
The New 200 Line on pages 2 and 3 is abreast of the best trend in current design. Simple, functional, with an individuality that sets it apart from all other lines of accessories, it has been an overnight success. The design is protected by design patents.

All Aristocrome pieces and parts are made of solid brass, polished to a mirror-like surface, nickel plated and then heavily chromium plated. Projecting pieces are forged from rod brass. This process produces a very much closer grained and denser metal than sand casting. The denser metal takes a higher polish and gives a more brilliant and beautiful chromium finish than ordinary castings.

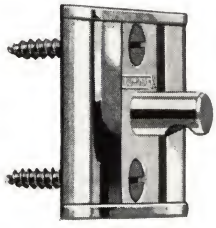
Recessed shells are drawn seamless from heavy rolled sheets of brass. The flange of all recessed pieces is integral with the body, eliminating any possibility of cracks opening between the flange and the body of the fixture. 200 Line fixtures are fully recessed, without any projecting lips or ears.

THE PATENTED ARISTOCROME LOCKING DEVICE

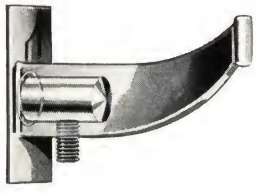
U. S. PATENT NO. 1,989,329



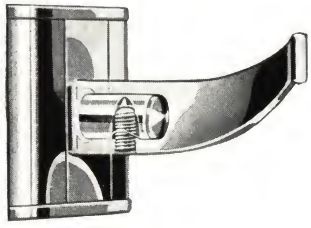
"L" Base Plate



"S" Base Plate



Projecting Part



Complete Fixture

EXCLUSIVE FEATURES: The base of the fixture is fastened directly and tightly to the wall. The projecting part is **locked to the base plate.** It does not depend for security upon pressure against a wall, but has a definite metal to metal lock against the base itself. The projecting part fits accurately into the patented recessed panel of the wall plate. This conceals the installing screws of the "S" type fixture and prevents any possibility of sidewise movement. In the "L" type the base of the fixture is integral with the cement lug. The lug is not screwed, soldered, or welded on, but is forged in one piece with the wall plate. After installation the two types are identical in outward appearance.



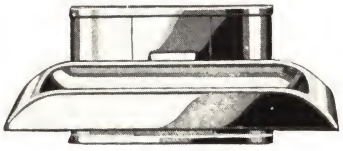
RECTANGULAR TOWEL BAR	18"	24"	30"	36"
No. 290—¾"x½" Chrome Bar	$3.35	$3.60	$3.85	$4.25



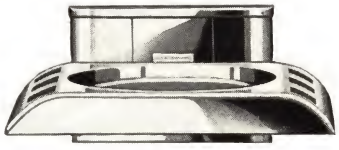
ROUND TOWEL BAR	18"	24"	30"	36"
No. 295—¾" Chrome Bar	$3.30	$3.40	$3.50	$3.65
No. 296—¾" Crystal Bar	3.30	3.40	3.50	3.65



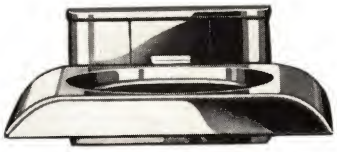
GLASS SHELF	18"	24"	30"
No. 201—5" Crystal Glass	$3.60	$3.75	$3.90
No. 202—5" Opal Glass	4.10	4.25	4.40
No. 203—5" Black Glass	4.10	4.25	4.40



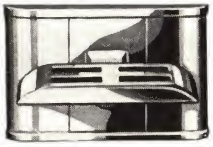
SOAP HOLDER
No. 220—Non-Draining .. $2.10
No. 221—With Drain Holes 2.20
Size: 3"x4"



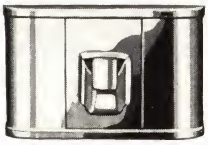
TUMBLER AND TOOTHBRUSH HOLDER
No. 231—Solid Bottom....$2.10
Size: 3"x4"



TUMBLER HOLDER
Design Matches Soap Dish
No. 241—Solid Bottom....$2.10
Size: 3"x4"



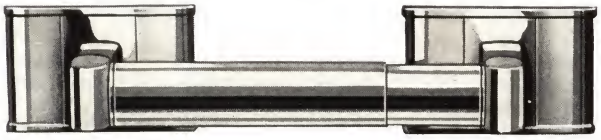
TOOTHBRUSH HOLDER
No. 250—4 Brushes.....$1.35



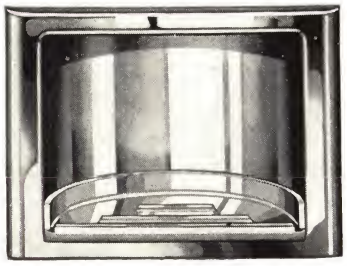
SINGLE HOOK
No. 281—2¼" Projection..$1.25



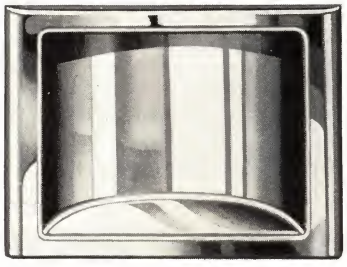
DOUBLE HOOK
No. 283—1½" Projection..$1.50



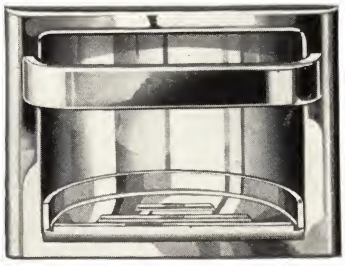
TOILET PAPER HOLDER
No. 270—Chrome Roller $3.35
No. 271—Black Wood Roller 3.00



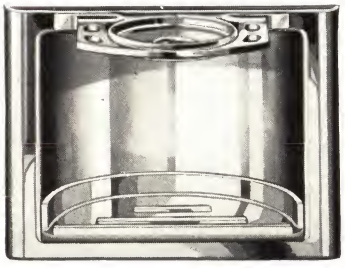
SOAP HOLDER
No. 225—Unbreakable Crystal Soap Tray.....$2.75



TUMBLER HOLDER
No. 245—Full Recess, No Projections $2.50



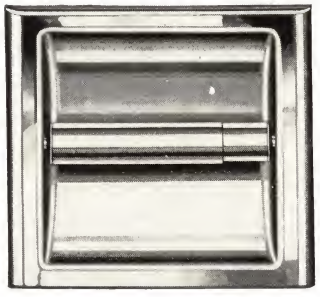
SOAP AND GRAB
No. 265—Unbreakable Crystal Soap Tray.....$3.90



SOAP, TUMBLER AND TOOTHBRUSH HOLDER
No. 235—Unbreakable Tray $4.35

Wood screw installation of 200 Line recessed fixtures is through sides of recess for all pieces except Paper Holder, which is through top and bottom.

Non-draining soap trays can be furnished when specified.



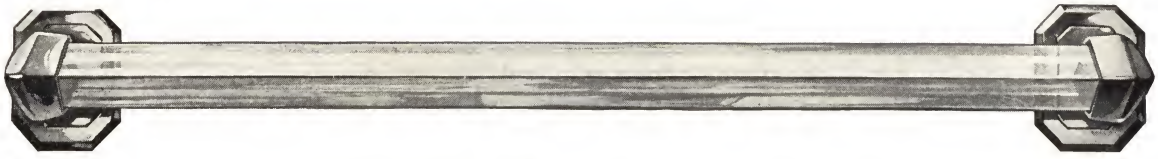
PAPER HOLDER
No. 275—Chrome Roller ...$2.95
No. 276—Black Wood Roller 2.60

WALL OPENINGS:
For Nos. 225-235-245-265: 5¾"x4⅜"x2¾"
For Nos. 275-276: 5⅜"x5⅜"x2¾"

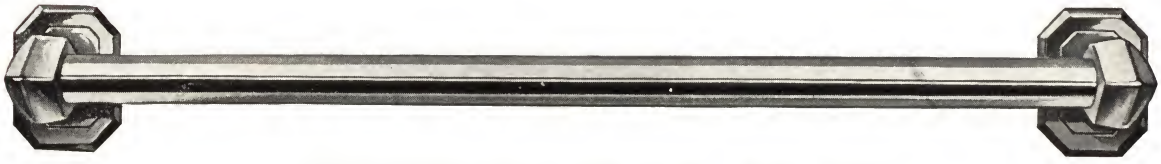
OVERALL OF FLANGE:
For Nos. 225-235-245-265: 7"x5¼"
For Nos. 275-276: 6½"x6"

Aristocrome accessories are made in two different types. In ordering specify the type desired.
If fixtures are to be installed with screws add "S" to catalog number.
If fixtures are to be installed by setting in cement add "L" to catalog number.

The 300 Line, on pages 4 and 5, within a few years achieved the largest national sale of all high-grade chrome accessories. The outstanding success of these fixtures has attracted many imitators, who have not, however, been able to imitate the patented Aristocrome locking device nor the superb design and finish of the Hall-Mack craftsmen.



SQUARE TOWEL BAR	18″	24″	30″	36″
No. 390—⅞″ Chrome Bar	$3.00	$3.25	$3.50	$3.90
No. 391—⅞″ Crystal Bar	3.50	3.75	4.00	4.50
No. 392—⅞″ Opal Glass Bar	4.50	4.75	5.00	5.50
No. 393—⅞″ Black Glass Bar	4.50	4.75	5.00	5.50



ROUND TOWEL BAR	18″	24″	30″	36″
No. 395—¾″ Chrome Bar	$2.90	$3.00	$3.10	$3.25
No. 396—¾″ Crystal Bar	2.90	3.00	3.10	3.25



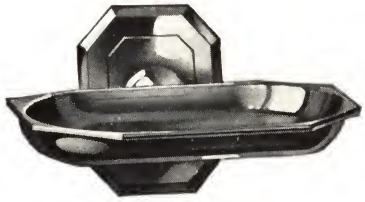
GLASS SHELF	18″	24″	30″
No. 301—5″ Crystal Glass	$3.10	$3.25	$3.40
No. 302—5″ Opal Glass	3.60	3.75	3.90
No. 303—5″ Black Glass	3.60	3.75	3.90



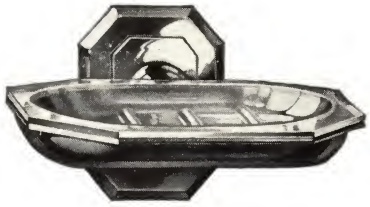
COMBINATION SHELF	18″	24″	30″
Holds Soap, Tumbler and Brushes			
No. 311—5″ Crystal Glass	$5.60	$5.75	$5.90
No. 312—5″ Opal Glass	6.10	6.25	6.40
No. 313—5″ Black Glass	6.10	6.25	6.40



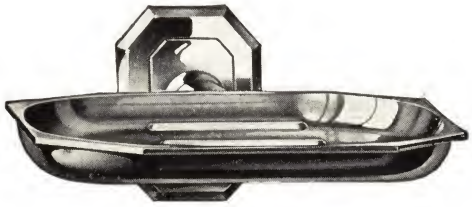
ROLLER TOWEL BAR
For Paper Towel Rolls
No. 397—¾″x12″ Chrome Roller.....$3.75



SOAP HOLDER
No. 320—Non-Draining . . . $1.65
No. 321—With Drain Holes 1.75
Size: 3"x4"



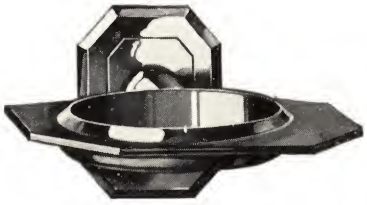
SOAP HOLDER
No. 322—With Crystal Tray $1.90
Size: 3"x4"



LARGE SOAP HOLDER
No. 323—Non-Draining $2.50
No. 324—With Drain Holes. 2.60
Size: 3¾"x5¼"



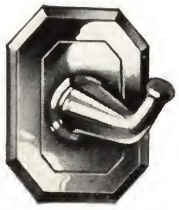
TUMBLER AND TOOTHBRUSH HOLDER
No. 330—Ring Type $1.65
No. 331—Solid Bottom. . . . 1.80
Size: 3"x4"



TUMBLER HOLDER
Design Matches Soap Dish
No. 340—Ring Type $1.65
No. 341—Solid Bottom 1.80
Size: 3"x4"



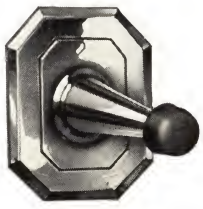
RAZOR STROP HOOK
No. 380 . . . $ .95
2¼" Long



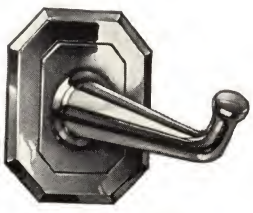
SINGLE ROBE HOOK
No. 381 . . . $ .95
2½" Long



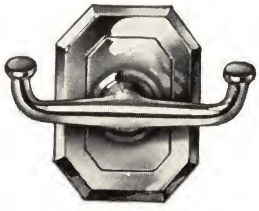
TOOTHBRUSH HOLDER
No. 350 . . . $1.25



DOOR STOP
No. 384 . . . . . $1.00
3" Long



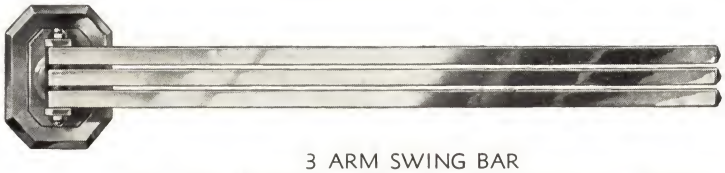
TOWEL PIN
No. 382 . . . . . $1.35
5" Long



DOUBLE ROBE HOOK
No. 383 . . . . . $1.25



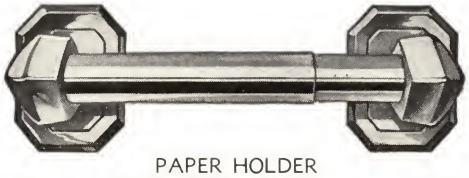
TOWEL HOOK
No. 389 . . . $2.75



3 ARM SWING BAR
No. 399—5/16" Square Chrome Bars—12" Long . . . $2.50

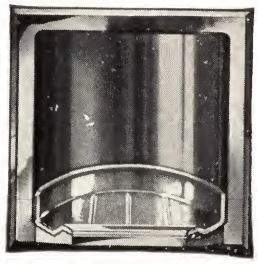


GRAB BAR
No. 390—8" ⅞" Square, as illustrated. $2.75
No. 395—8" ¾" Round, not illustrated. 2.75

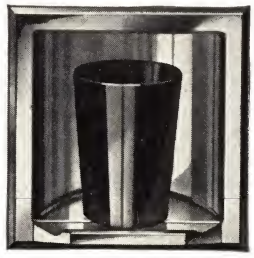


PAPER HOLDER
No. 370—Chrome Roller $2.85
No. 371—Wood Roller 2.50

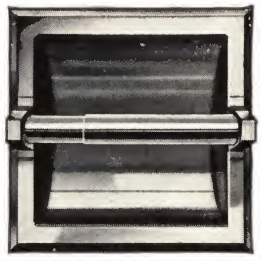
Aristocrome accessories are made in two different types. In ordering specify the type desired.
If fixtures are to be installed with screws or toggle bolts add "S" to catalog number.
If fixtures are to be installed by setting in cement add "L" to catalog number.



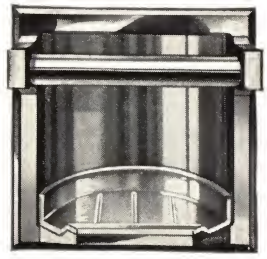
SOAP HOLDER
No. 325—Unbreakable
Crystal Tray $2.60



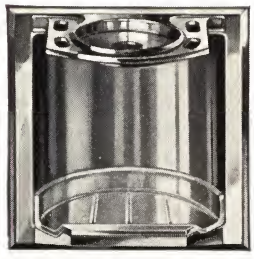
TUMBLER HOLDER
No. 345—Tumbler
Not Included $2.35



PAPER HOLDER
No. 375—Chrome Roller $2.85
No. 376—Wood Roller .. 2.50



SOAP AND GRAB
No. 365—Unbreakable
Crystal Tray $3.70



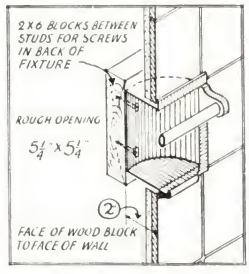
SOAP, TUMBLER AND
BRUSH HOLDER
No. 335—Unbreakable
Crystal Tray $3.90



SPONGE HOLDER
No. 355 . . . . . $4.50



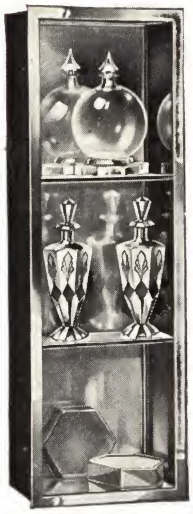
PAPER HOLDER
No. 378—Folded Paper $2.50
Overall: 4¾"x6"
Opening: 4½"x5½"x2"



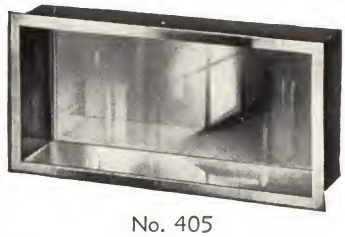
"S" TYPE
INSTALLATION

All numbers above, except 378, are 6⅛"x6⅛" overall and take wall opening 5¼"x5¼"x2".
Non-draining soap trays for Nos. 325-335-365 can be furnished when specified.
Accessories above are made in two different types. In ordering specify the type desired.
If fixtures are to be installed with screws add "S" to catalog number.
If fixtures are to be installed by setting in cement add "L" to catalog number.

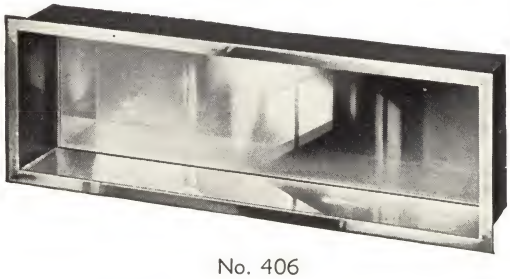
RECESS MIRROR SHELVES



No. 407
(Toiletries not included)



No. 405



No. 406



No. 407

No.	Wall Opening	Overall of Chromium Plated Flange	Usually Installed	Installed by Wood Screws	Price
405	17¼"x8½"x4½"	17¾"x9"	Over lavatory	Through sides	$ 9.50
406	25½"x8½"x4½"	26"x9"	Over bathtub	Through sides	11.00
407	8⅜"x25½"x4½"	8¾"x26"	At sides of cabinet or where desired	Through sides	14.50

One or more of the mirrored shelves above will add strikingly modern beauty to any bathroom. Their decorative value as well as their utility in holding miscellaneous toiletries cannot be exaggerated. No. 407 is shown twice to suggest its use as a pair, one on either side of the medicine cabinet. It is just as striking used singly wherever a decorative and colorful niche is desired.

CONCEALED LAVATORY UNIT

U. S. Patent No. 2,039,065



No. 338—Open



No. 338—Turning



No. 338—Closed . . . $9.80

An outstanding feature of the Hall-Mack line. One fixture takes the place of three. Soap holder, tumbler holder, and tooth brush holder are on a panel which revolves so as to entirely conceal these necessary utilities when not in use. Panel revolves in seamless chromium plated brass housing. The great success of this fixture has made possible a substantial price reduction on the original solid brass chromium plated model No. 338. In addition, a new low priced design, No. 337, is shown at right.

Wall opening for both models: 6½"x8"x3½"
Size overall of flange, both models: 7⅜"x8⅝"

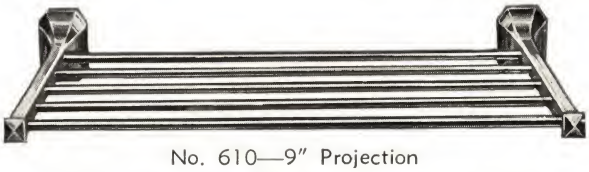
Both designs are made in two types: "L" type, installed by setting in cement. "S" type installed by wood screws through sides. Wood buck must be provided at either side of opening to take screws. Specify type when ordering.

AT RIGHT, NO. 337—Chromium plated brass housing, with black bakelite revolving unit. Smooth side of revolving panel completely covered by chrome plated sheet brass. When closed, appearance is very similar to all-chrome fixture above.



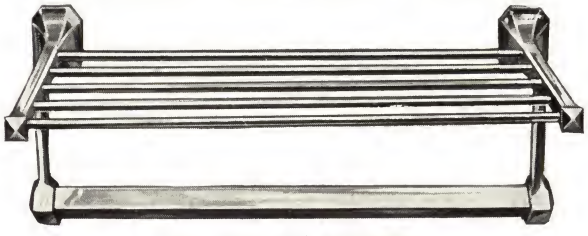
No. 337—Turning . . . $6.50

TOWEL SUPPLY SHELVES



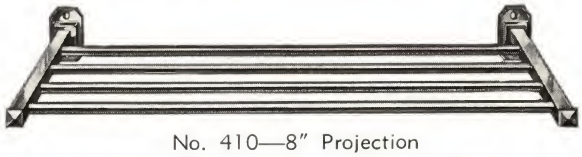
No. 610—9" Projection

Solid, Cast Brass Brackets. Five cross bars. "S" Type for concealed screw or toggle bolt installation. "L" Type for cement installation.
18" . . . $7.75 24" . . . $8.00 30" . . . $8.25



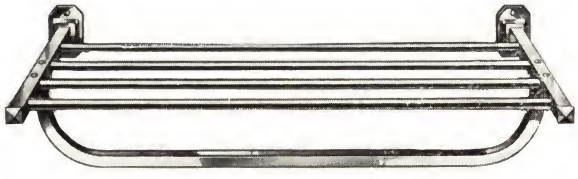
No. 615—9" Projection

Solid, Cast Brass Brackets. Five cross bars for towel supply. ⅞" square bar below.
"S" Type for concealed screw or toggle bolt installation. "L" Type for cement installation.
18" . . . $11.25 24" . . . $11.75 30" . . . $12.50



No. 410—8" Projection

Wrought Brass Brackets. Four cross bars. Exposed screw installation is standard. Fitted with cement lugs on special order.
18" . . $3.50 24" . . $3.75 30" . . $4.00



No. 415—8" Projection

Wrought Brass Brackets. Four cross bars for towel supply. ½" square bar below. Exposed screw installation is standard. Fitted with cement lugs on special order.
18" . . $5.00 24" . . $5.50 30" . . $6.00

SEAMLESS CABINETS

Every Hall-Mack cabinet is made without a single seam. Drawn on a huge press from one sheet of heavy steel, the cabinet is formed complete in this operation. There is absolutely no clinching, crimping, spot-welding, soldering or gas welding. Hall-Mack seamless medicine cabinets are offered in every price range—from the finest cabinets made, to the most economical.

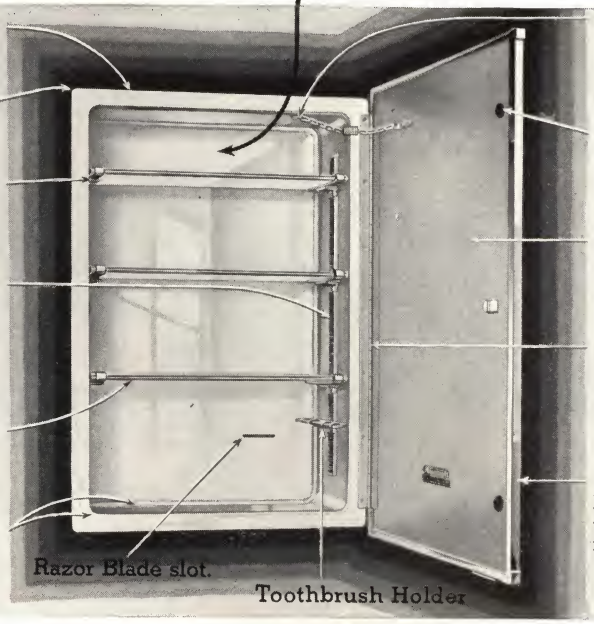
SERIES "P" cabinets, illustrated on pages 10 to 16, have vitreous porcelain interiors, the lifetime finish which Hall-Mack pioneered and perfected. This is the same finish as on a bath tub or lavatory. It can be thoroughly cleaned with a damp cloth and will last indefinitely. Every construction detail is in keeping with the fine porcelain interior. Hall-Mack Porcelain cabinets are priced no higher than better-grade enameled cabinets of competitive lines.

SERIES "A," illustrated on pages 16 to 19, offers a high-grade baked enamel line for jobs requiring cabinets lower in price than Series "P." The seamless bodies are finished in oven-baked enamel. Glass shelves are fully adjustable. Doors, hung on continuous hinge, have either chrome-plated brass binding or beveled-edge mirrors.

SERIES "F" cabinets on page 20 are low-priced cabinets. Low price has been achieved without sacrificing substantial construction or attractive appearance.

SERIES "CR" cabinets on page 21 are low-priced cabinets similar to Series "F" in design and construction, but fitted with first-quality crystal mirrors.

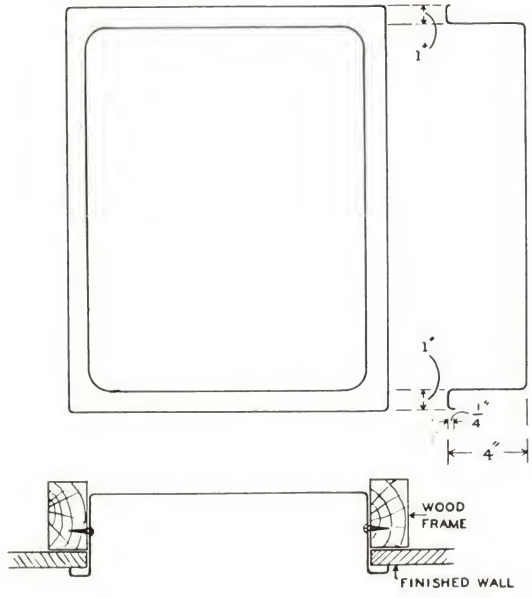
SEAMLESS *Porcelain* INTERIOR



INSTALLATION

All Hall-Mack Seamless Cabinets should be installed **after** the walls are completely finished. Installation is by four wood screws through the sides of the recessed case.

Leave wall opening of size indicated in catalog. Finish wall level to edge of opening. Tile not flush with plaster line must either completely surround the wall opening or may be dropped below opening, keeping 2″ or more away from wall opening at all points.



ROUND CABINETS

To facilitate the installation of Hall-Mack Circular Cabinets (page 12), four curved wood blocks are furnished free, and packed with each cabinet. To use these blocks, simply make a wall opening 20½″ square, and nail a block in each corner before lathing. Finish wall to edge of circular opening created by the blocks.

ELECTRICAL INSTALLATION FOR LIGHT CABINETS

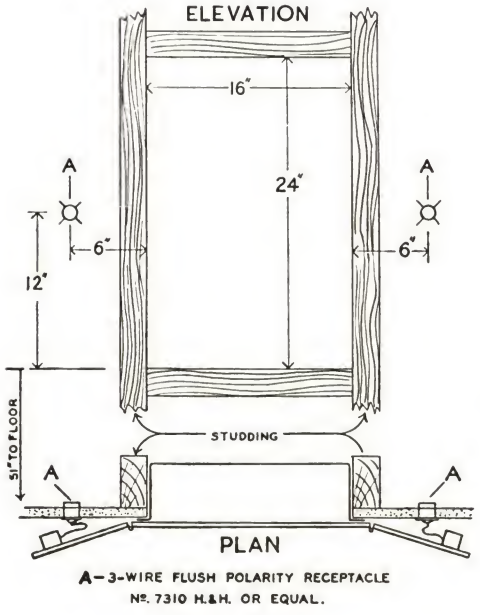


Fig. 1
FOR WING LIGHTS

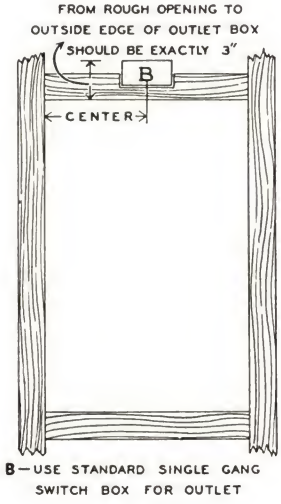


Fig. 3
FOR TOP LIGHT

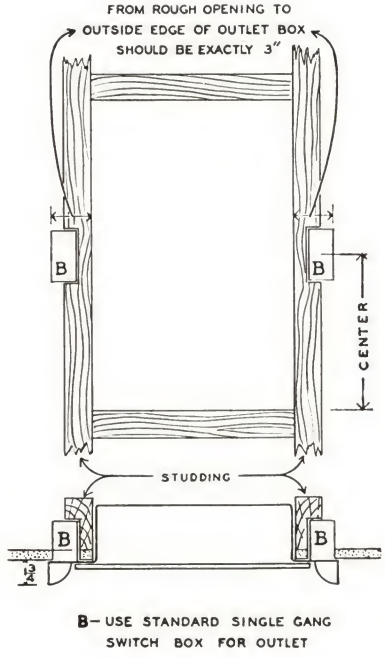
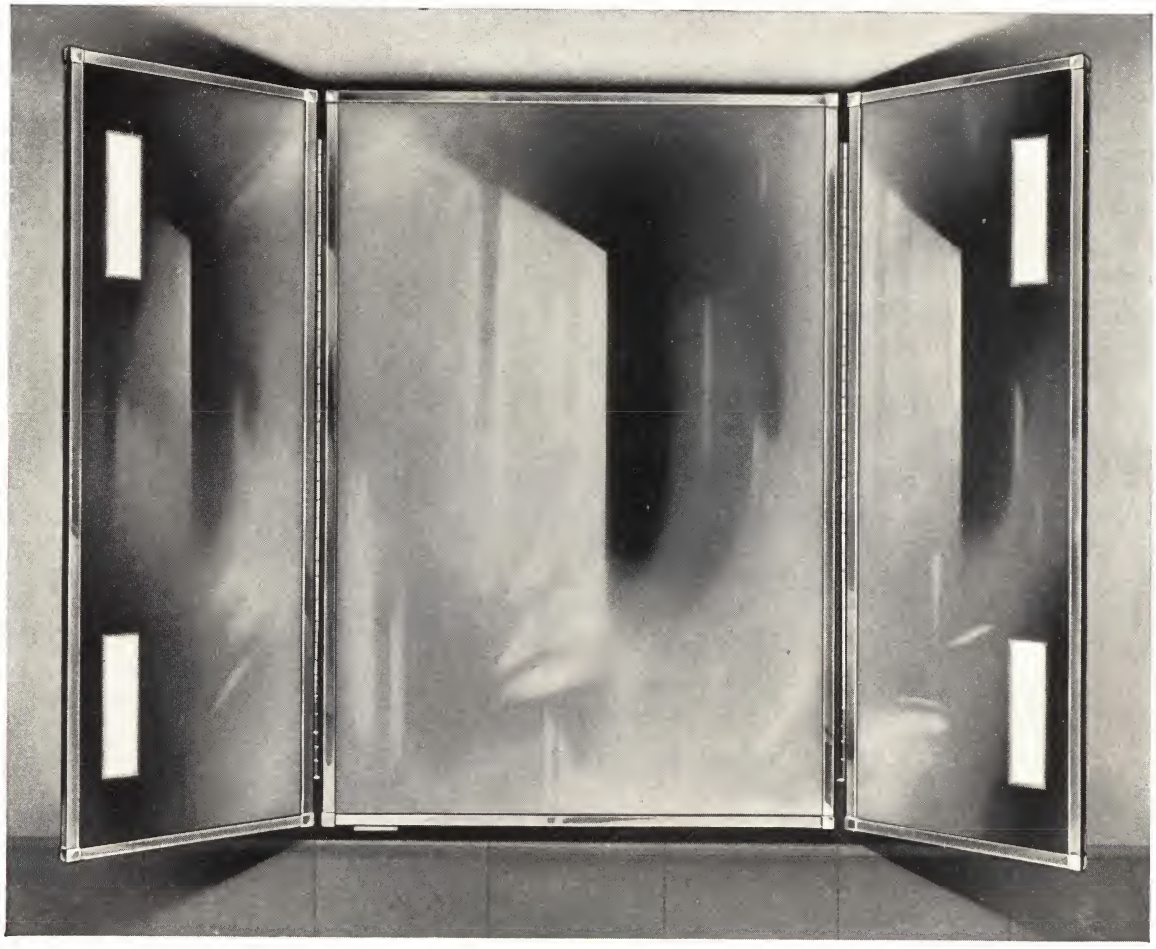


Fig. 2
FOR SIDE LIGHTS



ELECTRICALLY LIGHTED VANITY WING CABINET

No.	Center Mirror	Wing Mirrors	Wall Opening	Width Overall	Rough-in & Electrical Installation Data	Price
LWP1826C	18″x26″	8″x26″	16″x24″x4″	35½″	Page 9, Fig. 1	$65.00

A masterpiece of durable construction and smart design. Heavy continuous hinges permit the swinging of the illuminated side wings at any angle for clear front, side and rear view. One-piece seamless box of genuine porcelain, fused on heavy gauge Armco iron. An everlastingly new and sanitary medicine cabinet as well as a magnificent toilet, make-up and shaving mirror of real utility. No wiring or electrical housing of any kind inside of seamless porcelain cabinet. Copper backed mrrors guaranteed against silver spoilage.

SANITARY *PORCELAIN* INTERIOR



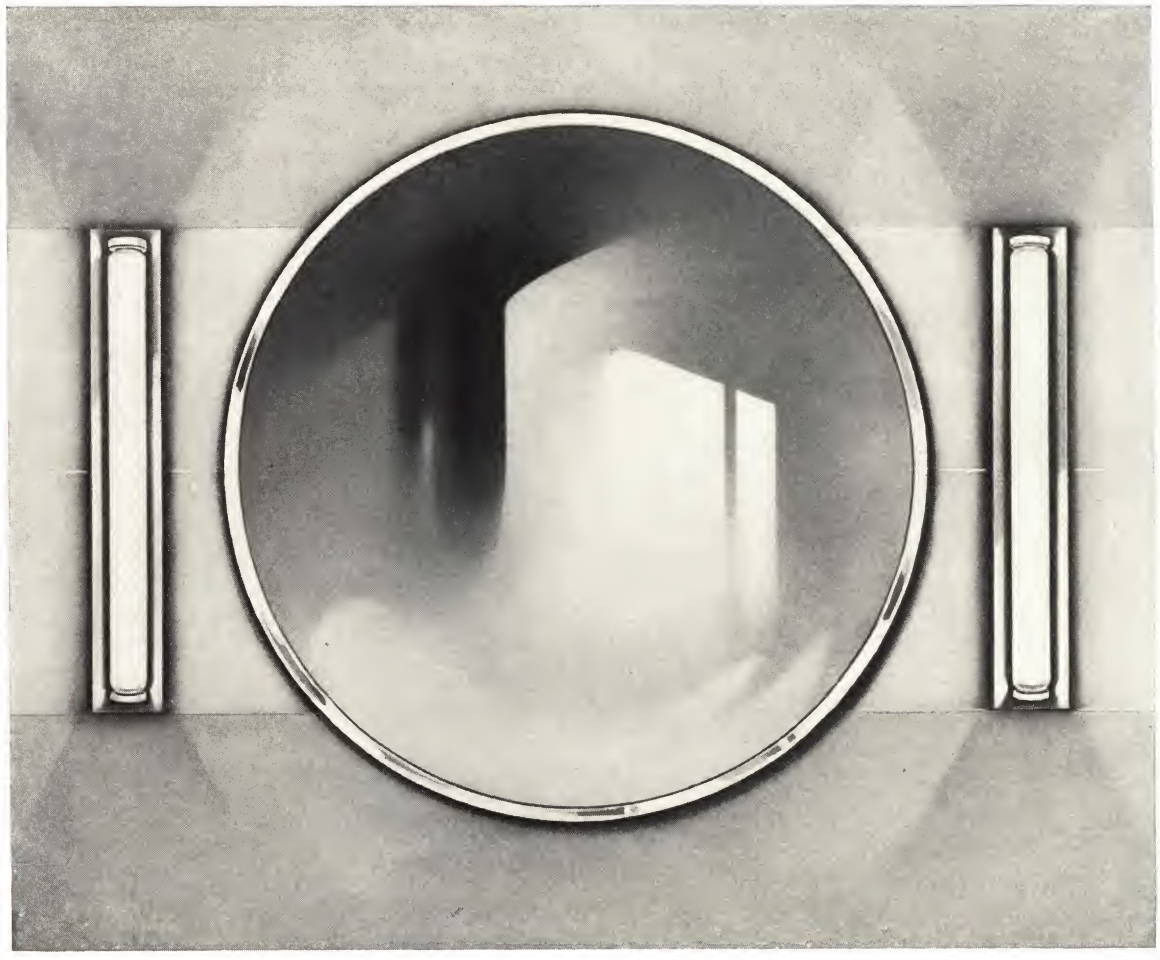
ELECTRICALLY LIGHTED REFLECTOR CABINET

No.	Mirror	Wall Opening	Width Overall	Rough-in & Electrical Installation Data	Price
LP1826C	18″x26″	16″x24″x4″	23″	Page 9, Fig. 2	$55.00

The last word in facial illumination—without glare or shadow. Adequate room illumination. Heavy chrome plated brass channel frame all around the mirror, eliminating breakage and insuring long life. No conduit box or electrical housing of any kind inside of seamless porcelain cabinet. Copper backer mirror guaranteed against silver spoilage.

SANITARY *PORCELAIN* INTERIOR

27
94



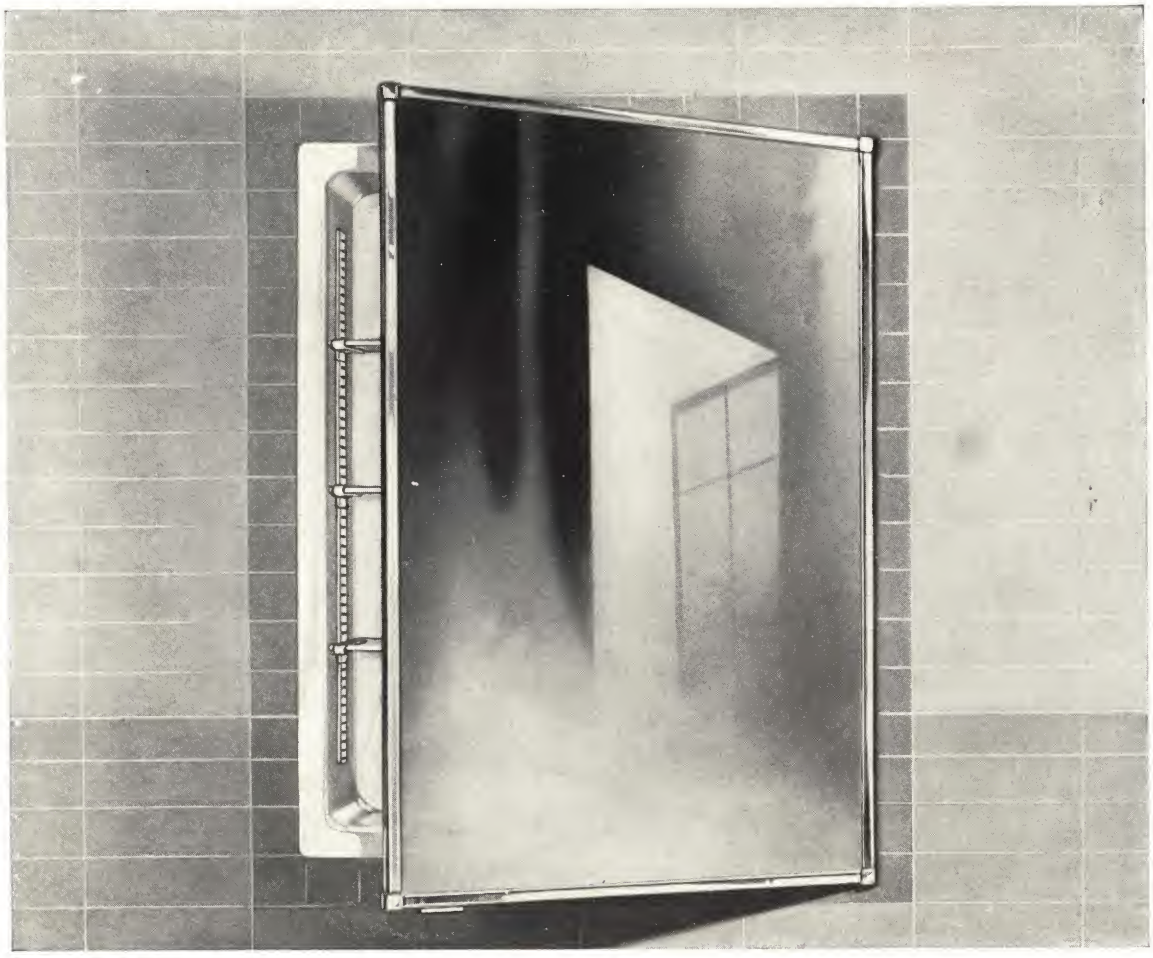
No.	Circular Mirror	Circular Wall Opening	Price
PR24C	24" Diameter	20½" Diameter (See page 9)	$27.50

An outstanding Hall-Mack Medicine cabinet. One-piece seamless box of genuine porcelain, fused on heavy gauge Armco iron. Mirror door completely bound with chromium plated brass channel and hung on extra heavy hinge. Three glass shelves with rolled front edges. Copper backed mirror guaranteed against silver spoilage. A distinctive, quality cabinet—reasonably priced.

For description of light fixtures at either side of cabinet see page 17.

On special order identical wall mirror can be supplied with metal backing and concealed hanger, but without cabinet. In ordering Wall Mirrors add "M" to number above.

SANITARY *PORCELAIN* INTERIOR



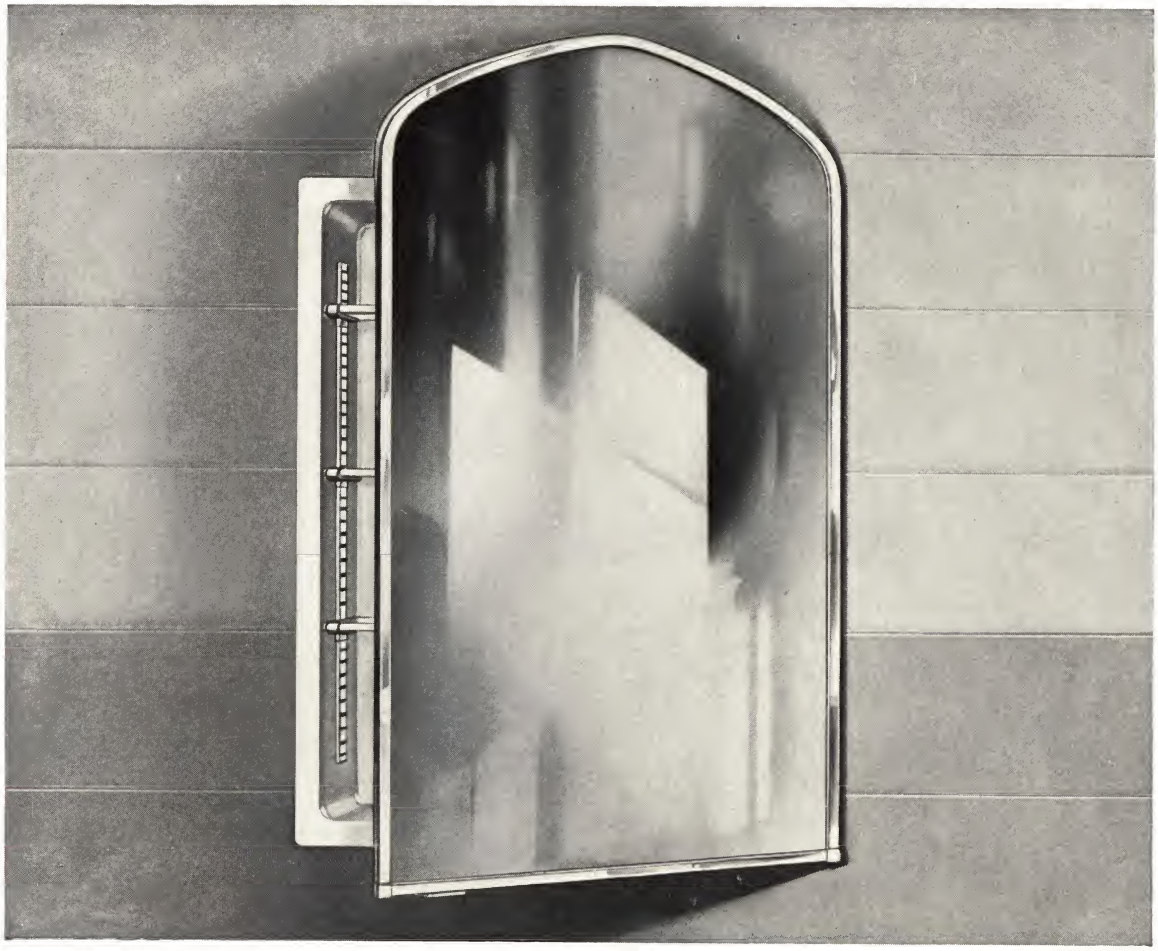
No.	Mirror	Wall Opening	Price
P1622C	16″x22″	14″x20″x4″	$19.50
P1826C	18″x26″	16″x24″x4″	22.50
P2030C	20″x30″	18″x28″x4″	28.00

The most popular Hall-Mack model for better grade residence work. One-piece seamless box of genuine porcelain, fused on heavy gauge Armco iron. Mirror door completely bound with chromium plated brass channel and hung on heavy continuous hinge. Adjustable glass shelves with rolled front edges. Copper backed mirror guaranteed against silver spoilage.

On special order identical wall mirrors can be supplied with metal backing and concealed hanger, but without cabinet. In ordering Wall Mirrors add "M" to number above.

SANITARY *PORCELAIN* INTERIOR

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94



No.	Mirror	Wall Opening	Price
P1626C	16″x26″	14″x20″x4″	$21.50
P1830C	18″x30″	16″x24″x4″	24.50
P2034C	20″x34″	18″x28″x4″	31.00

A Mirror Door with formed top of conservative design. One-piece seamless box of genuine porcelain fused on heavy gauge Armco iron. Adjustable glass shelves with rolled front edges. Mirror Door completely bound with chromium plated brass channel and hung on heavy continuous hinge. Copper backed mirror guaranteed against silver spoilage.

SANITARY *PORCELAIN* INTERIOR



No.	Mirror	Wall Opening	Price
P1626	16″x26″	14″x20″x4″	$20.00
P1830	18″x30″	16″x24″x4″	23.50
P2034	20″x34″	18″x28″x4″	29.00

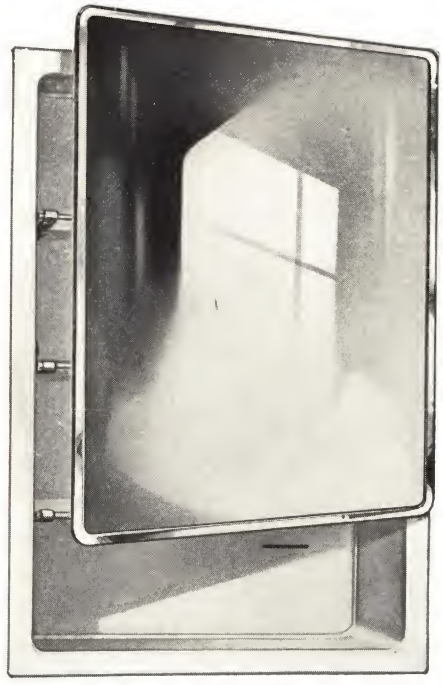
A Venetian Mirror design which has found wide favor among owners and builders. Construction details of cabinet identical with those on opposite page. The etched and beveled mirror is mounted with polished monel metal clips to avoid unsightly rosettes and to eliminate drilling of holes which weaken the glass. Copper backed mirror guaranteed against silver spoilage.

On special order identical wall mirrors can be supplied with metal backing and concealed hanger, but without cabinet. In ordering Wall Mirrors add "M" to number above.

SANITARY *PORCELAIN* INTERIOR

27
94

PORCELAIN HOTEL CABINETS WITH CHROME FRAME DOORS



No other medicine cabinet receives the continuous hard use and abuse of cabinets installed in hotels, college dormitories, hospitals and similar semi-public buildings. As a result, the ordinary hotel type cabinet within a few months after installation has been rendered unsightly and unsanitary by the paint enamel being nicked and chipped in a dozen different places.

Hall-Mack Porcelain Hotel Cabinets guarantee that they will retain permanently their original beauty for the following reasons:

1—The one-piece seamless body is drawn from extra heavy Armco iron. No spot-welding, no clinchings, no crimpings.

2—The finish on the box is a fired Vitreous porcelain, the same as on a bath tub or lavatory. It can be thoroughly cleaned with a damp cloth and will last indefinitely.

3—The mirror door is completely bound in chromium plated brass channel, the finish that cannot chip, tarnish or discolor, and never needs polishing.

4—Copper backed mirror GUARANTEED against silver spoilage.

LIFETIME PORCELAIN CABINET

No.	Mirror	Wall Opening	Price
P1616C	16″x16″	14″x20″x4″	$17.50
P1819C	18″x19″	16″x24″x4″	20.50

BAKED ENAMEL CABINET

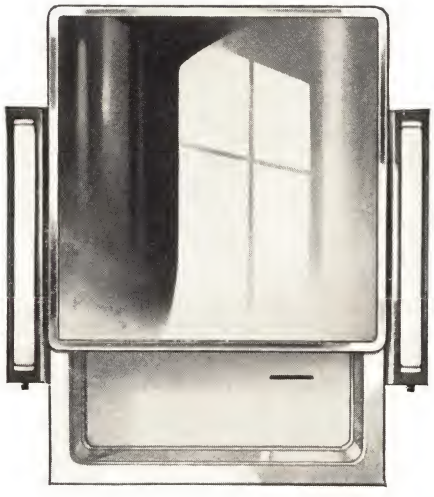
No.	Mirror	Wall Opening	Price
A1616C	16″x16″	14″x20″x4″	$15.00
A1819C	18″x19″	16″x24″x4″	17.75

BAKED ENAMEL HOTEL CABINETS

For the low priced job, the Hall-Mack Seamless Hotel Cabinet is also made in oven baked enamel finish instead of porcelain. All other construction details are identical with the Porcelain Cabinet.

RAZOR BLADE SLOT

All models of Hotel Cabinets have a slot for easy disposal of used razor blades.



HOTEL CABINETS WITH LIGHTS

Hotel cabinets can be made up, on special order, with 12″ Lumiline side light fixtures, shown at left, or with top light fixture as shown at right. Light fixture is made of brass, beautifully chromium plated. Prices on request.



SMART, DISTINCTIVE LIGHT CABINETS AT A MODERATE PRICE



No. A1622C-L and No. 1826C-L. An ideal cabinet for shaving, make-up and bathroom illumination. Cabinet is drawn seamless from one piece of steel and finished in oven baked enamel. Adjustable glass shelves. Mirror door hung on continuous hinge and completely bound with chromium plated brass channel. 12" Lumiline lighting fixture with 16"x22" mirror, and 18" Lumiline fixture with 18"x26" mirror. Light fixtures made of brass, beautifully chrome plated. Light bulbs not included, but can be furnished.

AT LEFT
NO. A1622C-L
NO. A1826C-L

AT RIGHT
NO. A1622C-TL



No. A1622C-TL. An attractive but economical light cabinet for the small bathroom or powder room. Construction details are identical with cabinet above at left.

The chromium plated brass shade over the bulb is an extra which must be ordered separately. Similar shades can be furnished for any Hall-Mack Lumiline Light Cabinet.

No.	Mirror	Width Overall	Wall Opening	Wiring Data Page 9	Price
A1622C-L	16"x22"	21"	14"x20"x4"	Fig. 2	$25.75
A1826C-L	18"x26"	23"	16"x24"x4"	Fig. 2	30.50
A1622C-TL	16"x22"	..	14"x20"x4"	Fig. 3	21.25



NO. F1624C-L

Cabinet details are identical with Series "F" cabinets on page 20. There is no wiring or electrical housing of any kind to mar the inside of these seamless cabinets.



NO. F1622C-TL

No.	Mirror	Wall Opening	Price
F1624C-L	16"x24"	14"x20"x4"	$23.50
F1622C-TL	16"x22"	14"x20"x4"	18.50



L-12
$3.75

L-18, $4.00

Overall, L-12: 2¼"x12¾"
Overall, L-18: 2¼"x18¾"

Chromium plated brass base, with switch.

For wall outlet use standard single gang switchbox. Light bulbs not included, but can be furnished.



An ever-growing preference for chrome bound plain mirrors makes these cabinets among the most popular designs. Cabinet body is drawn seamless from one piece of steel and finished in oven baked enamel. Mirror door is hung on heavy continuous hinge and completely bound with chrome plated brass channel. Adjustable glass shelves with rolled front edges. Copper backed mirror guaranteed against silver spoilage.

No.	Mirror	Wall Opening	Price
A1622C	16″x22″	14″x20″x4″	$15.75
A1826C	18″x26″	16″x24″x4″	19.00

A chrome bound mirror with graceful formed top is shown at the right. All construction details are identical with cabinet above.



No.	Mirror	Wall Opening	Price
A1624C	16″x24″	14″x20″x4″	$16.50
A1828C	18″x28″	16″x24″x4″	20.00



An attractive design for those who prefer beveled edge Venetian Mirror to chrome binding. Mirror is mounted with polished monel metal clips to avoid unsightly rosettes and to eliminate drilling of holes which weaken the glass. Cabinet body is drawn seamless from one piece of steel, and finished in oven baked enamel. Mirror door is hung on heavy continuous hinge. Adjustable glass shelves with rolled front edges. Copper backed mirror guaranteed against silver spoilage.

No.	Mirror	Wall Opening	Price
A1622	16″x22″	14″x20″x4″	$15.00
A1826	18″x26″	16″x24″x4″	18.50

A beveled edge Venetian Mirror with formed top is shown at the right. All construction details are identical with cabinet above.



No.	Mirror	Wall Opening	Price
A1624	16″x24″	14″x20″x4″	$15.75
A1828	18″x28″	16″x24″x4″	19.50

27
94

SERIES "F" cabinets illustrated on this page are economical cabinets in which low price has been achieved without sacrificing substantial construction or attractive appearance. Copper backed plate glass mirrors are guaranteed against silver spoilage. Seamless one-piece cabinet is finished in oven baked enamel. Rolled edge glass shelves. Three shelves furnished with 18" mirror cabinets. Chromium plated or silvertone frame on three sides of mirror is integral with door. Venetian mirrors held by polished monel metal clips.



WITH *Chrome Frame* MIRROR

AT LEFT

No.	Mirror	Opening	Price
F1622C	16"x22"	14"x20"x4"	$13.00
F1826C	18"x26"	16"x24"x4"	16.25

AT RIGHT

No.	Mirror	Opening	Price
F1624C	16"x24"	14"x20"x4"	$13.50
F1828C	18"x28"	16"x24"x4"	16.75





WITH *Silvertone Frame* MIRROR

AT LEFT

No.	Mirror	Opening	Price
F1622S	16"x22"	14"x20"x4"	$12.25
F1826S	18"x26"	16"x24"x4"	15.50

AT RIGHT

No.	Mirror	Opening	Price
F1624S	16"x24"	14"x20"x4"	$12.75
F1828S	18"x28"	16"x24"x4"	16.00





WITH *Venetian* MIRROR

AT LEFT

No.	Mirror	Opening	Price
F1622	16"x22"	14"x20"x4"	$12.75
F1826	18"x26"	16"x24"x4"	15.75

AT RIGHT

No.	Mirror	Opening	Price
F1624	16"x24"	14"x20"x4"	$13.25
F1828	18"x28"	16"x24"x4"	16.25



SERIES "CR" cabinets shown below are similar to Series "F" cabinets in design and construction, except that they are fitted with first quality crystal mirrors. Seamless one-piece cabinet is finished in oven baked enamel. Rolled edge glass shelves. Chromium plated or silvertone frame on three sides of mirror is integral with door. Venetian mirrors held by polished monel metal clips, in order to eliminate drilling of holes which weaken the glass.



WITH *Chrome Frame* MIRROR

AT LEFT

No.	Mirror	Opening	Price
CR1622C	16"x22"	14"x20"x4"	$11.25

AT RIGHT

No.	Mirror	Opening	Price
CR1624C	16"x24"	14"x20"x4"	$11.50





WITH *Silvertone Frame* MIRROR

AT LEFT

No.	Mirror	Opening	Price
CR1622S	16"x22"	14"x20"x4"	$10.50

AT RIGHT

No.	Mirror	Opening	Price
CR1624S	16"x24"	14"x20"x4"	$10.75





WITH *Venetian* MIRROR

AT LEFT

No.	Mirror	Opening	Price
CR1622	16"x22"	14"x20"x4"	$10.75

AT RIGHT

No.	Mirror	Opening	Price
CR1624	16"x24"	14"x20"x4"	$11.00



BATHROOM ACCESSORIES AND SEAMLESS MEDICINE CABINETS

CATALOG No. 38

HALL-MACK

HALLENSCHEID & McDONALD

FACTORY AND GENERAL OFFICES
LOS ANGELES
1344 West Washington Boulevard

FACTORY BRANCH
SAN FRANCISCO
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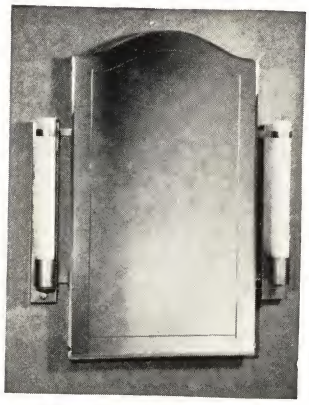
SECTION 27

CONTINUED ⟶

HESS WARMING & VENTILATING CO.

Hess Mirrored Bathroom Cabinets and Lavatory Mirrors

1211 South Western Avenue, CHICAGO, ILL.



L-1830 Tube-O-Lite Cabinet

HESS TUBE-O-LITE CABINETS

Standard tubular Mazda lamps inside the tubes produce a long source of light from both sides of the cabinet. Lights may also be turned to a soft glow for night light. The tubes produce an abundance of light, sufficient for bathrooms of ordinary size without additional lighting facilities.

Venetian "Seal-Bak" Mirror, guaranteed against discoloration may be plain or miter line decoration at customer's option. Cabinet comes completely wired with switch, ready to install and connect. Lamps are not included but may be obtained from any lamp supply house. Use Mazda No. T-8 40 watts.

Telegraph code word	No.	Type	Frame	Mirror, size, in.	Weight, lb.	Wall opening, in.
Snaplite	L-1828	Simplicity	None	18x27 1/2	50	15x24x4 1/4
Fraslite	LF-828	Simplicity	Framed	18x27 1/2	52	15x24x4 1/4
Snolite	L-2030	Simplicity	None	20x30	60	17x26x4 1/4
Frostlite	LF-2030	Simplicity	Framed	20x30	62	17x26x4 1/4
Valite	L-1830	Venetian	None	18x30	55	15x24x4 1/4
Verblite	LF-1830	Venetian	Framed	18x30	58	15x24x4 1/4
Viewlite	L-2032	Venetian	None	20x32	65	17x26x4 1/4
Fralite	LF-2032	Venetian	Framed	20x32	70	17x26x4 1/4

Depth of return flange—3/4 in. Number of shelves—three, plus extra plate for bottom. Miter line decoration will be supplied with Venetian Tube-O-Lite cabinets unless otherwise ordered.

All Tube-O-Lite Cabinets are approved and labeled by Underwriters' Laboratories, Inc.

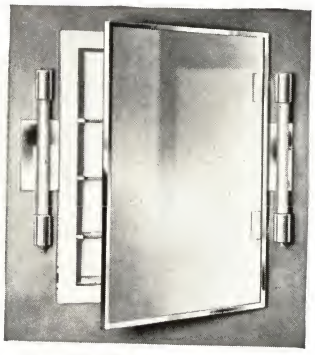
THE LINELITE

An Attractive Inexpensive Lighted Cabinet

The new Linelite Cabinet offers the time-tested advantages of tubular lighting, in a style of bracket that is distinctly attractive. The slender tubes are supported at both ends, the base on each lamp terminating in a switch. The cabinet is not only attractive but is practical as well, for the tubular lamps provide a long source of light for each side of the cabinet which completely illuminates the face, eliminating shadows. On the lower side of the cabinet there is a convenience outlet for a razor or curling iron.

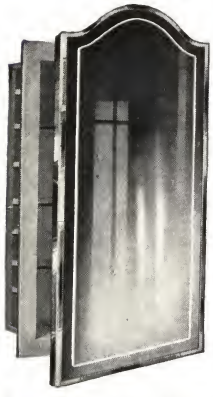
The Mazda T-8 frosted lamps are not included but may be purchased from any lamp supply house or public service company. The cabinet comes completely wired, ready for the electrical connection.

Telegraph code word	No.	Type	Frame	Mirror size, in.	Weight, lbs.	Wall opening, in.
Bim	B-1824	Simplicity	None	18x24	40	15x21x3 1/2
Best	BF-824	Simplicity	Framed	18x24	42	15x21x3 1/2
Belt	B-1826	Venetian	None	18x26	42	15x21x3 1/2
Birch	BF-826	Venetian	Framed	18x26	44	15x21x3 1/2



No. BF-824 Framed Linetite

HESS FRAMED VENETIAN AND SIMPLICITY CABINETS



Framed Venetian Miter Line Decoration

Mirrors—Exceptionally high grade selected plate glass. Silvering is Seal-Bak protected, guaranteed against discoloration.

Doors—Doors are 13/32 in. thick and have channel section brass chromium plated frames with 7/16-in. face. Curved tops of frames on Venetian doors are die formed without distortion of surface. Backs of doors are steel finished in white baked enamel like cabinet. A fiber pad or cushion is placed between mirror and the back. Door latch is polished stainless steel.

Cabinets—Cabinet and door back are made of cold rolled furniture steel. Cabinet is formed from one piece of steel, and is smooth inside, no seams or raw edges to catch dirt. Cabinet may be set and fastened in the recess before the door is hung.

Finish—White porcelain-like baked enamel. Proof against soap, alcohol and all solvents usually found in household medicinal preparations.

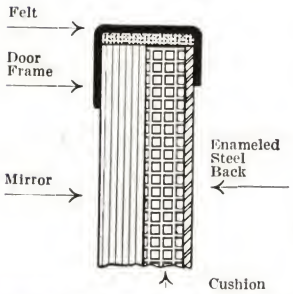
Shelves—Bulb edge glass, adjustable, with plate glass bottom shelf.

Door Stops—Doors are provided with chromium beaded chain door stops. Chain stops are noiseless, and do not interfere with bottles on top shelf as do solid bar stops.

Design—Hess framed cabinets set close to wall. Total projection including the door is only *one inch.*



Framed Venetian Etched Decoration



Section of Framed Cabinet Door with Framed Lavatory Mirror

FRAMED VENETIAN CABINETS

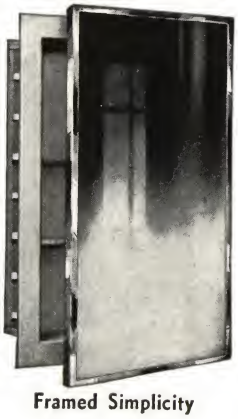
Code word	No.	Mirror size, in.	Wall opening, in.	Return flange, in.	Over-all size, in.	Number of shelves	Ship. wgt., lbs.
Fravote	F-1624	16x24	13x19x3 7/8	3/8	15 5/8 x21 5/8	2	33
Fravale	F-1826	18x26	15x21x3 7/8	3/8	17 5/8 x23 5/8	3	42
Fraverb	F-1830	18x30	15x24x3 7/8	3/8	17 5/8 x26 5/8	3	46
Fraview	F-2032	20x32	17x26x3 7/8	3/8	19 5/8 x28 5/8	3	61

FRAMED SIMPLICITY CABINETS

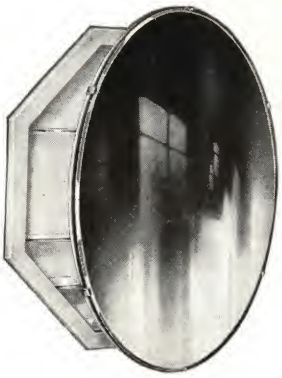
Frasnug	F-622	16x22	13x19x3 7/8	3/8	15 5/8 x21 5/8	2	30
Fraswan	F-824	18x24	15x21x3 7/8	3/8	17 5/8 x23 5/8	3	39
Frasnap	F-828	18x27 1/2	15x24x3 7/8	3/8	17 5/8 x26 5/8	3	43
Frasnow	F-2030	20x30	17x26x3 7/8	3/8	19 5/8 x28 5/8	3	58

An extra plate glass is furnished for bottom of cabinet.

Framed Simplicity cabinets may be had with mirrors having polished miter line decoration at small additional charge.



Framed Simplicity



Caprice Cabinet

Caprice Mirrored Cabinet

Ideal for the most modern bathroom or powder room. The circular Seal-Bak mirror is supported by tiny stainless steel clips. Cabinet is in the form of an octagon to give greater shelf space.

Mirror—selected plate glass—circle, 24-in. diameter. Wall opening—octagonal, 20 in. between sides. Depth of return or body flange—⅞-in. Three glass shelves and one flat shelf, plate thickness.

Caprice Wall Hung Mirror

A round mirror for wall hanging. It is used where a circular mirror is wanted and where a Caprice Cabinet either cannot be installed due to wall obstruction or is not desired. Round mirrors are very popular for decorative purposes.

Same Dimensions as door on Caprice Cabinet.

Either Caprice Cabinet or Wall Hung Mirror can be furnished in handsome chromium framed mirror instead of as shown.



Caprice Wall Hung Mirror

HESS VENETIAN AND SIMPLICITY CABINETS



Venetian Miter Line Decoration

Mirrors—Exceptionally high grade plate glass, carefully selected to eliminate defects. Beveled edges; silvering is Seal-Bak protected.

Doors—One-half inch thick, containing insulating fiber pad or cushion which protects mirror and eliminates any rattle or metallic sound. Mirror clips and door latch are polished stainless steel.

Cabinets—Cabinet and door are made of cold rolled steel. The cabinet is formed from one piece of steel, and is smooth inside, no seams or raw edges to catch dirt. The cabinet box may be set and fastened in the recess before the door is hung. This saves time in installing cabinets.

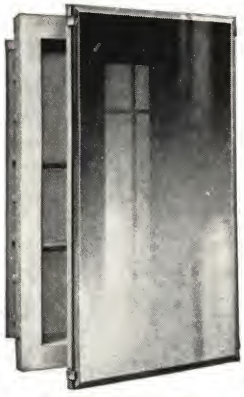
Finish—White porcelain-like baked enamel. Proof against soap, alcohol and all solvents usually found in household medicinal preparations.

Shelves—Bulb edge glass, adjustable.

Door Stops—Plated brass spring chain door stops. Chain stops are noiseless, and do not interfere with bottles on top shelf as do solid bar stops.



Venetian Etched Decoration



Simplicity Cabinet

VENETIAN CABINETS

Telegraph code word	No.	Mirror size, in.	Wall opening, in.	Depth of return or body flange, in.	Overall size of cabinet, in.	Number of shelves	Weight, lbs.
Vote	1624	16x24	13x19x3½	¾	15⅝x21⅝	2	30
Vale	1826	18x26	15x21x3½	¾	17⅝x23⅝	3	37
Value	1830	18x30	15x24x4¼	¾	17⅝x26⅝	3	42
View	2032	20x32	17x26x4¼	¾	19⅝x28⅝	3	55

Mirrors with etched decoration, with miter line decoration, or with no decoration whatever are optional on Venetian cabinets. Mirrors with etched decoration will be supplied on Venetian cabinets unless otherwise ordered.

SIMPLICITY CABINETS

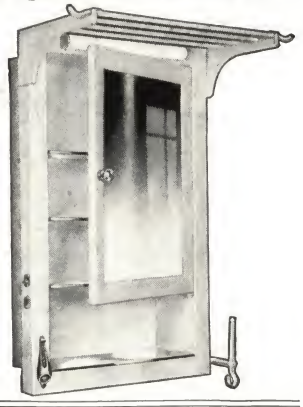
Telegraph code word	No.	Mirror size, in.	Wall opening, in.	Depth of return or body flange, in.	Overall size of cabinet, in.	Number of shelves	Weight, lbs.
Snug	1622	16x22	13x19x3½	¾	15⅝x21⅝	2	28
Swan	1824	18x24	15x21x3½	¾	17⅝x23⅝	3	34
Snap	1828	18x27½	15x24x4¼	¾	17⅝x26⅝	3	40
Snow	2030	20x30	17x26x4¼	¾	19⅝x28⅝	3	50

Mirrors with polished miter line decoration can be supplied with simplicity cabinets at small extra cost.

Hess Hotel Cabinet

The growing demand for the soft lighting afforded with tubular lights has led us to incorporate the lumiline feature in our Hotel Model. This cabinet is a vast improvement over the conventionally lighted cabinet. The soft glow that emanates from the entire length of the tube makes this light adequate in itself for bathroom illumination. It is equipped with a switch and convenience outlet.

The towel rack and combination corkscrew and bottle opener are among the several convenience fixtures which make this cabinet ideal for use in hotels and dormitories.



Code word	Mirror, in.	Wall opening, in.	Flange, in. deep	No. Shelves	Weight, lbs.
Hotolite	12x16	15x24x3½	1¼	3	38

This cabinet is also available with the conventional light fixture in place of the tubular light.

Lavatory Mirrors

Mirrors have brass channel section, chromium plated frames with galvanized steel backs and concealed key hole slots for hanging either way. Mirror silvering is Seal-Bak protected, guaranteed against discoloration.

FRAMED WALL-HUNG MIRRORS

Code word	No.	Mirror size, in.	Weight, lbs.
Serf	121	12x18	12
Slat	142	14x20	14
Spot	162	16x22	18
Spud	172	18x24	22
Strut	182	18x27½	28

UNFRAMED LAVATORY MIRRORS

Smart	21	12x16	10
Star	62	16x22	15



Framed Wall-Hung Mirror

For Complete Line and Prices Send for Our Catalog

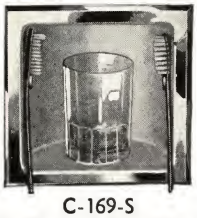
HOEGGER, INC.

WEEHAWKEN, N. J.

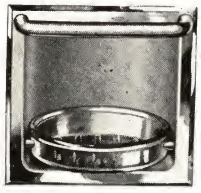
NEW YORK SHOWROOMS, Room 213, 101 Park Avenue and with Architects' Samples Corp.

SHEET BRASS RECESS AND BRASS FORGED ACCESSORIES, CHROME PLATED AND LOW PRICED MEDICINE CABINETS AND TOWEL SHELVES

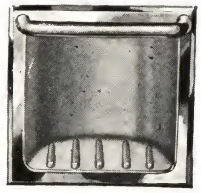
(Patents 1636364, 1773815, 1962739, 1997686)
Drawn in one piece from .040" brass—chromium plated. Designed to be cemented in wall—no buck required.
Outside size, 7¼x7¼"—leave exact opening, 6x6x2⅞" deep.



C-169-S
Tumbler and Toothbrush Holder
Price $5.60
(Without Tumbler)



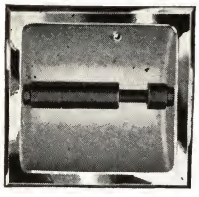
C-165-S
Soap and Grab Bar
Projection 2"
Crystal Dish $7.60
Black Dish 7.80



C-166-S
Soap and Grab Bar
Projection 2"
Removable Metal Tray
Price $9.60



C-641 Brass Chrome Plated Towel Shelf and Bar
Projection 7". Height 5"
20".....$5.00 24".....$6.00



C-162-S
Paper Holder
Wooden Roller..$4.50
Metal Roller ... 5.30



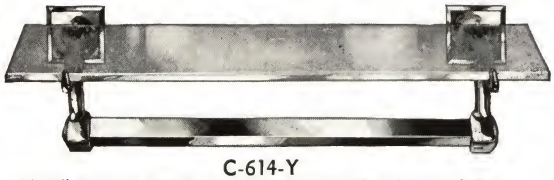
C-600-Y—¼x5" Crystal Plate Glass Shelf
(Spring Brackets, Patent 1779236)

Crystal Shelf	18"	$5.10	24"	$5.30	30" $5.70
Black Shelf	18"	6.50	24"	7.30	30" 8.30



C-505-Y ¾" Square Towel Bar

"Crodon" Metal Bar	18"	$3.80	24"	$4.20	30" $4.60
Crystal Drawn Glass Bar	18"	4.70	24"	5.20	30" 5.60
Black Drawn Glass Bar	18"	4.90	24"	5.40	30" 5.80



C-614-Y
¼x5" Crystal Shelf and ¾" Square Metal Towel Bar
(Spring Brackets, Patent 1779236)

Length Shelf	18"	24"	30"
Length Bar	14"	18"	24"
Price	$8.60	$9.30	$10.00



C-8-F



C-730-Y—Soap and Grab Bar
¾"—Specify Left or Right
Center to center of post, 9"....$4.50



C-815-Y
Glass Toothbrush Holder
$2.40



C-8-M



C-512-Y—Grab Bar
Projection 3⅝"
¾"x9" $3.20



C-717-Y
Soap Holder
$2.20



C-8-H



C-859-Y—Paper Holder
Wood Roller $2.90
Metal Roller 3.70



C-8-Y
Double Robe Hooks
$1.40



C-8-T
Above designs F, M, H or T at same prices as Y designs



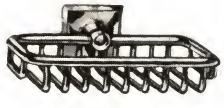
C-540-Y—⅜x12" Swing Towel Bar
Towel Bar $5.30



C-4-Y
Hook
$1.05



C704-Y
Crystal Soap Dish
Price $3.55



C-711-Y
Heavy Wire Soap Basket
Price $4.00

Method of Installing Tyteset Accessories

Fasten concealed mounting plate to Wall (Fig. 1). Place wall shield over stud (Fig. 2). Attach fixture to stud with concealed set screw (Fig. 3), which draws three pieces together.

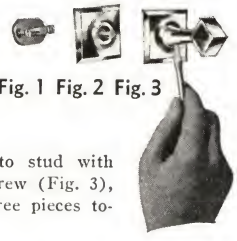
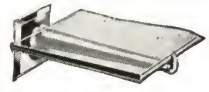


Fig. 1 Fig. 2 Fig. 3

(Patent 1779236)



Front spring lip sets against edge of glass shelf holding it rigidly in place under rear lip.

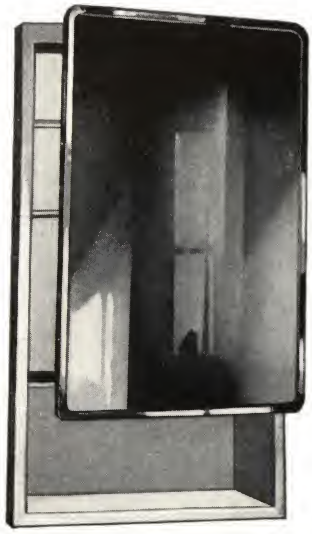
Spring Lip Shelf Bracket

Low Priced Medicine Cabinets to Create Sales

18 gauge silver finished steel cases. Patented double door hinge and stop. No. 1 mirror. Fixed polished plate glass shelves.



No. 13—Door size, 18x24"; wall opening, 4x16½x22½"; bottom to finish floor, 52".....$24.00
No. 11—⅔ door size, 18x16"; wall opening, 4x16½x22½"....$22.00



No. 7—Door size, 18x24"; wall opening, 4x16½x30¼".....$30.00
No. 8—Full door size, 18x32"; wall opening, 4x16½x30¼".$35.00

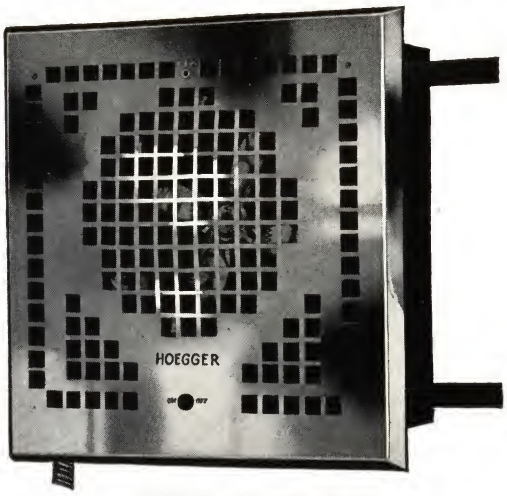


"Park Avenue" Recess Cabinets
Silver finish.

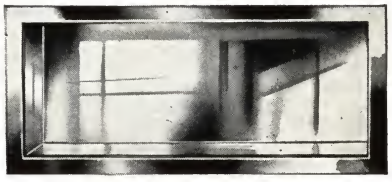
Cat. No.	Mirror	Rough opening	Price
C-272-S	16x22	14¼ x20¼ x4½	$30.00
C-273-S	20x26	18¼ x24¼ x4½	40.00
C-274-S	24x30	22¼ x28¾ x4½	50.00



"Park Avenue" Surface Cabinet
Silver finish, 4″ deep inside, 5″ o.d.
C-442. 16x22″ door $33.50
C-443. 20x26″ door 43.10



C-192 Fan Electric Heater
Price $32.00
Brass chrome plated grille 12x12″, ¾″ projection. Wall buck 4¾ x10½ x10½″. Volt. 110-120, A.C. only. Watts 1320.



Mirror Lined Recess Shelf

Cat. No.	Outside Size	Exact Opening	Price
C-644	16⅛ x8⅞ x4	15½ x8¼ x4¼	$28.00
C-645	20⅛ x8⅞ x4	19½ x8¼ x4¼	32.00
C-648	24⅛ x8⅞ x4	23½ x8¼ x4¼	38.40
C-643	31⅛ x9⅛ x4	30½ x8½ x4¼	48.50

Lights for Vertical or Horizontal Mounting



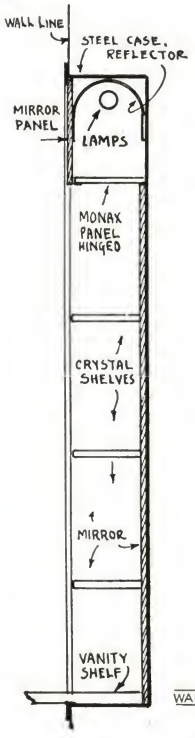
Hoegger Luminite with Shade
Width 27⅞″, projects 2¼″, use Gem Box. Bulbs not included in price.
C-22. 13″...$11.00 C-23. 19″...$12.00

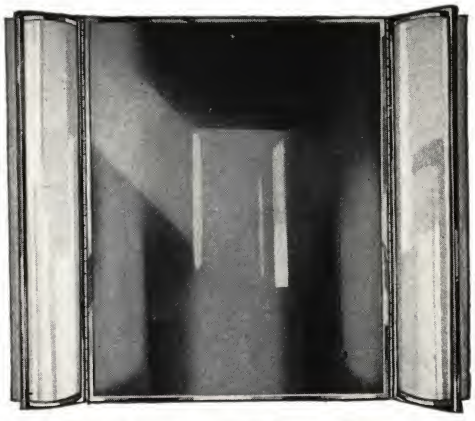


Tubular Light Fixture
Projects 3½ in., use Gem Box.
C-37. 8″.....$9.00 C-36. 14″...$12.00

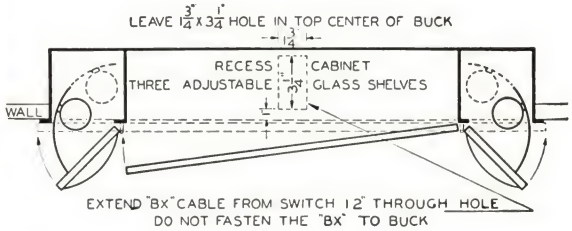


C-972 Illuminated Recess Mirror Lined Vanity
Price $225.00
¾″ pol. chrome frame o.d. size 33⅜ x35⅜″, 4½″ deep, 12″ pink mirror shelf. Wall opening 4½ x32⅞ x34⅞″.





C-64-S "Hoeggerlite" Recess Cabinet
(Patents 1686104, 1948111, 1948112)
Price $130.00
Adjustable side wing illuminated panels, silver finished cabinet and reflectors, first quality mirror, no mitre lines.
Leave Rough Opening 29¾ x25x4½″ *deep.*



Send for Complete Catalog

LAWSON BATHROOM CABINETS

THE F. H. LAWSON COMPANY
• BATHROOM DIVISION •
CINCINNATI, U.S.A.

1939

• WALL MIRRORS • ACCESS UNITS • BATHROOM ACCESSORIES

LAWSON CABINETS REFLECT A WHOLE CENTURY OF EXPERIENCE — AND A DESIGNING AS MODERN AS TOMORROW

LAWSON Bathroom Cabinets have an interesting history. They are built by one of America's hundred oldest concerns . . . a pioneer in sheet metal fabrication that opened its shop long before the bathroom cabinet was even a novelty — 1816.

Today these Lawson Cabinets embody the tradition, the enviable reputation, the business integrity, the unquenchable appreciation for fine craftsmanship that have always been typically Lawson. Although designs and methods and materials change, one thing has remained constant: QUALITY. The products in this catalog are guaranteed to be exactly as represented: each item is constructed of the finest materials compatible with the purchase price.

The STEEL in Lawson Cabinets, for instance, is especially selected, rigidly inspected, meticulously tested—stretcher-leveled to remove the slightest buckle or twist.

The FINISH . . . Lawson's famous time-defying "WHITE-CAP". Supplied on DeLuxe Cabinets only.

And the MIRRORS . . . except where otherwise noted, the mirrors of Lawson Cabinets are made of **plate glass** and comply fully with the requirements of the United States Department of Commerce (CS 27-36 August 20, 1936). They are finished by the new PERMALOY process which insures a truer image and increases materially the life of the mirror. It is to the advantage of the architect and contractor to insist on PERMALOY-processed mirrors.

And to give Lawson Mirrors extra years of service, their silver backing is protected by a coating of copper. This copper prevents deterioration of the silver and makes possible our rigid guarantee against silver spoilage. The copper (in solution) is **sprayed on**—to eliminate any possibility of pin holes, air bubbles, moisture spots or brush marks.



Architects and contractors are invited to consult our engineering department when planning new work or renovating present structures. Blue prints furnished without obligation.

●

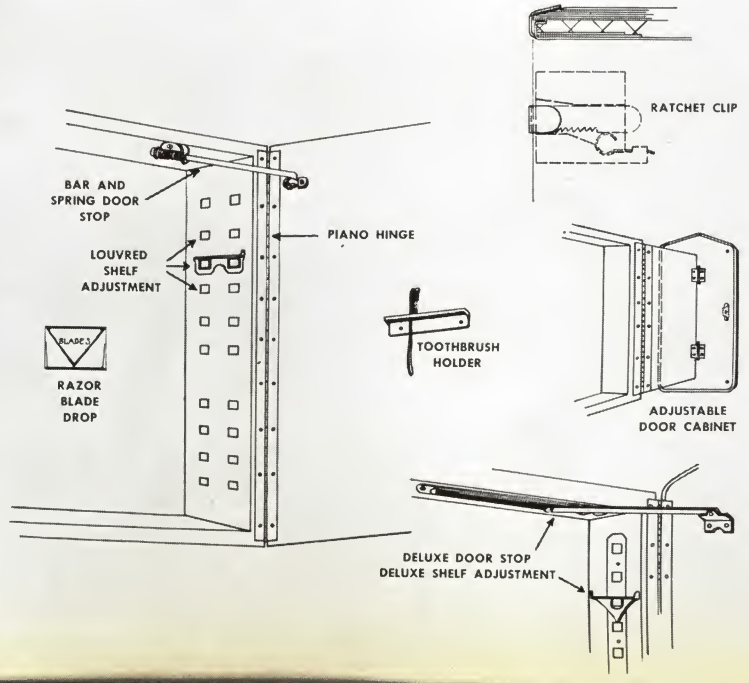
The prices mentioned in this catalog are only approximate. They are shown merely to determine the **relative values** of the various products. These prices **should not** be used for quotation.

●

The Bathroom Division of the F. H. Lawson Company—whose policy is one of continual improvement—reserves the right to change specifications, design or price without incurring obligation.

CONSTRUCTION DETAILS

The SPECIAL FEATURES shown below deserve careful study—for they play an important role in the year-after-year service of Lawson Cabinets.

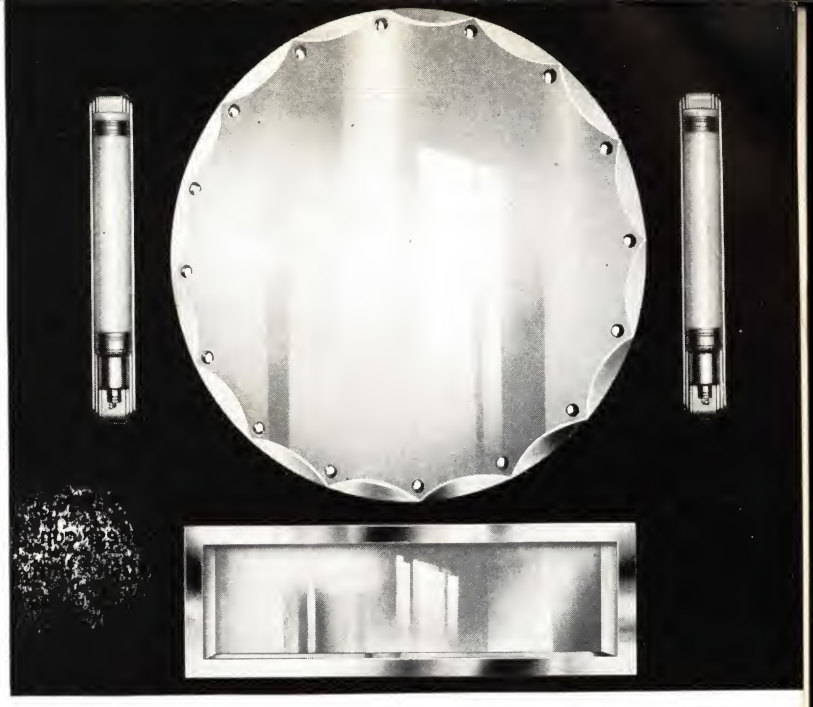


THIS handsome cabinet meets the present vogue for round mirrors. It is designed for bathrooms and dressing rooms in the ultra-modern or modern classic styles. Although pictured with the mirror decorated in a restrained motif, as illustrated (**No. 705**), the Rotunda is also furnished with a plain mirror (**No. 700**), and with a plain mirror and a narrow chromium frame (**No. 710**).

TWO IMPORTANT FEATURES

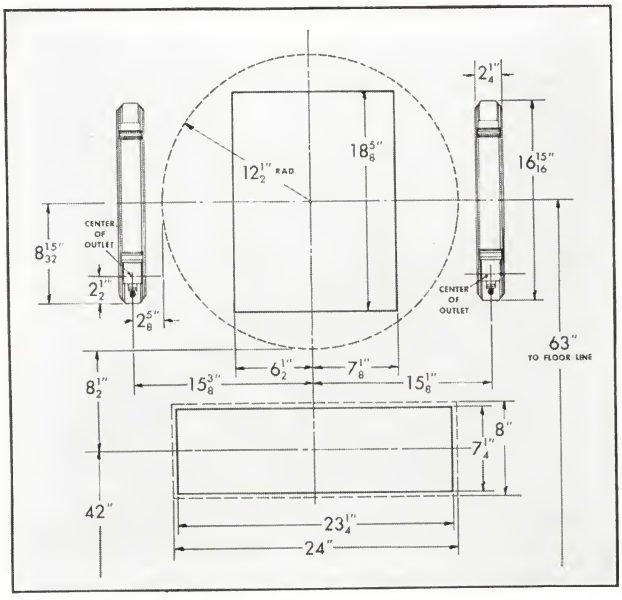
Due to its ingenious, mechanically correct construction the Rotunda has two important features: As shown below, its door is easily opened with one hand to a full 90° angle. No possibility of the door striking the wall when opening.

The second big feature of the Rotunda is its rectangular-shaped box. Thus, this cabinet can be set in the wall with the same ease as a rectangular door model. It is no wonder that the Rotunda is gaining such wide popularity!



LAWSON ROTUNDA

A DE LUXE CABINET WITH A ROUND MIRROR — DESIGNED FOR BATHROOMS AND DRESSING ROOMS IN MODERN AND CLASSIC STYLES



Construction

Heavy gauge stretcher-level steel . . . Lawson guaranteed "Whitecap" ELECTRO-RUSTPROOFED lacquer finish **over baked red oxide prime coat** . . . PERMALOY plate glass mirror with 5-year silver-spoil guarantee . . . "Jiffy" ratchet mirror clips . . . heavy glass shelf covers . . . toothbrush compartment . . . razor. blade drop . . . door catch . . . sturdy chromium-finish de luxe door stop.

The Rotunda is also supplied as a wall mirror. . . . consisting of only mirror and door . . . with concealed hanger-slots. Price is three-quarters that of complete cabinet.

TUBULAR WALL LIGHTS

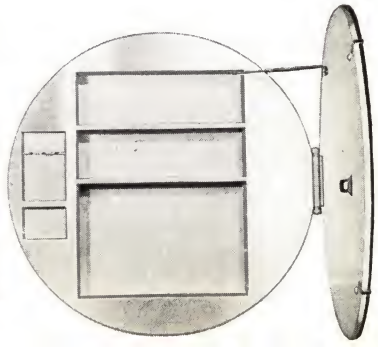
The neatly shaped wall lights pictured (No. 333) are newly designed and modern in every detail. They are particularly effective with the Rotunda—but can be used with any non-lighted Lawson Cabinet. These lights **are not attached to the cabinet** and are supplied as separate units . . . see page 14.

DeLUXE RECESS SHELF

The tinted mirror lining and chromium-plated face flange of this recess shelf make it an appropriate companion to the Rotunda. It is a separate unit and **is not supplied with the cabinet**. Details and mirror colors on page 14.

Description	Stock No.	Door Size, In.	Required Rough Opening, In.	Overall Dimen., In.	Inside Box Depth, In.	No. of Shelves	Shipping Wgt., Lbs.
Engraved-Frameless	705	25 Dia.	13⅜ x 18⅝ x 3½	24 Dia. 1¼ Return	4½	2	43
Plain-Frameless	700						43
Plain-Framed	710						43

List Prices of the Rotunda Cabinets range approximately from $32.50 to $38.00. The Wall Brackets, approximately, $16.40 per pair. The Recess Shelf, approximately, $30.00 each.



LAWSON De LUXE CABINETS • Lighted



THREE OUTSTANDING CABINETS of the Lawson DeLuxe Lighted Line. All are made on the same body and are equipped with the new DeLuxe Side Lights as pictured. (Side lights are assembled to the cabinets.) These lights use frosted tubular bulbs and diffusing shades, holding them in place with chromium-plated brackets. The lower cup bracket houses the bakelite socket into which the bulb is screwed; the upper arm-and-ring supports the shade. The brackets are housed in highly polished brass, chromium-plated reflectors which, in turn, are secured to the return flange of the cabinet. THE LIGHT SWITCH IS BUILT INTO THE BASE OF THE LEFT BRACKET; A CONVENIENCE OUTLET INTO THE BASE OF THE RIGHT BRACKET. Instructions for installing lighted cabinets on page 8.

Bulbs are not furnished with Lawson Cabinets — but can be quoted separately on request. For the DeLuxe Cabinets, we recommend that General Electric T-8 tubular bulbs, 40-watt and frosted, be purchased locally. ALL LAWSON LIGHTED CABINETS ARE WIRED IN STRICT COMPLIANCE WITH THE REGULATIONS OF THE UNDERWRITERS' LABORATORIES AND CARRY THE SEAL OF SAFETY.

DeLuxe Cabinets can also be obtained **without** side lights; they are not carried in stock — and must be ordered at least three weeks in advance. Specify cabinet as "**without lights**" and **omit** suffix "**LTD.**"

CAVALIER • No. 1200-LTD

In the popular rectangular shape with smoothly rounded corners. The frame is highly polished stainless steel . . . rust-proof and tarnish-proof . . . retains its rich lustre year after year . . . never needs replating.

The simple U-mitered line on the mirror makes the Cavalier especially suitable for master bathrooms where a restrained decoration is preferred.

Construction

Heavy gauge stretcher-level steel . . . Lawson guaranteed "Whitecap" **Electro-Rust-proofed** lacquer finish **over baked red oxide prime coat** . . . PERMALOY plate glass mirror with five year silver-spoil guarantee . . . heavy bulb-edge glass shelves . . . opal glass bottom shelf cover . . . toothbrush holder . . . razor blade drop . . . bullet door catch . . . DeLuxe chromium-plated door stop . . . DeLuxe shelf adjustment . . . chromium-plated piano hinge . . . wiring completely housed **and approved by Underwriters' Laboratories.** Removable door on Cavalier. Mirrors secured to door by four chrome plated bolts on **Luzerne** and **Florentine.**



LUZERNE • No. 1250-LTD

The latest note in bathroom decoration. This cabinet has the same scroll-top Venetian mirror as the Florentine. Its decoration, however, consists of a marine design engraved in the lower left of the mirror . . . with the border painted in black. This border can also be supplied in colors to harmonize with surrounding tile (send tile sample or refer to number on accepted color chart).



FLORENTINE • No. 1275-LTD

The "decorator" cabinet at right . . . well proportioned in every detail . . . is designed for the finest bathrooms. Its graceful scroll-top Venetian mirror is frameless and richly engraved in silver . . . a delicate floral pattern.

Name	Stock No.	Lighting	Door Size, In.	Required Rough Opening, In.	Overall Dimen., In.	Inside Box Depth, In.	Extreme Light Bracket Spread, In.	Shelves	Shipping Weights, Lbs.
Cavalier	1200-LTD	De Luxe	18x28						79
Luzerne	1250-LTD	De Luxe	18x30	15½ x 24¼ x 3½	17¾ x 25¾ x ⅞	4¼	24½	4	78
Florentine	1275-LTD	De Luxe	18x30						73

The List Prices of the De Luxe Lighted Cabinets range approximately from $58.00 to $61.00.
For these cabinets *without* lights, made to special order only, List Prices range approximately from $50.00 to $53.00.

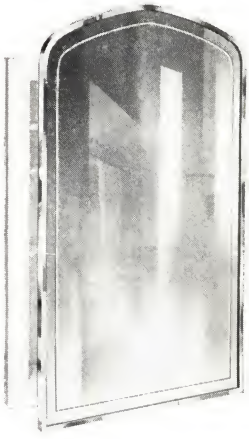
LAWSON De LUXE CABINETS • Not Lighted

FIVE EXQUISITE CABINETS of Lawson's finest line—the DeLuxe. Built with the traditional Lawson guarantee of quality materials and quality workmanship . . . yet moderate in price. With the exception of the Capitol, these cabinets are styled with patrician frameless tops. The Acropolis is framed.

COLONIAL • Nos. 1803, 1903

This frameless cabinet is simply but effectively engraved. It is especially designed for a residence where the Colonial idea is carried into the bathroom design. Decoration in gold; silver on request. Four gold plated mirror bolts.





ACROPOLIS • No. 1850

An unusually pleasing interpretation of the Gothic style . . . with narrow chromium frame. The mirror's only decoration is the engraved U-mitered line that follows the contour of the frame and is accented in gold (in silver on request). One size only.

GOTHIC • Nos. 1800, 1900

A frameless mirror with engraved U-mitered line following the mirror's contour and accented in gold (in silver on request). Four gold plated mirror bolts.



SPARTAN • Nos. 1804, 1904

(Not Shown)

A beveled edge mirror with the characteristic Gothic top but no engraving. Decidedly effective due to its uncompromised simplicity. Four gold plated mirror bolts.



CAPITOL • Nos. 880, 885

A handsome frameless cabinet at a moderate price. Mirror has graceful scroll top and is richly engraved in silver . . . in either a modern floral motif (designation "F") or a simple mitered line (designation "M"). Held securely by two chromium-plated mirror bolts and two supporting clips at bottom of door.

Construction

Heavy gauge stretcher-level steel . . . Lawson guaranteed "Whitecap" ELECTRO-RUSTPROOFED lacquer finish over baked, red oxide prime coat . . . PERMALOY plate glass mirror with five year silver-spoil guarantee . . . heavy bulb-edge glass shelves . . . opal glass bottom shelf cover . . . toothbrush holder . . . razor blade drop . . . bullet door catch . . . DeLuxe chromium plated door stop . . . DeLuxe shelf adjustment . . . chromium-plated piano hinge.

Approximate List Prices:
Capitol from $26.50 to $31.50.
1800 series from $36.75 to $39.75
1900 series from $51.25 to $55.50

Name	Stock No.	Door Size, In.	Required Rough Opening, In.	Overall Dimen. Cabinet Flanges, In.	Inside Box, Depth, In.	Shelves	Shipping Wgt., Lbs.
Colonial	1803	18 x 28	15¼ x 20¾ x 3½	17¾ x 23¼ x ¾	4¼	3	47
	1903	20 x 36	17½ x 28¼ x 3½	19¾ x 30¾ x ¾	4¼	4	95
Spartan	1804	18 x 28	15¼ x 20¾ x 3½	17¾ x 23¼ x ¾	4¼	3	47
	1904	20 x 36	17½ x 28¼ x 3½	19¾ x 30¾ x ¾	4¼	4	95
Gothic	1800	18 x 28	15¼ x 20¾ x 3½	17¾ x 23¼ x ¾	4¼	3	47
	1900	20 x 36	17½ x 28¼ x 3½	19¾ x 30¾ x ¾	4¼	4	95
Capitol	880	16 x 25½	13½ x 19½ x 3½	15¾ x 21½ x ⅞	4¼	3	33
	885	18 x 30	15½ x 23¾ x 3½	17¾ x 25¾ x ⅞	4¼	4	43
Acropolis	1850	18 x 28	15¼ x 20¾ x 3½	17¾ x 23¼ x ¾	4¼	3	42

LAWSON STANDARD CABINETS • Frameless

WITH OR WITHOUT SIDE LIGHTS



THIS LINE of well-proportioned cabinets is planned for moderate priced homes and combines the traditional Lawson quality with reasonable price. Each cabinet is constructed to withstand years of hard service.

There are four major lines—pictured on this and the opposite page. The tables at the bottom of these pages indicate which cabinets are furnished with either the "Tubular" or "Reflector" Side Lights; which cabinets are carried in stock; and which are supplied on order. For installation instructions for Lighted Cabinets, see page 8.

TUBULAR SIDE LIGHTS

This style of side light uses a tubular shade of frosted glass and gives a soft, glareless light. It holds the shade in place with chromium-plated brackets attached to the side of the cabinet. The lower cup bracket supports the base of the shade and houses the socket for the bulb. The upper arm-and-ring holds the shade securely in position. Cabinets equipped with this style of side lights are designated by the suffix "TUB." Example: 799-TUB. SWITCH IS BUILT INTO LOWER LEFT CUP; CONVENIENCE OUTLET INTO LOWER RIGHT CUP.

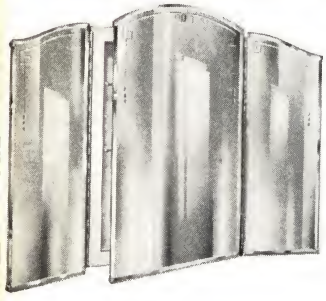
REFLECTOR SIDE LIGHTS

This type uses a frosted tubular bulb, unshaded, against a long, narrow brass chromium-plated reflector. It gives full illumination and diffuses the light without glare. At each end of the reflector is a cup. The upper cup, in reversed position, houses the socket; the lower cup conceals the tip of the bulb and holds it tightly in place. The reflector is firmly fastened to the return flange of the cabinet and rests flush on the wall. Cabinets equipped with this style of side lights are designated by the suffix "REF." Example: 799-REF. SWITCH IS BUILT INTO LOWER LEFT CUP; CONVENIENCE OUTLET INTO LOWER RIGHT CUP.

BERKSHIRE: Nos. 799 • 888 • 1000.

Shown with Tubular Side Lights, "799-Tub"
Also available with Reflector Side Lights, "799-Ref"

The most popular of all Lawson Cabinets. Its gracefully arched mirror and its simple engraving make this frameless Venetian cabinet excellent for the modest bathroom. Three convenient sizes.



LENOX • No. 791-WING

The Berkshire . . . **plus frameless Venetian wing mirrors.** Especially desirable for shaving and makeup. Wings have curved bow tops and are decorated to match the center mirror. One size only. **This cabinet cannot be supplied with side lights.**



TACONIC:

Nos. 777 • 822

Shown with Reflector Side Lights, "777-Ref"

Also available with Tubular Side Lights, "777-Tub"

Same as the Berkshire . . . except that its frameless door is rectangular. Two convenient sizes.

Name	Stock No.	Lighting	Door Size, In.	Required Rough Opening, In.	Overall Dimen. Cabinet Flanges, In.	Inside Box Depth, In.	Extreme Light Bracket Spread, In.	Shelves	Shipping Weight, Lbs.
Berkshire	799-TUB	Tubular	16 x 24	13½ x 20⅛ x 3½	15¼ x 21 x ⅞	4¼	21⅜	3	38
	799-REF	Reflector		13½ x 20⅛ x 3½			20⅜		38
	799	None		13½ x 19½ x 3½			None		30
	888-TUB	Tubular	18 x 26	15½ x 22⅛ x 3½	17¼ x 23 x ⅞	4¼	23⅜	4	62
	888-REF	Reflector		15½ x 22⅛ x 3½			22⅜		62
	888	None		15½ x 21½ x 3½			None		37
Taconic	1000-TUB	Tubular	18 x 28	15½ x 24⅛ x 3½	17¼ x 25¼ x ⅞	4¼	23⅜	4	66
	1000-REF	Reflector		15½ x 24⅛ x 3½			22⅜		66
	1000	None		15½ x 23¾ x 3½			None		40
	777-TUB*	Tubular	16 x 22	13½ x 20⅛ x 3½	15¼ x 21 x ⅞	4¼	21⅜	3	52
	777-REF*	Reflector		13½ x 20⅛ x 3½			20⅜		52
	777	None		13½ x 19½ x 3½			None		28
	822-TUB*	Tubular	18 x 24	15½ x 22⅛ x 3½	17¼ x 23 x ⅞	4¼	23⅜	4	61
	822-REF*	Reflector		15½ x 22⅛ x 3½			22⅜		63
	822	None		15½ x 21½ x 3½			None		35
Lenox	791-WING	None	15½ x 24 center 8 x 22 wings	13½ x 19½ x 3½	15¾ x 21½ x ⅞	4¼	None	3	72

*Note: Cabinets marked with (*) not carried in stock and are built on special order, requiring approximately three weeks to ship.

Approximate List Prices: Lighted Cabinets from $34.25 to $43.00; Non-lighted from $15.00 to $22.50.

LAWSON STANDARD CABINETS • Framed

WITH OR WITHOUT SIDE LIGHTS

Construction OF CABINETS ON BOTH PAGES

HEAVY GAUGE stretcher-level steel . . . finished in fine quality hot-baked white enamel . . . PERMALOY plate glass mirror with five-year silver-spoil guarantee . . . removable doors on framed cabinets . . . "Jiffy" ratchet mirror clips (on frameless cabinets) . . . bulb-edge glass shelves . . . glass bottom shelf cover . . . nickel-plated bar and spring door stop . . . toothbrush holder . . . razor blade drop . . . bullet door catch . . . piano hinge . . . shelves adjustable to ten positions.





Bulbs are not furnished with Lawson Cabinets—but can be quoted separately on request. For the Standard Cabinets, we recommend that General Electric T-8 tubular bulbs, 40-watt and frosted, be purchased locally.

ALL LAWSON LIGHTED CABINETS ARE WIRED IN STRICT COMPLIANCE WITH THE REGULATIONS OF THE UNDERWRITERS' LABORATORIES AND CARRY THE SEAL OF SAFETY.

BOSTONIAN: Nos. 54 • 65

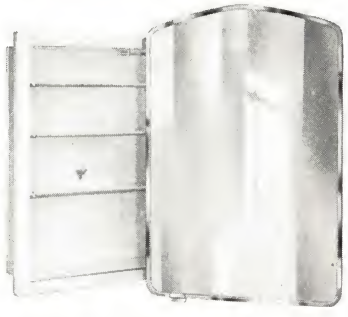
Shown with Reflector Side Lights, "54-Ref"
Also available with Tubular Side Lights, "54-Tub"

Same as the Berkshire . . . except the framed Venetian mirror is safeguarded and held to the door by a stainless steel frame. The advantages of this frame are self evident: it retains its rich lustre year after year, never needs replating. Two sizes.

CHAMPLAIN: Nos. 46 • 47 • 48 • 51

Shown with Tubular Side Lights, "46-Tub"
Also available with Reflector Side Lights, "46-Ref"

THE CHAMPLAIN cabinet has wide appeal. Its rectangular mirror has stainless steel frame with rounded corners. Furnished in four sizes for special uses: the smallest size (No. 46) is suitable for first floor lavatories. The second size (No. 47) is convenient for general purposes. The third size (No. 48) for bathrooms where a cabinet of increased height—but not exceptional width—is required. The largest size (No. 51) for remodeling jobs where an old wood cabinet is to be replaced with a steel cabinet requiring an extra large rough wall opening. No lights supplied on Nos. 48 or 51.



SPECIAL Cabinet with Adjustable Hinge Nos. 64, 899

SPECIAL Lawson Cabinet

A new cabinet with an unusual feature: shows either side of the face to advantage. The door of this cabinet—after it is swung on its normal axis to a 90 deg. angle (like all cabinets)—can then be pivoted in the opposite direction. Thus, this cabinet gives a perfect vision of the right side of the face as well as of the left. (See page 2.) Two Venetian mirror styles: without frame (No. 899); with stainless steel frame (No. 64).

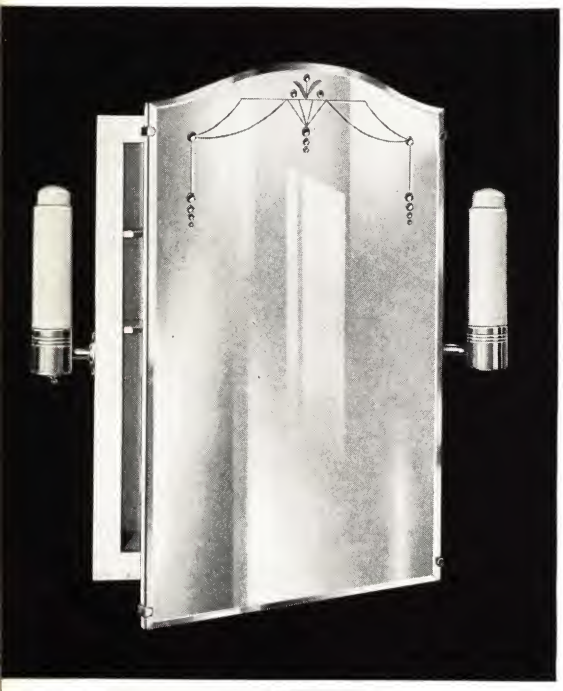
Name	Stock No.	Lighting	Door Size, In.	Required Rough Opening, In.	Overall Dimen. Cabinet Flanges, In.	Inside Box Depth, In.	Extreme Light Bracket-Spread, In.	Shelves	Shipping Wgt., Lbs.
Bostonian	54-TUB 54-REF 54	Tubular Reflector None	16 x 24	13½ x 20⅛ x 3½ 13½ x 20⅛ x 3½ 13½ x 19½ x 3½	15¼ x 21 x ⅞	4¼	21⅜ 20⅜ None	3	38 38 30
	65-TUB* 65-REF* 65	Tubular Reflector None	18 x 28	15½ x 24⅛ x 3½ 15½ x 24⅛ x 3½ 15½ x 23¾ x 3½	17¼ x 25¼ x ⅞	4¼	23⅜ 23⅜ None	4	66 66 40
Champlain	46-TUB* 46-REF* 46	Tubular Reflector None	16 x 22	13½ x 20⅛ x 3½ 13½ x 20⅛ x 3½ 13½ x 19½ x 3½	15¼ x 21 x ⅞	4¼	21⅜ 20⅜ None	3	52 52 29
	47-TUB* 47-REF* 47	Tubular Reflector None	18 x 24	15½ x 22⅛ x 3½ 15½ x 22⅛ x 3½ 15½ x 21½ x 3½	17¼ x 23 x ⅞	4¼	23⅜ 22⅜ None	4	62 62 37½
	48	None	18 x 31	15½ x 27 x 3½	17¾ x 29 x ⅞	4¼	None	4	45½
	51	None	21 x 27	18¼ x 24 x 3¾	20⅜ x 26⅛ x ⅞	4½	None	4	63

Nos. 64 and 899; same specifications as No. 54 and 799 respectively—no lights supplied.
*Note: Cabinets marked with (*) not carried in stock and are built to special order, requiring approximately three weeks to ship.

Approximate List Prices: Lighted cabinets, from $37.50 to $47.50; Non-lighted from $18.25 to $31.50.

LAWSON STANDARD CABINETS • Frameless

WITH OR WITHOUT SIDE LIGHTS



GREENWICH • Nos. 675, 685

Shown with "Glow" Side Lights; "675-GLO"

This frameless Venetian cabinet is a new addition to the Lawson Standard Line and is pictured with the recently introduced "Glow" Side Lights. It is especially suitable for apartment installations where a low priced Venetian cabinet is desired.

The Greenwich is similar in construction to other Lawson Cabinets—but is modified in details to permit a lower price. On orders of a dozen or more this cabinet effects substantial savings. See installation instructions below.

"GLOW" SIDE LIGHTS

This new shade-type light gives adequate illumination and diffuses the light without glare. Its chromium-plated cup—on either side of the cabinet—supports the tubular frosted glass shade and houses the socket into which the bulb is screwed. A TOGGLE SWITCH IS BUILT INTO THE BASE OF THE LEFT CUP; A CONVENIENCE OUTLET INTO THE BASE OF THE RIGHT CUP. The Greenwich No. 675-GLO is the only cabinet on which this style of lighting is used. Lights are not supplied on No. 685.

Bulbs are not furnished with Lawson Cabinets—but can be quoted and supplied separately on request. For the Greenwich we recommend that General Electric T-10 tubular bulbs, 40-watt and frosted, be purchased locally.

ALL LAWSON CABINETS ARE WIRED IN STRICT COMPLIANCE WITH THE REGULATIONS OF THE UNDERWRITERS' LABORATORIES AND CARRY THE SEAL OF SAFETY.

Construction

Heavy gauge steel . . . finished in hot-baked white enamel . . . PERMALOY plate glass mirror with five-year silver-spoil guarantee . . . "Jiffy" ratchet mirror clips . . . bulb edge glass shelves . . . glass bottom shelf cover . . . toothbrush holder . . . razor blade drop . . . bullet door catch . . . bar door stop . . . enameled continuous hinge.

Description	Stock No.	Lighting	Door Size, In.	Required Rough Opening, In.	Overall Dimen. Cabinet Flanges, In.	Inside Box Depth, In.	Extreme Light Bracket Spread, In.	Shelves	Shipping Wgt., Lbs.
Small—Lighted	675-GLO	Glow	16x24	13½ x 20⅛ x 3½	15¾ x 21½ x ⅞	4¼	21⅜	2	38
Small—Not Lighted	675	None		13½ x 19½ x 3½			None		29
Large—Not Lighted	685	None	18x26	15½ x 21½ x 3½	17¾ x 23½ x ⅞	4¼	None	3	35

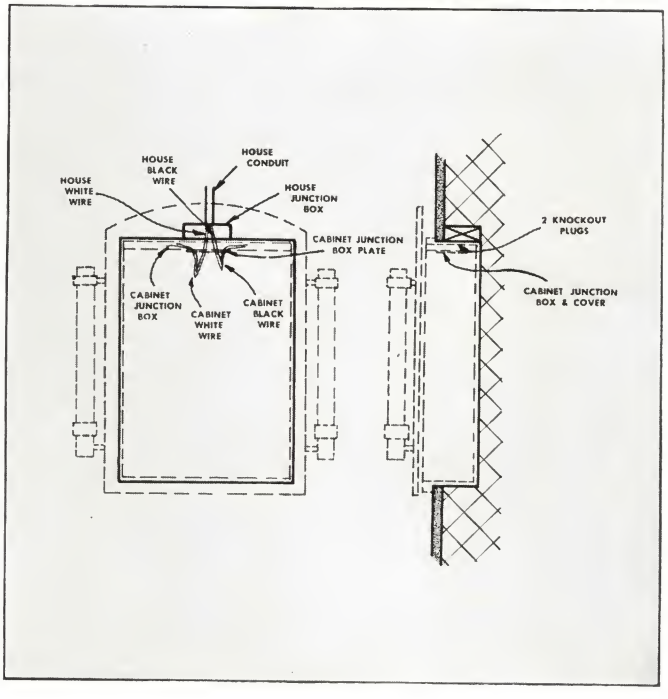
Approximate List Prices: Lighted, $27.00; Non-Lighted, $13.90 to $19.35.

Instructions for INSTALLING Lawson Lighted Cabinets

Lawson Lighted Cabinets are furnished completely equipped for installation and use—with the exception of the electric light bulbs. THEY ARE WIRED IN STRICT COMPLIANCE WITH THE REGULATIONS OF THE UNDERWRITERS' LABORATORIES AND CARRY THE SEAL OF SAFETY.

The position of the outlet box in relation to the rough opening is shown on the drawing at the right. The house wires, when being installed, should be allowed to project 10 inches from the outlet box.

The installation is simple. After the cabinet is unpacked, the door is opened for access to the inspection plate in the center top of the cabinet body. This inspection plate is removed by loosening two screws. The knock-out holes are then pushed out. Through these holes the house wires are fed and pulled down through the inspection opening into the cabinet. Then—before the connections are made—the cabinet is placed in the rough opening and fastened to the rough buck in the usual manner. When firmly in place, the proper wires are connected—white to white—black to black. Joints should be properly soldered and tape insulated. The wires are then folded together and pushed up into the junction box and the inspection plate replaced.



LIGHT BULBS RECOMMENDED

On the De Luxe Lighted Cabinets (page 4) and on Standard Lighted Cabinets (pages 6 and 7), we recommend GE T-8 tubular bulbs, 40-watt and frosted.

On the Greenwich (above), we recommend GE T-10 tubular bulbs, 40-watt and frosted.

On the Economy Cabinets (page 9), any ordinary 40-watt bulb may be used. The frosted flame type, illustrated, is decidedly attractive.

For data on Lawson Wall Lights, see page 14.

LAWSON ECONOMY CABINETS

WITH OR WITHOUT SIDE LIGHTS

The cabinets on this page represent the lowest prices at which good recess cabinets can be made and sold. They are designed for low cost residences and summer cottages. For installation instructions for lighted cabinets, see page 8.

FLAME SIDE LIGHTS

This type light bracket consists of a chromium-plated cup assembled to the return flange on both sides of the cabinet. The cup houses the socket into which is screwed the frosted bulb, either a round or flame-shaped. A toggle switch is located on the left return flange; a convenience outlet on the right.

Bulbs are not supplied, but any standard 40-watt bulb can be used.

WIRING IS IN STRICT COMPLIANCE WITH UNDERWRITERS' REGULATIONS.



SUFFOLK • No. 421

Shown with Flame Side Lights; "421-FLA"

Same as the Cottage . . . except the Venetian mirror is held to the door by highly polished frame of stainless steel. Frame retains its lustre year after year, never needs replating.



NASSAU • No. 422

Shown with Flame Side Lights; "422-FLA"

Same as the Cottage . . . except the mirror is held to the door by black enameled Venetian frame designed to harmonize with bathrooms trimmed in black.



COTTAGE • No. 445

Shown with Flame Side Lights; "445-FLA"

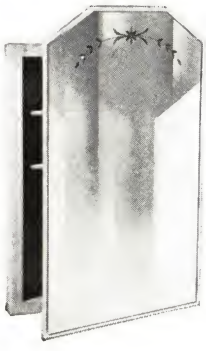
This cabinet is of true frameless Venetian type with the typical floral engraving. An unusually popular model.

Construction Of Cabinets ABOVE Table

Medium gauge automobile body steel . . . baked enamel finish . . . crystal mirror with five year silver-spoil guarantee . . . "Jiffy" ratchet mirror clips (on frameless mirrors) . . . bulb-edge glass shelves . . . toothbrush holder . . . razor blade drop . . . bullet door catch . . . nickel-plated door stop . . . selective shelf adjustment (i.e., four positions for two shelves) . . . sturdy butt hinges, brass, nickel-plated.

Name	Stock No.	Lighting	Door Size, In.	Required Rough Opening, In.	Overall Dimen. Cabinet Flanges, In.	Inside Box Depth, In.	Extreme Light Bracket Spread, In.	Shelves	Shipping Wgt., Lbs.
Cottage	445-FLA	Flame	15½ x 22	13⅝ x 19¼ x 3½	15¼ x 20¼ x 1¼	4½	21½	2	27
	445	None		13⅝ x 18⅝ x 3½			None		21
Suffolk	421-FLA	Flame	15½ x 23	13⅝ x 19¼ x 3½	15¼ x 20¼ x 1¼	4½	21½	2	25
	421	None		13⅝ x 18⅝ x 3½			None		19
Nassau	422-FLA	Flame	15½ x 23	13⅝ x 19¼ x 3½	15¼ x 20¼ x 1¼	4½	21½	2	25
	422	None		13⅝ x 18⅝ x 3½			None		19
Bungalow	415	None	15½ x 23	13⅝ x 18⅝ x 3½	15¼ x 20¼ x 1¼	4½	None	2	15
Houston	14-445	None	13¼ x 20	11⅜ x 16⅜ x 3½	13 x 18 x ⅞	4¼	None	2	13
Camper	14-415	None	13¼ x 20	11⅜ x 16⅜ x 3½	13 x 18 x ⅞	4¼	None	2	12
Piccadilly	033	None	19¾ dia.	15½ x 15½ x 3½	18⅜ dia. x 15/16	4¼	None	2	15

Approximate List Prices: lighted Venetian cabinets from $19.50 to $21.00; non-lighted Venetian cabinets from $9.50 to $11.00; other non-lighted cabinets from $5.00 to $10.50.



Construction

Of Cabinets BELOW Table

Medium gauge steel . . . white enamel finish . . . double strength glass mirrors . . . metal shelves . . . toothbrush holder . . . razor blade drop . . . bullet door catch . . . sturdy butt hinge.

BUNGALOW • No. 415

A remarkably low cost cabinet . . . with modernistic top, white enameled frame and "spray" decoration. No lights.



HOUSTON • No. 14-445 (at left)

A very low priced Venetian mirror cabinet. No lights.

CAMPER • No. 14-415

(not shown)

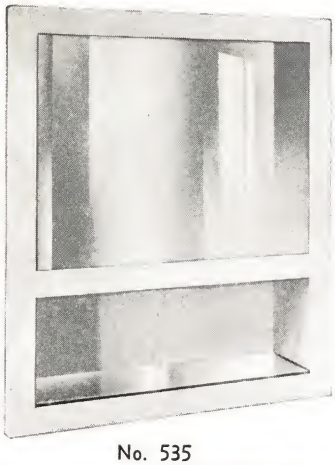
Same as the Houston but with white enameled framed mirrors, modernistic shape. The lowest priced recess cabinet in the Lawson Line. No lights.



PICCADILLY • No. 033

Popular round mirror encased in stainless steel. Round pan-shaped body. Can be set in square rough buck; instructions with cabinet. Surprisingly low in cost. No lights.

LAWSON CHALLENGER UNITS



No. 535



Nos. 1100, 3100, 4100, 5100



Nos. 5600, 5650

For HOTELS and APARTMENTS

Lawson Challenger Cabinets are built unusually durable to withstand years of severe usage. As they are low in price, they are widely specified for large hotel and apartment projects. Generally furnished with plain mirror . . . beveled mirror also available at 10% additional cost. Detail drawings on request.

THREE DISTINCT MODELS

RECESS SHELF AND MIRROR COMBINATION (No. 535) . . . available with or without hotel accessories. List Price without accessories, approximately $14.50.

WITH FULL DOOR (Nos. 1100, 3100, 4100) . . . sturdily constructed in every detail. List Prices range approximately from $10.00 to $15.10. Only when ordered in large quantities, can this type Challenger be equipped with hotel accessories).

WITH OPEN SHELF (Nos. 5600, 5650). . . available with or without hotel accessories. List Price without accessories, approximately from $14.55 to $17.00. When ordered in quantity, this type Challenger can also be furnished with stainless steel framed door — details on request.

Construction

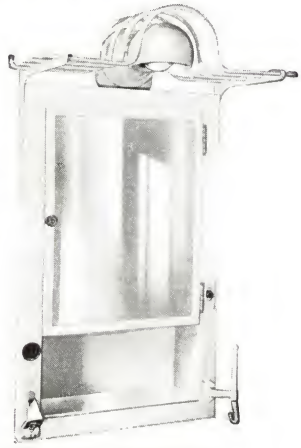
Heavy gauge stretcher-level steel finished in high quality hot-baked enamel . . . PERMALOY plate glass mirror (crystal on No. 1100) with five-year silver-spoil guarantee . . . bulb-edge glass shelves . . . glass bottom shelf cover . . . razor blade drop . . . bullet door catch . . . sturdy chromium-plated door stop . . . shelf adjustment . . . semi-concealed brass nickel-plated hinge.

HOTEL ACCESSORIES

The following accessories can be readily furnished on Open Shelf Type (Nos. 5600 and 5650) and on the Recess Shelf and Mirror combination (No. 535). For additional cost, see Price List.

(a) Wet Towel Hook.
(b) Bottle Opener.
(c) Bottle Opener and Cork Screw Combination.
(d) Convenience Outlet.
(e) Hump Towel Rack.
(f) Overhead Light Fixture with Switch (illustrated).
(g) Overhead Light Fixture with Pull Chain.
(h) Overhead Light Fixture **without** switch or chain, for use with wall switch.
(i) Single Cup Light Brackets (chromium) and switch. Brackets located on side flanges of cabinet box.
(j) Single Cup Light Brackets (chromium) **without** switch. For use with wall switch.
(k) Straight Towel Rack—for use either without lights or with side brackets.
(l) Lower Shelf Covering of Opal Glass.
(m) Rectangular Stainless Steel framed door covering the face of the cabinet but leaving 6-inch lower open shelf.

For wall accessories see pages 12, 13.



With Hotel Accessories

Approximate List Prices, without accessories from $10.00 to $17.00

Description	Stock No.	Mirror Size, In.	Required Rough Opening, In.	Overall Dimen. Cabinet Flanges, In.	Inside Box Depth, In.	Shelves	Shipping* Wgt., Lbs.
Open Shelf Style	5600	12 x 16	13⅜ x 23⅜ x 3⅜	16 x 26 x 1¼	4½	3	23
	5650	14 x 18	15⅜ x 25⅜ x 3⅜	18 x 28 x 1¼	4½	3	26
Full Door Style	1100	12 x 16**	13⅜ x 17⅜ x 3⅜	16 x 20 x 1¼	4½	2	18
	3100	12 x 16	13⅜ x 17⅜ x 3⅜	16 x 20 x 1¼	4½	2	19
	4100	14 x 18	15⅜ x 19⅜ x 3⅜	18 x 22 x 1¼	4½	3	24
Mirror and Recess Shelf	535	18 x 14	18 x 6½ x 4⅝	20½ x 24⅛ x 1	5¼	None	22

**Crystal mirror on No. 1100, all others plate glass.

*Shipping Weights are without accessories.

LAWSON CHALLENGER UNITS

SURFACE TYPE MIRROR AND SHELF COMBINATIONS

For Hotels and Apartments

Three Lawson specialty combinations . . . for kitchens, offices, schools, rest rooms, filling stations, etc.

No. 2 (illustrated) . . . With rectangular plate glass mirror in white enameled frame . . . shelf of black opal glass . . . black towel bar.

No. 1 . . . same as No. 2 . . . except with shelf of white opal glass and white towel bar.

No. 111 . . . A new Lawson Combination . . . with rectangular glass mirror in narrow chromium-plated frame. Crystal glass shelf is securely fastened to mirror by chromium-plated brackets.

Combination Number	Mirror, In.	Overall Size, In.	Shipping Wgt., Lbs.
1, 2	13½ x 15½	18 x 20 x 6	15
111	16 x 20	16½ x 20½ x 6	15

Nos. 1 and 2 List Prices approximately $8.45 and $9.00 respectively. No. 111 approximately $15.25.



No. 2



No. 111

LAWSON MIRRORS FOR WALL HANGING

Built for years of service, Lawson Wall Mirrors are used not only in bathrooms and dressing rooms—but, likewise in bedrooms, halls and other parts of the home. They are widely specified for hotels, schools, theatres, institutions, rest rooms, and office and municipal buildings.

Lawson Mirrors are high quality plate glass . . . and, because of the copper that protects their silver backing, are guaranteed for five years against silver spoilage. Generally furnished with plain edges . . . beveled edges 10% additional.



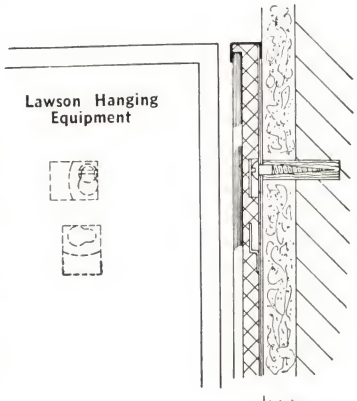
A Cabinet Door Used as a Wall Mirror

In addition to the regular Lawson Wall-Hung Mirrors (Nos. 30, 40, 45, 50, 60), the door of any Lawson Cabinet shown in this catalog can be furnished as a wall mirror . . . with metal back and slots for hanging . . . the price being 75% of that of the complete cabinet. These mirrors, however, are not carried in stock and should be ordered well in advance of delivery date.

As shown in the cross-section, the hanging equipment of all Lawson Mirrors is entirely concealed and permits the mirrors to hang **flush** with the wall. The hanger slots are placed in the metal backing. Rectangular mirrors are slotted to hang in either vertical or horizontal position. See upper drawing.

THEFT-PROOF FEATURE

This efficient, yet inexpensive device guards against theft. It consists of four zig-zag shaped slots in the metal back, which receive the four wall screws. No special installation equipment necessary. Slight additional charge. As mirrors equipped with this Theft-Proof Feature are not carried in stock they should be ordered in advance. See lower drawing.

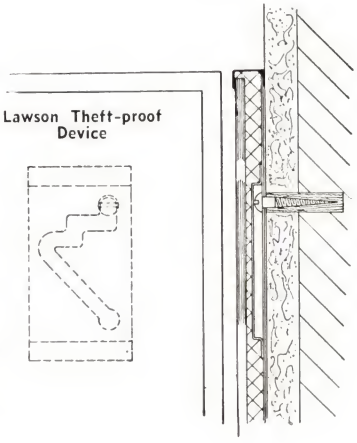




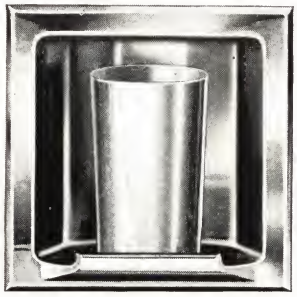
Nos. 30, 40, 45, 50, 60

Mirror Number	Size, In.	Shipping Wgt., Lbs.
30	12 x 18	12
40	14 x 20	14
45	16 x 20	17
50	16 x 22	19
60	18 x 24	29

List Prices of the above Wall Mirrors range approximately from $9.50 to $15.00. Add $0.50 list for theft-proof feature.



LAWSON PIONEER ACCESSORIES



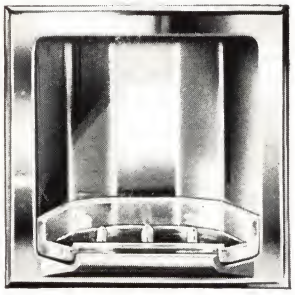
RECESS TUMBLER HOLDER
No. 9760
CHROME TUMBLER: No. 10

FORGED BRASS, CHROMIUM-PLATED . . . beautifully designed . . . concealed screws . . . wider flange that insures perfect fit . . . decidedly resistant to scratching and to grouting on tile walls. Built to endure a lifetime of useful service.

Measurements of All Lawson RECESS Accessories—
Overall Dimen.: 6¼ x 6¼ in. Required Rough Opening: 5¼ x 5¼ in.

If accessories are to be fastened to the wall with screws or toggle bolts, specify "S" type.

If accessories are to be set in the wall with cement, specify "L" type.



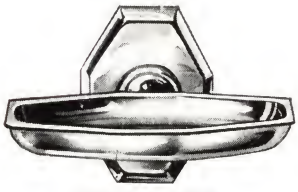
RECESS SOAP DISH
Unbreakable, transparent tray
No. 9750



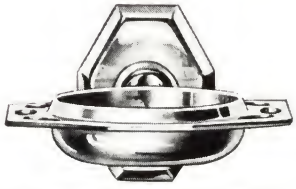
RECESS SOAP DISH AND GRAB BAR
Unbreakable, transparent tray
No. 9780



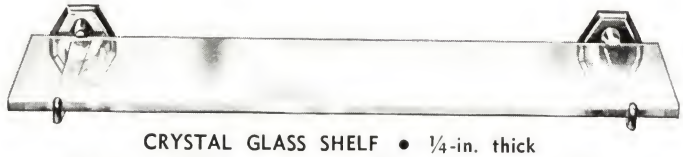
RECESS PAPER HOLDER
Chrome roller: No. 9770
Black wood roller: No. 9775



SOAP HOLDER
With drain holes: No. 9531
Non-draining: No. 9530



TUMBLER AND TOOTHBRUSH HOLDER
With toothbrush slots: No. 9045
Without toothbrush slots: No. 9040



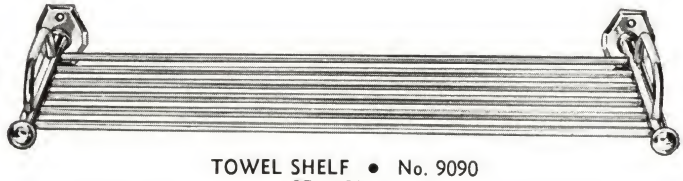
CRYSTAL GLASS SHELF • ¼-in. thick
18-in.: No. 9018 24-in.: No. 9024 30-in.: No. 9030



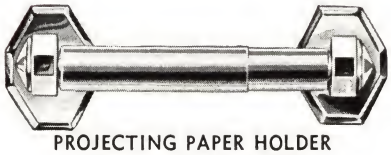
TOOTHBRUSH HOLDER
For five brushes No. 9050



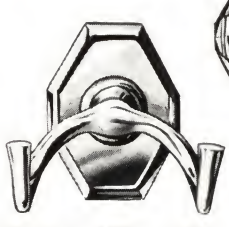
SINGLE ROBE HOOK
No. 9060



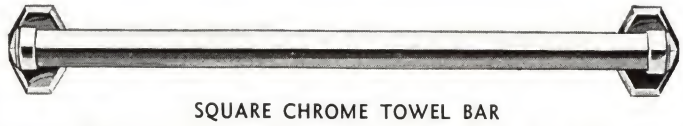
TOWEL SHELF • No. 9090
25 x 8⅜ in.



PROJECTING PAPER HOLDER
Chrome roller: No. 9070
Black wood roller: No. 9075



DOUBLE ROBE HOOK
No. 9065



SQUARE CHROME TOWEL BAR
18-in.: No. 3018 24-in.: No. 3024 30-in.: No. 3030
36-in.: No. 3036

OCTAGONAL CHROME TOWEL BAR (NOT SHOWN)
18-in.: No. 2018 24-in.: No. 2024 30-in.: No. 2030
36-in.: No. 2036 8-in. (Grab Bar): No. 208

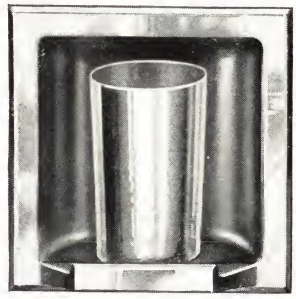
LAWSON PURITAN ACCESSORIES

CAST METAL, CHROMIUM-PLATED. Recommended for use in bathrooms where style, sturdiness and stringent economy are required. The recessed portions of the recessed accessories are drawn from **seamless brass**—to insure long life of the chromium finish on the concave surfaces . . . concealed screws.

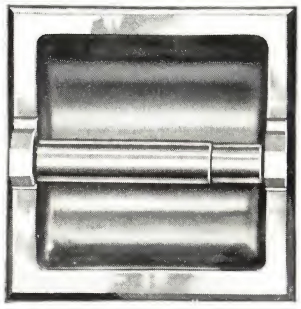
Measurements for All Lawson RECESS Accessories—
Overall Dimen.: 6¼ x 6¼ in. Required Rough Opening: 5¼ x 5¼ in.

If accessories are to be fastened to the wall with screws or toggle bolts, specify "S" type.

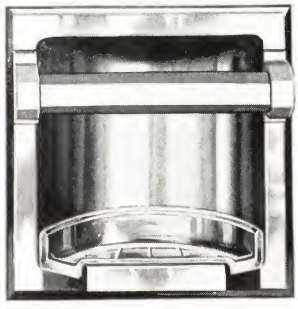
If accessories are to be set in the wall with cement, specify "**L**" type.



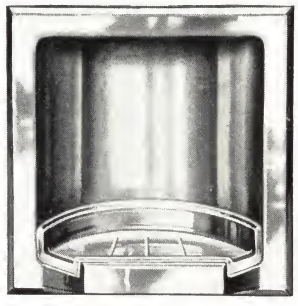
RECESS TUMBLER HOLDER
No. 955
CHROME TUMBLER • No. 10



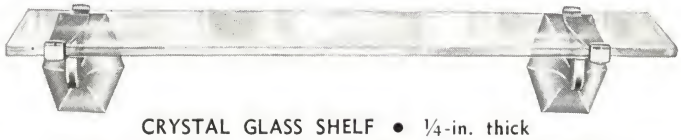
RECESS PAPER HOLDER
Chrome roller: No. 959
Black wood roller: No. 958



RECESS SOAP DISH AND GRAB BAR
Unbreakable transparent glass tray: No. 957



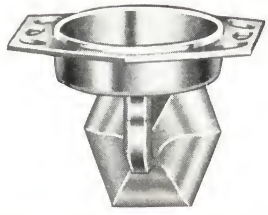
RECESS SOAP DISH
Unbreakable, transparent glass tray: No. 956



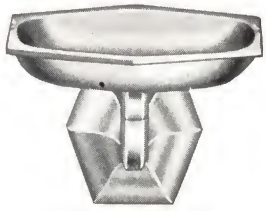
CRYSTAL GLASS SHELF • ¼-in. thick
18-in.: No. 7018 24-in.: No. 7024 30-in.: No. 7030



HEXAGONAL CHROME TOWEL BAR • ¾-in. thick
18-in.: No. 1018 24-in.: No. 1024 30-in.: No. 1030
36-in.: No. 1036



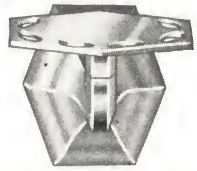
TUMBLER AND TOOTHBRUSH HOLDER
With toothbrush slots: No. 906
Without toothbrush slots: No. 907



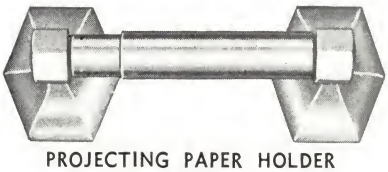
SOAP HOLDER
With drain holes: No. 905-D
Non-draining: No. 905



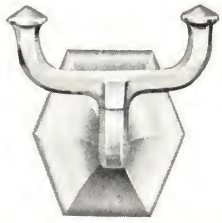
CHROME GRAB BAR • 8-in.
No. 912



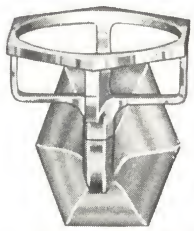
TOOTHBRUSH HOLDER
No. 903



PROJECTING PAPER HOLDER
Chrome roller: No. 910
Black wood roller: No. 909



DOUBLE ROBE HOOK
No. 915



TUMBLER HOLDER
Open Type
No. 904



SINGLE ROBE HOOK
No. 908

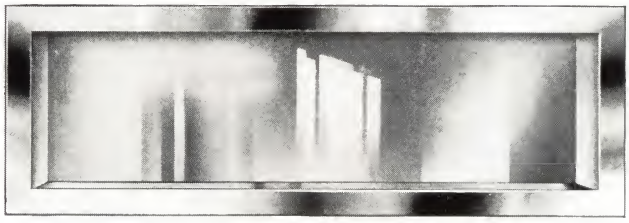
LAWSON RECESS SHELVES

THE TWO Lawson Recess Shelves pictured are a convenient accommodation for toilet articles and prove a welcome addition to bath and dressing rooms styled in any type of wall covering or decoration. Either can be used with any Lawson Bathroom Cabinet.

De LUXE RECESS SHELF • No. 488

The secret of the charm of this shelf is its tinted mirrors. For the De Luxe Shelf is completely lined with mirrors . . . in blue, green, rose, gunmetal or silver. And then, to add a further modern note, its face flange is chromium plated.

Size overall: 24 x 8 inches. Required rough opening: 23⅜ x 7⅜ x 4 inches. List Price approximately $30.00.



STANDARD RECESS SHELF • No. 599

This Lawson Recess Shelf, in addition to its moderate price, has another reason for its popularity. It is built entirely of stainless steel that retains its brilliance year after year



. . . never needs refinishing or replating. To give this shelf a note of contrast . . . to make it unusually useful and inviting . . . its bottom is completely covered with opal glass — **in black.**

Size overall: 17 x 7 inches. Required rough opening: 15⅞ x 6 x 3½ inches. List Price approximately $13.50.

LAWSON WALL LIGHTS

WHERE it is impractical or undesirable to use Lawson Cabinets with side lights attached, these Lawson Wall Lights are widely specified. They give sufficient light to illuminate the entire bathroom — and diffuse the light without glare. When used in combination with any Lawson non-lighted Cabinet, these Wall Lights create a most pleasing effect. Toggle switch on each light.

In installing these Wall Lights, we recommend that the center of the outlet box be 2⅝ inches from the edge of the cabinet door; see drawing on page 3. Like all Lawson Cabinets, these Wall Lights are wired in strict compliance with the regulations of the Underwriters' Laboratories and carry the seal of safety.

Bulbs are not furnished—but can be quoted and supplied separately. We recommend General Electric T-8 tubular bulbs, 40-watt and frosted, be purchased locally.



Lawson Tubular Wall Lights, No. 333.

TUBULAR • No. 333

This type of Wall Light consists of a brass chromium-plated back plate which is screwed directly to the wall. On this plate are mounted the two brackets that hold the tubular shade of frosted glass. The lower cup bracket supports the base of the shade and houses the socket for the tubular bulb; the upper arm-and-ring holds the shade firmly in place.



Size overall: 2½ inches wide; 17 inches long. Price approximately $16.40 per pair.



Lawson Reflector Wall Lights, No. 444.

REFLECTOR STYLE • No. 444

This style of Wall Light is exceptionally brilliant. It uses a frosted tubular bulb, unshaded, against a chromium-plated reflecting wall plate. On this plate are mounted the two cups that hold the bulb in position. The upper cup, inverted, house the socket for the bulb; the lower cup hides the tip of the bulb.



Size overall: 2¼ inches wide; 17 inches long. Price approximately $13.00 per pair.

LAWSON WALL-HUNG CABINETS

THESE Lawson Cabinets . . . built with the typical Lawson sturdiness . . . are designed for use where recessing is not possible or desired. These cabinets conceal their hanging equipment and hang flush with the wall. This is accomplished by hanger slots cut in the back of the cabinet; into these slots fit the screws already inserted in the wall. The mirrors are guaranteed for five years against silver spoilage.

No. 94 . . . With frameless Venetian crystal mirror.

Nos. 131, 152 (illustrated) . . . With Venetian crystal mirror and stainless steel frame.

Nos. 121, 142 (not shown) . . . With Venetian crystal mirror and black enameled frame.

No. 85 . . . Heavily constructed for severe usage. Built to comply with specifications of many government departments. Plate glass mirror.

Nos. 28½, 212, 214 . . . With bow-top mirror neatly engraved and bound with narrow white enamel frame. Three "convenient" sizes. Single strength glass mirror. Nos. 212 and 214 have toothbrush holder.

For quotations, see price list.

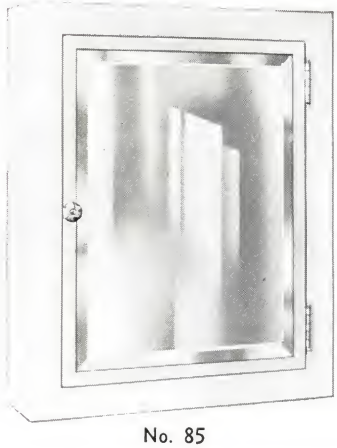
Cabinet Number	Mirror, In.	Overall Dimen., In.	Shelves	Shipping Wgt., Lbs.
94	14 x 20	13½ x 18 x 4½	2 (glass)	17
121, 131	12 x 18	11½ x 16 x 4½	2 (metal)	13
142, 152	14 x 20	13½ x 18 x 4½	2 (metal)	17
85	12 x 16	16 x 20 x 4⅝	2 (glass)	21
28½	11 x 15½	10¾ x 14 x 3½	1 (metal)	5
212	12 x 18¾	12 x 17¼ x 4	2 (metal)	8½
214	13½ x 20	13¼ x 18¼ x 4½	2 (glass)	11½



No. 94



Nos. 131, 152 (121, 142)



No. 85



Nos, 28½, 212, 214

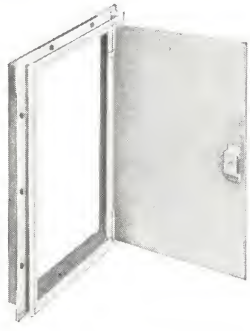
LAWSON ACCESS PANELS



List Price of Lawson Access Panels approximately $5.20 to $12.25.

FLUSH TYPE • REMOVABLE HINGED DOORS • CAM-ACTUATED LOCKS

These Access Panels—WITH 14-GAUGE DOORS AND 16-GAUGE FRAMES—permit easy access to pipes, valves, air shafts and similar equipment located in or behind walls. The panel door closes firmly on the inside sill or flange . . . thereby prevents dust and dirt from entering the room. The entire unit is made of steel and is fireproof. After installation, it can be covered and concealed with plaster or wallpaper.

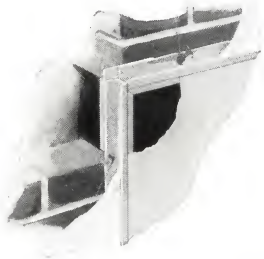


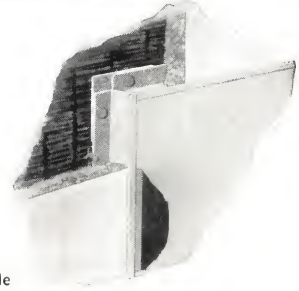
The door of the Unit is held in place by an inconspicuous screw-head lock. This lock can be turned by a screw driver. The door swings to a full 90 degree angle and **can be removed and replaced with ease.**

Furnished in two types: For use in plaster walls; and for use in walls faced with marble, tile or similar materials.

Panel Number		Panel, In.	Wall Opening, In.	Shipping Weight Lbs.
For Use In Plaster Walls	For Use in Hard Surface Walls			
5	55	7½ x 11½	8 x 12	6
7	75	12½ x 16½	13 x 17	10
11	115	14½ x 18½	15 x 19	14
21	215	18½ x 24½	19 x 25	25
23	235	18½ x 30½	19 x 31	30

At Left: for plaster walls





At Right: for marble or tile

LAWSON DISTRIBUTION FACILITIES

Lawson Bathroom Cabinets, Wall Mirrors, Access Units, and Bathroom Accessories are sold by leading dealers in plumbing supplies, lumber, builders hardware and tile . . . in every section of the country. These distributors are prepared to quote on your requirements and to make prompt delivery of standard Lawson products.

LAWSON Bathroom Division SALES ORGANIZATION

*SALES HEADQUARTERS: Evans and Whateley Streets, CINCINNATI, OHIO

Ray E. Van Hart, Middle Western Territory, c/o Cincinnati Office

Hugh Smith, Northern Indiana Representative, P. O. Box 1885, Station "E," Cleveland, Ohio

*NEW YORK, N. Y., George V. Galbreath, 17 Warren St.

*CHICAGO, ILL., H. L. Jillson, 1327 W. Washington Blvd.

*BOSTON, MASS., W. H. Maxwell, 239 "A" Street

*WASHINGTON, D. C., I. A. Pectol, 5616 13th St. N. W.

*MONTREAL, QUEBEC, CANADA, R. G. K. Ward, 4443 Beaconsfield Ave., N. D. G.

*PHILADELPHIA, PA.
City: Marshall Ward, 117 N. 2nd St.
Eastern Pa.: J. Harvey Ward, 117 N. 2nd St.

*PITTSBURGH, PA., Metal Cabinets & Built-In Corp., 3008 Jenkins Arcade

EXPORT DEPARTMENT, C. C. Chopp, Mgr., Rockefeller Building, Cleveland, Ohio

* Indicates warehouse stocks carried in these cities.

BUFFALO, N. Y., Walter L. Hoffman, 84 Sterling Ave.

CLEVELAND, OHIO, S. Arthur George, 1200 W. 9th St.

COLUMBUS, Ohio, V-W Company, 214 Oak St.

DALLAS, TEX., A. T. Powell Co., 511 Great National Life Bldg.

DAYTON, OHIO, Charles L. Woodbury, 2053 Litchfield Ave.

DENVER, COLO., Carl H. Roath, 1925 W. 3rd Ave.

DETROIT, MICH., F. C. Funke, P. O. Box 244

GRAND RAPIDS, MICH., T. J. Hughes, 1125 Madison Ave., S. E.

HOUSTON, TEX., A. T. Powell Co., J. M. Collins, Agt., 809 First National Bank Bldg.

JACKSONVILLE, FLA., Wesley C. Lantz, 543 W. 25th St.

KANSAS CITY, MO., Harold S. Thiem, P. O. Box 384

KNOXVILLE, TENN., James H. Rolen, P. O. Box 1464

LEXINGTON, KY., I. H. Stern, 221 N. Limestone

MARIETTA, OHIO, P. I. McGowan, P. O. Box 23

MILWAUKEE, WISC., L. J. Novotny, Plankinton Bldg.

OKLAHOMA CITY, OKLA., L. A. Wheaton, P. O. Box 411

ROANOKE, VA., A. L. Horwitz, 208 Boxley Bldg.

ROCHESTER, N. Y., Charles A. Kolstad, 243 Long Acre Road

SALT LAKE CITY, UTAH, Rex Williams, 409 Dooly Bldg.

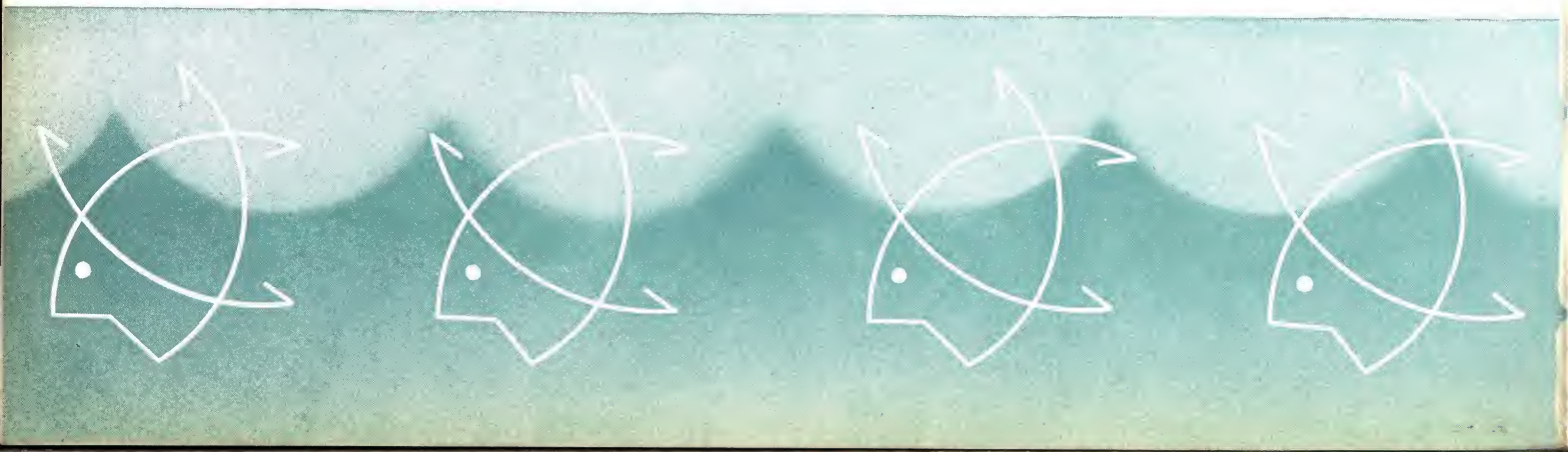
SAN ANTONIO, TEX., A. T. Powell Co., A. E. Connor, Agt., 419 Houston Bldg.

SEATTLE, WASH., R. A. Provine, 2004 32nd Ave., South

ST. LOUIS, MO., The L. C. Watling Co., 100 No. Broadway Bldg.

VANCOUVER, B. C., W. G. Breeze & Co., 1150 Hamilton St.

WINNIPEG, MAN., George Peatt & Co., 35 Aikins Bldg.





Miami

★ CAREY ★ COLONIAL ★

Bathroom Cabinets

Bathroom Accessories and Mirrors

. . . *"Glorifying the American Bathroom"* . . .

BRIEF HISTORY OF THE COMPANY

Twenty years ago, the Miami Cycle and Manufacturing Company, manufacturers of the famous Racycle Bicycle and the Flying Merkle Motorcycle, introduced Miami steel recessed bathroom cabinets to the architectural and building fraternity. In 1923, the Miami Cabinet Company was organized for the purpose of taking over the bathroom cabinet business of the Miami Cycle and Manufacturing Company. In 1933, The Philip Carey Company, an institution of international scope, purchased the Miami Cabinet Company, thus linking together two famous trade names, MIAMI and CAREY.

In 1933, Carey Cabinets were introduced for the first time. In 1938, the Colonial Line of cabinets and bathroom accessories was introduced. Today, we present to you in this catalog the most complete line of bathroom cabinets, mirrors and accessories ever offered the trade.

The products shown in this catalog are the result of forty-eight years of experience in the fabricating and finishing of metal. This experience, backed by the resources of The Philip Carey Manufacturing Company (organized in 1873), is your guaranty of complete satisfaction.

DESIGN AND CONSTRUCTION

When Miami Cabinets were first introduced twenty years ago, all bathroom cabinets, both wood and steel, were of standard pattern and design — a square or oblong box fitted with a mirror door with wide unsightly flanges of steel or wood visible on all sides of the mirror — useful, but certainly not beautiful. Miami designers and engineers, not satisfied and refusing to accept the existing opinion that a bathroom cabinet could not be beautiful as well as useful, set to work to revolutionize the industry. In the ensuing years, Miami first introduced the panel Venetian type of cabinet; the mirror clip that replaced the old ugly rosettes; the wing mirror type of cabinet, the complete hotel bathroom unit, the circular mirror model, mirror lined recess shelves (both horizontal and vertical). The Imperial, the DuBarry and many other distinctive and beautiful models have all been introduced by Miami. The first electrically-lighted bathroom cabinet was likewise introduced by Miami.

In brief, Miami has combined the beautiful with the useful as is exemplified in the many exclusive models illustrated in this catalog. Miami's new designs of today are the standard models of tomorrow for others.

CO-OPERATION WITH ARCHITECTS

Miami-Carey designers and engineers recognized the fact that the Modern Bathroom of Today is as different from yesterday's bathroom as is the difference between day and night. Bathroom layout and the selection of the proper fixtures for today's many different bathrooms presents a problem that requires the services of a trained architect.

Miami-Carey designers and engineers work in close co-operation with architects, builders and contractors in the interest of a better understanding between the home owner, the architect and the manufacturers. Architects are invited to call on us for sketches and helpful suggestions on any unusual bathroom cabinet, mirror or accessories problems.

Over two hundred practical cabinet and accessories men located in strategic points throughout the country are available to assist you with your cabinet, mirror and accessories problems.

See back cover for partial list of branch offices and distributors.

A FEW TYPICAL INSTALLATIONS

For twenty years, Miami Cabinets have been recognized as the finest examples in bathroom cabinet construction. In 1933, the Carey Cabinets were introduced for the first time. Today, the combined line is known as MIAMI-CAREY-COLONIAL, the most complete line of cabinets, mirrors and accessories offered the trade.

It may well be said that the sun never sets on MIAMI-CAREY-COLONIAL cabinets. Thousands of them are in use all over the world — in China, Japan, India, Italy, France, England, Alaska and in the South American countries as well as in all the states in the United States; likewise, in ships that "Go Down to the Sea."

In the nature of a reference, we submit below a few typical installations.

RESIDENCES

The Governor's Mansion, Jefferson City, Missouri
John D. Rockefeller, Jr., Estate, Pocantico Hills, N. Y.
Henry Ford, near Savannah, Georgia
Junior Chamber of Commerce Home, Birmingham, Alabama
Mrs. Horace Dodge Wilson, Detroit, Michigan
Elisha Walker, Syosset, Long Island, New York
Dickerson Estate, Brattlesboro, Vermont
Kodak Realty Homes, Rochester, New York
A. L. Riley, Wilkes-Barre, Pennsylvania
S. N. Amster, Shaker Heights, Ohio
Lewis L. Strauss, Brandy, Virginia
Leonard K. Firestone, Macedonia, Ohio

PUBLIC BUILDINGS

The Building of Italy, Rome, Italy
WWJ (Detroit News Radio Station), Detroit, Michigan
New York State Bathhouses, Saratoga Springs, New York
Hickman Memorial Home, West Chester, Pennsylvania
Southwestern Bell Telephone Building, St. Louis, Missouri
U. S. Aerological Building, Los Angeles, California
27 U. S. Army and U. S. Navy Barracks Buildings

HOTELS, CLUBS, THEATRES, APARTMENTS

19 East 72nd St. Apartments, NewYork City, N.Y.
Hotel Manila, Manila, P. I.
Hotel Astor, New York City, N. Y.
Greenbrier Hotel, White Sulphur Springs, Va.
Stevens Hotel, Chicago, Ill.
Broadway Mansions, Shanghai, China
Roxy Theatre, New York City, N. Y.
Hotel Isabel, Mexico City, Mexico
New Washington Hotel, Seattle, Wash.
Hotel Dennis, Atlantic City, N. J.
Waldorf Apartments, Cincinnati, Ohio
Hotel Frontier, Cheyenne, Wyoming
Hotel Sylvan Lake, Rapid City, S. Dak.
Madison Park Apts., Seattle, Wash.
Oakley Village, Inc., Baltimore, Maryland
Franklin Heights Apartments, Roanoke, Va.
The Rahall Hotel, Beckley, W. Va.
Brentwood Village Apts., Washington, D. C.
Hotel St. Paul, St. Paul, Minn.
40 U. S. Government Housing Projects
Huckens Hotel, Oklahoma City, Okla.
Baranof Hotel, Juneau, Alaska
Laurel Village Ben Avon, Pittsburgh, Pa.

UNIVERSITIES AND HOSPITALS

State Teachers' College, Harrisville, Pa.
Notre Dame University, Notre Dame, Ind.
Columbia University, New York City, N. Y.
Creighton University, Omaha, Nebr.
Texas University, Austin, Texas
Yale University, New Haven, Conn.
Duke University, Durham, N. C.
John Carroll University, Cleveland, Ohio
Johns-Hopkins Hospital, Baltimore, Md.
Allegheny General Hospital, Pittsburgh, Pa.
Fitzsimons General Hospital, U. S. Army, Denver, Colorado
U. S. Marine Hospital, Buffalo, N. Y.
Maternity Hospital, Cleveland, Ohio

STEAMSHIPS

S. S. Manhattan, U. S. Line
S. S. George Washington, U. S. Line
U. S. Navy Warships
Chris-Craft Yachts and Cruisers

Copyright 1938; Miami Cabinet Company

. . . Glorifying the



American Bathroom

MIAMI

CABINETS and ENSEMBLES

SPECIFICATIONS

ALL models and units illustrated on catalog pages 4 to 13, inclusive, are Miami ensembles, cabinets or individual units. These models are representative of the finest in cabinet design and construction. Only the best materials obtainable are used in the manufacture of the Miami Line.

MIRRORS

All mirrors are "A" quality genuine plate glass. No finer mirrors can be purchased. All mirrors are "Electrolytic" *copper backed*, guaranteed for five years against silver spoilage.

BRASS

All brass used for mirror frames, hinges and other parts is specially rolled to our specifications so as to insure a first-quality chromium finish.

PLATING

Chrome plating is in strict accordance with the best specifications for this type of plating so as to insure an everlasting and lustrous finish.

HINGES

All door hinges, except the hinge on the Duchess and Moderne, are piano type, *brass, chromium plated.* The Duchess and Moderne hinge is of a special type.

STEEL AND CONSTRUCTION

The steel used in the Miami Line is ARMCO prime sheets, 18-gauge, specially prepared for enameling.

The bodies of all cabinets in the Miami Line are formed from one piece of steel so as to make a one-piece body. No open seams or joints to rust or gather dirt.

All door strikes are *stainless steel*, bullet door catches are *brass, chromium plated.* Door stops are the bar type, *brass, chromium plated.*

Shelf supports in the Miami Line are *stainless steel.* The "U" type bracket prevents the shelf from being upset. The two bottom shelf brackets are arranged to accommodate six tooth brushes.

FINISH

A cabinet is no better than its finish. The finish used on all models in the Miami Line is *Crystal Snow*, a non-porous finish of a pyroxylin nature applied by a special process. It is guaranteed not to discolor with age, crack, craze or peel. The original lustre will remain indefinitely in spite of frequent cleaning to remove stains, a fact which earned for *Crystal Snow* the title "The finish that won't retain a stain."



MIAMI DU BARRY CABINET . . . MIRROR ENSEMBLE

A Masterpiece of Beauty, Convenience and Completeness

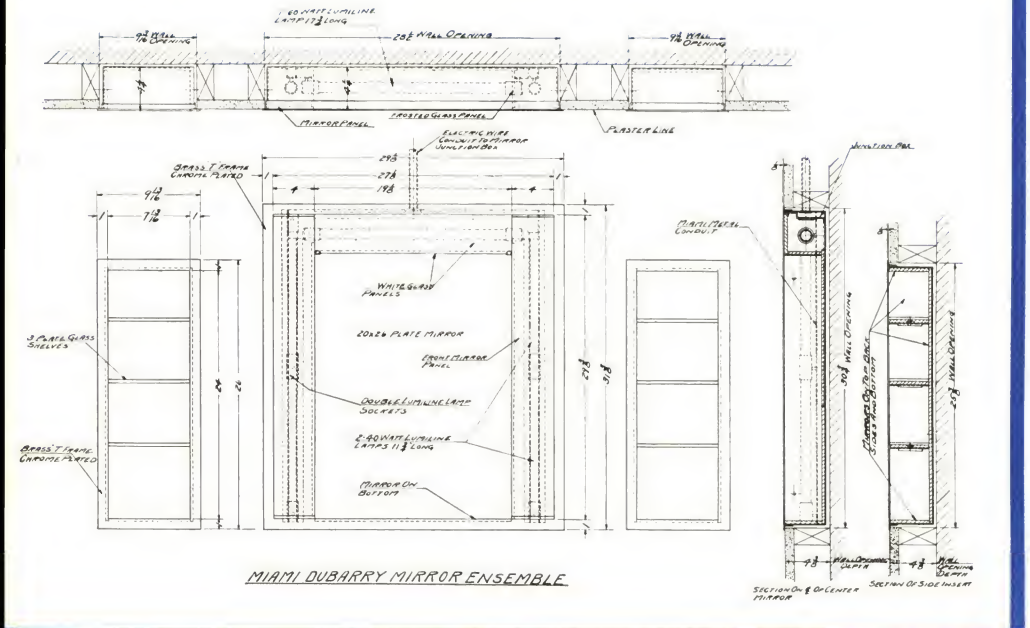
The DuBarry, a distinctive unit, brings to the modern bathroom life-time beauty, today, tomorrow and always — colorful, brilliant, modern.

The beautiful center unit, with its concealed lighting reflected onto the mirror and into the room, is enhanced by the two open side cabinets. The deep lustre of chrome, combined with colored or regular silver mirrors, makes it possible for the architect and the home owner to work out a combination that will harmonize with the general color scheme of the bathroom.

DETAILS OF CONSTRUCTION

The center unit consists of recessed mirror set in a *brass, chromium plated* frame. The concealed light fixtures are located behind opal glass panels at the top center and behind the narrow mirrors on both sides of the large center mirror. Perfect illumination for the entire bathroom and for shaving and dressing the hair is provided by four 12-inch, 10-watt Lumaline light bulbs, two on each side of the large center mirror and by one 18-inch, 60-watt Lumaline light bulb above the large center mirror. These five bulbs will be furnished, if ordered, at extra cost. See price list for cost. The unit is wired complete at the factory. See catalog pages 16 and 17 for suggested installations.

The large center mirror is optional as to color, either the new rose (flesh) or regular silver. The small narrow side mirrors of the center unit may be had in blue, green, gun metal, rose (flesh) or regular silver.



MIAMI DUBARRY MIRROR ENSEMBLE

SIDE CABINETS

There are no doors on the side cabinets of the DuBarry. These cabinets are lined on the inside with mirrors, either blue, green, gun metal, rose (flesh) or regular silver. Three glass shelves to match the mirror are furnished with each cabinet.

SPECIFICATIONS

No return flange on the center or side units. When installed, all units set flush against the finished wall line.

When ordering, please specify:

1. Color of large mirror — rose (flesh) or regular silver.
2. Color of narrow side mirrors in the center unit — blue, green, gun metal, rose (flesh) or regular silver.
3. Color of interior of the two side cabinets — rose (flesh), gun metal, blue, green or regular silver.
4. Specify whether light bulbs shall be furnished.

[*See page 3 for additional specifications*]

New

Different

Distinctive

•



MIAMI LOUIS XIV CABINET . . . MIRROR ENSEMBLE

The Louis XIV unit is not merely a bathroom cabinet, but an ensemble of beautiful bathroom furniture. The flexibility of this ensemble is one of its most attractive features. If there is not sufficient wall space for the installation of all three units above the lavatory, the center unit, with its concealed light fixtures around the center mirror, may be installed over the lavatory and the individual side cabinets may be installed in the adjacent side walls (see catalog pages 16 and 17 for different installations).

DETAILS OF CONSTRUCTION

The center unit is a beautiful modern recessed mirror. There is no cabinet behind it. There is no door. The frame around the center unit is *brass, chromium plated*. The center mirror is the new rose (flesh) colored glass. Regular "A" quality silver mirror is optional. The small side mirror panels on the center unit are optional as to color — either rose (flesh), blue, gun metal, green or regular silver.

The lights concealed behind the white opal glass panel at the top of the center unit and behind the two narrow side mirrors are arranged so as to reflect proper illumination to the center of the mirror. Light is also reflected out into the room through the top front panel, thus providing sufficient illumination for the average bathroom. Two 12-inch, 40-watt Lumaline lights are placed on each side of the center mirror. One 18-inch, 60-watt Lumaline light is located behind the opal glass panel above the large center mirror.

These bulbs will be furnished at extra cost if ordered. See price list for bulb cost. The wiring is complete at the factory.

SIDE CABINETS

The two side cabinets are finished inside in Miami *Crystal Snow* white finish. Three glass shelves are furnished with each cabinet.

The mirrors in the side cabinets are set in *brass, chromium plated* frames to match the frame of the center unit. These mirrors are the new rose (flesh) color. Regular silver mirrors are optional.

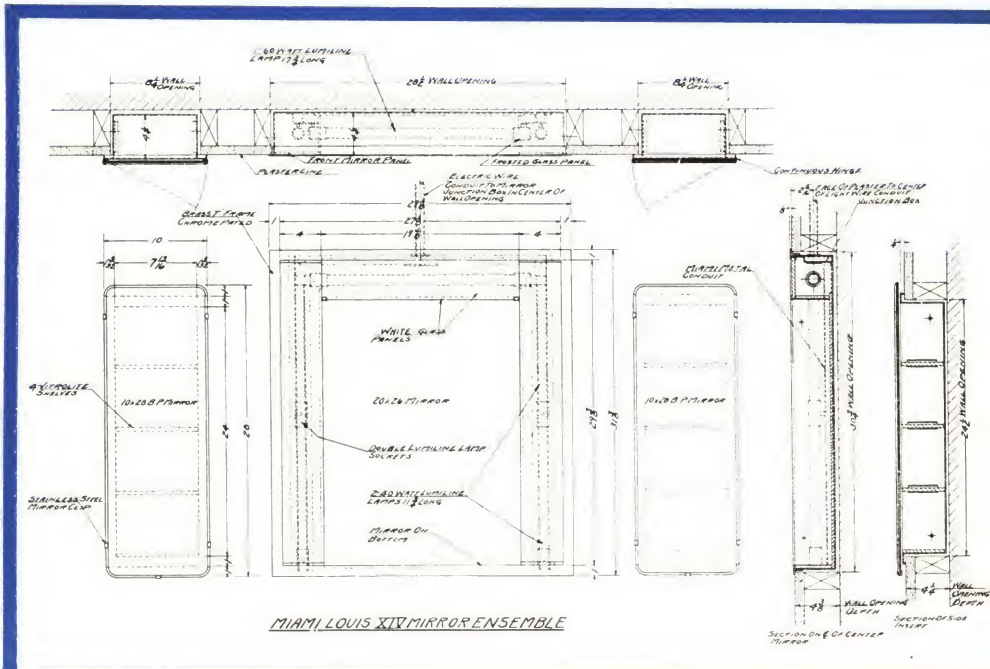
SPECIFICATIONS

No return flanges on center unit. The side cabinets have one-quarter inch return flange.

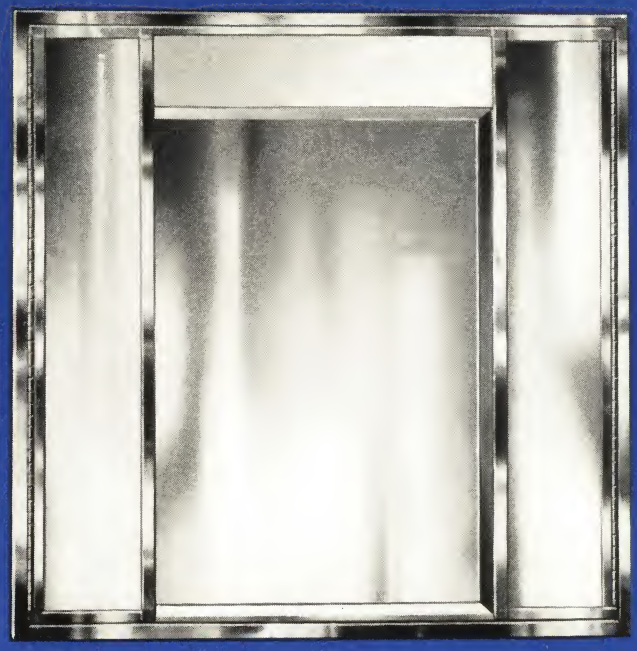
When ordering, please specify:

1. Color of mirror for side cabinets, either rose (flesh) or regular silver.
2. Color of large mirror for center unit — rose (flesh) or regular silver.
3. Color of the two narrow side mirrors for the center unit — blue, green, gun metal, rose (flesh) or regular silver.
4. Specify whether light bulbs are to be furnished.

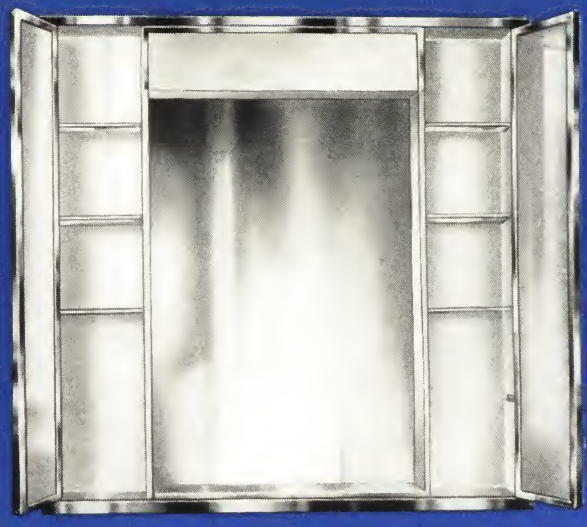
[*See page 3 for additional specifications*]



MIAMI LOUIS XIV MIRROR ENSEMBLE



(Left) The Imperial with Side Cabinet Doors Closed



The Imperial with Side Cabinet Doors Open.

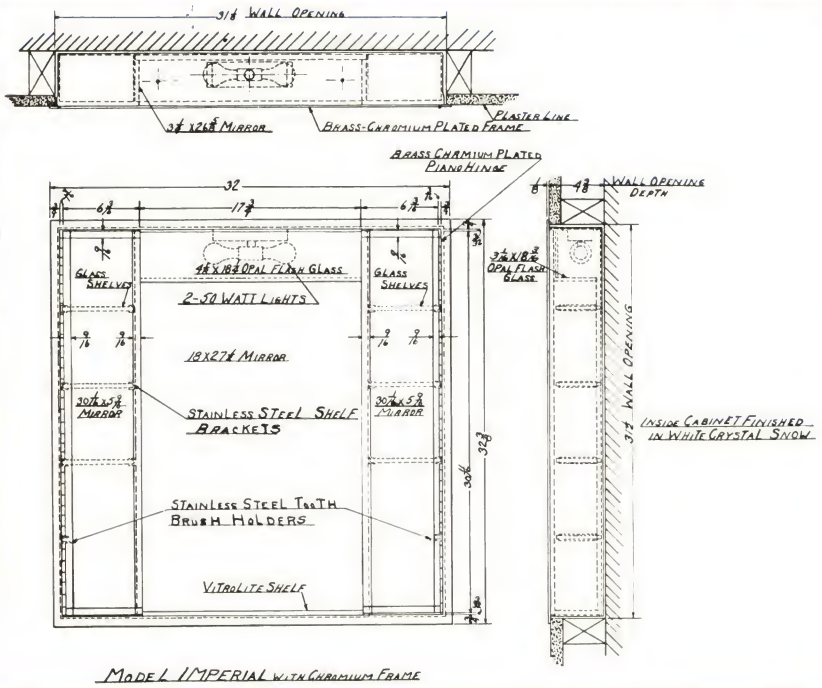
MIAMI IMPERIAL CABINET

Here is Miami's latest development in Modern Bathroom Cabinets — an exclusive, distinctive, DeLuxe Model for those of discriminating taste — the very finest cabinet that money can buy. The Imperial is distinguished by the skillful harmonizing of Chrome and Glass. The frame around the entire cabinet is *brass, chromium plated.* Spacious side cabinets, one on each side of the large recessed mirror, have chromium framed mirror doors swung on *brass, chromium plated* piano-type hinges. Cabinets are finished inside in white *Crystal Snow* and are equipped with three glass shelves, *stainless steel* shelf supports and tooth brush holders. The shelf under the center mirror is white *vitrolite.*

The inside walls projecting outward from the center mirror are faced with mirrors that match the large center mirror.

The lighting arrangement is indirect. Two light bulbs concealed behind the opal glass panel at top of the center mirror provide perfect reflected light for shaving or dressing the hair. If fifty watt or larger bulbs are used, the light is sufficient to provide adequate illumination for the average bathroom. All wiring is completed at the factory.

The rose (flesh) colored mirrors may be had if required.



MODEL IMPERIAL WITH CHROMIUM FRAME

SPECIFICATIONS

Overall size	32" x 32⅜"
Wall opening	31⅛" x 31½" x 4⅜"
Depth, front to back	4⅜"

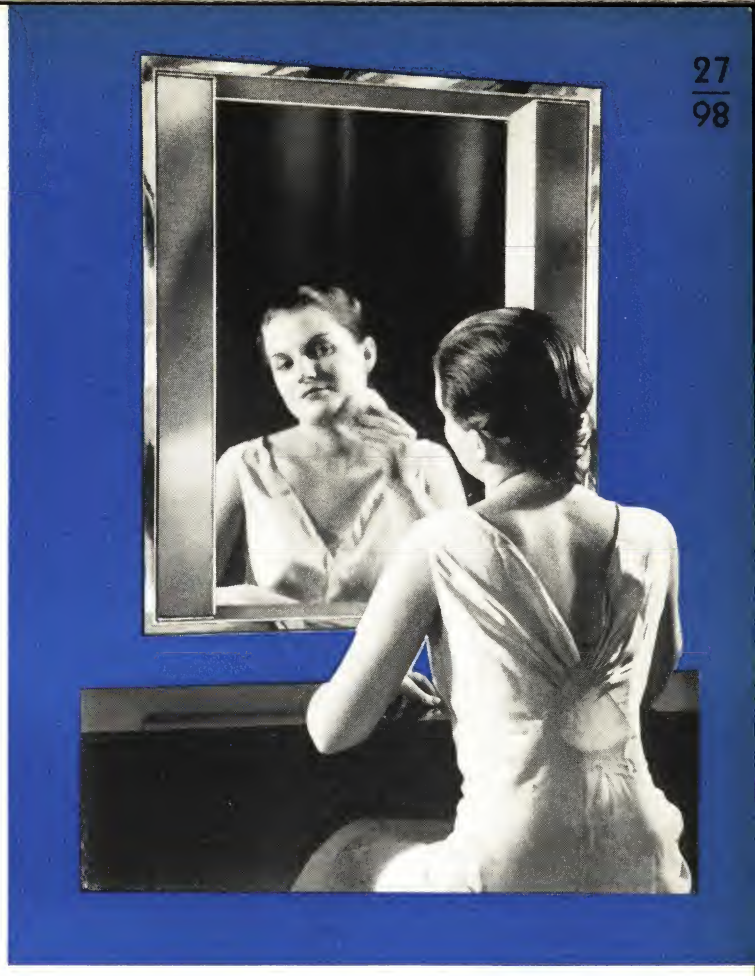
[*See page 3 for additional specifications*]

The POWDER PUFF

Dressing Room Mirror

In the home of today, the Powder Room is almost as essential as was the bathroom in the house of the late nineties.

The custom-built Powder Puff unit, as illustrated, adds the final touch to the modern powder or dressing room. Architects, contractors, and home owners have indorsed the Powder Puff as the most complete and distinctive dressing room unit yet offered to the public.



DETAILS OF CONSTRUCTION

The outside frame is *brass* finished in lustrous *chromium plate*. The large center mirror is the new alluring rose (flesh) color. Regular silver mirrors may be had if desired.

The small mirrors on either side of the large center mirror are optional as to color—either rose (flesh), gun metal, blue, green, or regular silver. The recessed lower shelf may also be had in the same colors as the small side mirrors or in regular silver.

The light brackets are concealed behind the two small side mirrors and are so located that the light is reflected onto the large center mirror through ground glass panels. Four 18-inch, 60-watt Lumaline bulbs, two on each side of the center mirror, provide perfect illumination. These four bulbs will be furnished when ordered. See price list for extra cost.

All wiring is completed at the factory.

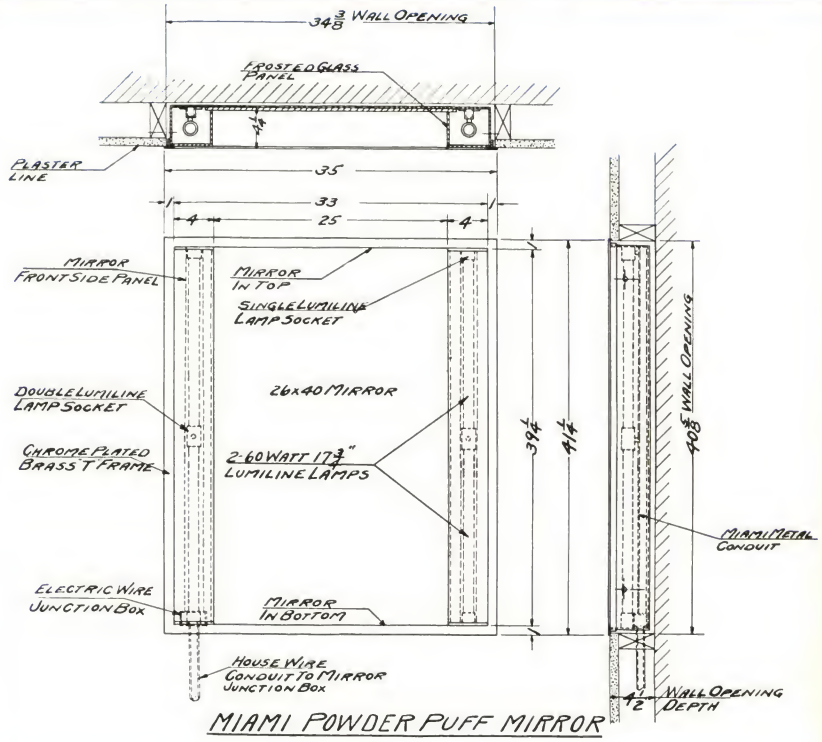
When ordering, please specify color of mirrors desired.

SPECIFICATIONS

Overall size	35″x41¼″
Wall opening	34⅜″x40⅝″x4⅜″
Depth, front to back	4⅜″

This unit is not fitted with a return flange. When set in the wall, the front flange sets flush against the finished wall line.

[*See page 3 for additional specifications*]



MIAMI POWDER PUFF MIRROR



The DUCHESS







The POMPADOUR

The DUCHESS

The Duchess is a spacious cabinet concealed behind a beautiful circular mirror set in a *chromium plated* frame of *brass*, styled to match today's modern bathroom fixtures and accessories.

The ingenious hinge, on which the door is swung, permits the door to be pulled outward over the lavatory so that when opened the mirror is only a few inches from the face of the individual — an ideal arrangement for shaving or dressing the hair.

The MODERNE





The Moderne is similar to the Duchess except that there is no frame around the mirror. The mirror has a beautiful beveled edge and is attached to the solid steel door with *stainless steel* mirror clips.

When installed in the wall, the Duchess and the Moderne look like beautiful circular mirrors hung on the wall.

Two plate glass shelves adjustable to three positions are furnished with each model. The razor blade drop in the back wall of the cabinet is *brass, chromium plated.*

Both of the above models are protected by U. S. Patent No. 2130556.

SPECIFICATIONS — THE DUCHESS and MODERNE

Mirror size . . . . . 26″ circle
Wall opening . . . . . 16½″x16½″x4¼″

The POMPADOUR

Circular Mirror and Recessed Shelf

The Pompadour, an ideal unit for the guest bathroom, the downstairs lavatory or the dressing room, consists of a 26-inch circular mirror and glass lined recess shelf. There is no cabinet behind the circular mirror. Steel back on which the mirror is mounted is fitted for concealed hanging on the wall.

The frame around the lower recessed shelf is *brass, chromium plated.* The shelf itself is lined with mirrors. The colors available are blue, green, gun metal, rose (flesh) or regular silver. By using suitable colors in the lower shelf, beautiful effects can be worked out that will harmonize with bathroom color schemes.

The circular mirror is usually finished in regular silver. The new rose (flesh) color mirror is available at slight additional cost.

SPECIFICATIONS FOR LOWER SHELF

Wall opening . . . . . 23⅜″x7⅜″x4⅜″

When ordering, please specify color desired for recessed shelf — blue, green, gun metal, rose (flesh) or regular silver.

[*See page 3 for additional specifications*]

The OXFORD

The Oxford, a smaller and less expensive edition of the Imperial, is modern, complete, different and distinctive. It is designed for the medium and smaller sized bathrooms not large enough to accommodate the Imperial.

Color makes the bathroom of today attractive and alluring. The Oxford, finished in color to match tile, bathroom fixtures or the color scheme of the room, is the last word in modern planning. The Oxford can be finished in any color desired at a slight additional cost. See price list for cost in special colors.



DETAILS OF CONSTRUCTION

Storage cabinets are located on each side of the mirror. The door frame of the storage cabinets is *brass, chromium plated*. The shelves, three on each side of the cabinet, are plate glass. The center mirror is recessed four inches back from the front of the cabinet. There is a white *vitrolite* shelf at the bottom of the center mirror, a convenient place for toilet articles.

The frame around the entire unit is *Armco* prime stock steel regularly finished in white *crystal snow*.

The light brackets concealed behind the white opal glass panel at the top center of the cabinet are arranged so as to reflect light onto the center mirror and thus provide illumination for making the toilet.

Light is also reflected out into the room through the front light panel, providing sufficient illumination for the average bathroom. Regular type bulbs up to 75 watts may be used. We do not furnish the bulbs.

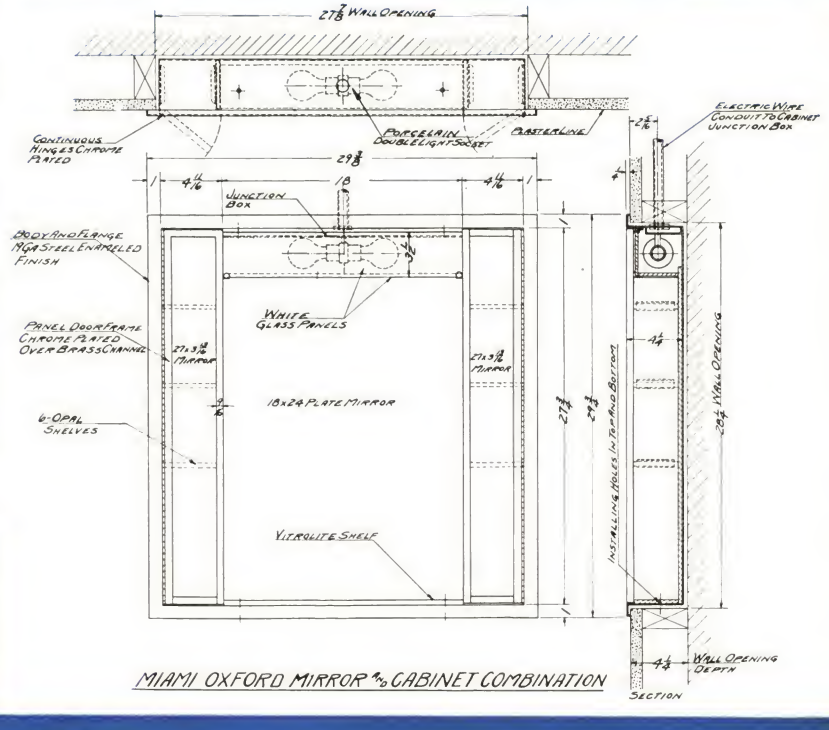
All wiring is completed at the factory, and is in accordance with Underwriters' regulations.

SPECIFICATIONS

Overall size	29⅜"x29¾"
Wall opening	27⅞"x28¼"x4¼"
Depth, front to back	4¼"
Return flange	¼"

When ordering, please specify color in which the cabinet frame and side panels are to be finished. Also specify whether regular silver or rose color mirrors are desired.

[See page 3 for additional specifications]



MIAMI OXFORD MIRROR & CABINET COMBINATION



No. 902



No. 903

INDIVIDUAL UNITS

The units illustrated on this page make possible a wide choice in expressing individual ideas of beauty and distinction. The combination of these units permits the architect and the home owner to make up combinations that will best meet the owner's requirements.

No. 902 — 26″ Circular Mirror — This beautiful circular mirror fitted with concealed device for hanging on the face of the wall is the ideal unit for installation in the small dressing room, for the entrance hall or above the dresser in Milady's boudoir.

It is also a practical and very beautiful mirror for hanging above the mantel in the living room. The mirror may be had in regular silver or in the new rose (flesh) color, the latter at slight additional cost.

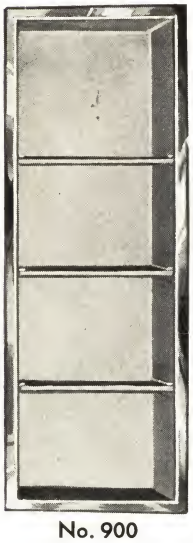
No. 903 — Recessed Lighted Mirror — The majority of the leading interior decorators are today suggesting that a lighted mirror be installed over the lavatory of the bathroom and that the medicine cabinet be installed in an adjacent or opposite wall.

Model 903 meets these specifications exactly. The large center mirror is recessed four inches back from the front of the unit. Underneath the center mirror is a *vitrolite* shelf providing a convenient place for the toilet articles in use.

The large center mirror is surrounded with lights on both sides and at the top. The light fixtures on the side are concealed behind decorative side mirrors. Light fixtures at top are concealed behind the opal glass panel, so that entire mirror is illuminated; in addition, the top light assists in illuminating the bathroom.

The frame around the entire unit is *brass, chromium plated.*

The new rose (flesh) or regular silver mirror is optional for the center panel. Side mirrors may be had in blue, gun metal, green, rose (flesh) or regular silver.



No. 900

No. 900 — Mirror Lined Recess Shelf — In far too many bathrooms, no storage space is provided for accessories which are either too large or too damp to be stored in the average medicine cabinet. This unit is suggested for installation above the end of the bathtub where it provides storage space for Milady's bath salts, bath brush, sponge and other accessories of the bath. The interior of the unit is lined with beautiful colored mirrors, either rose (flesh), blue, gun metal, green or regular silver. The shelves are glass to correspond with the mirrors.



No. 904

No. 904 — Mirror Lined Recess Shelf —This is a smaller mirror lined recess shelf suggested for installation above the tub where the larger Model 900 is not required.

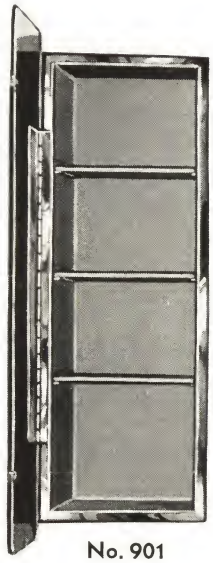
This unit combined with Model 903 illustrated on this page is an ideal combination for installation above the lavatory when the cabinet is placed in a different position in the bathroom.

Rose (flesh), blue, green, gun metal and regular silver mirrors are available.

No. 901 — Extra Bathroom Cabinet — The modern bathroom of today is very often equipped with more than one cabinet. Model 901 is an ideal smaller cabinet to be installed alongside of the large cabinet over the lavatory or on walls adjacent to the lavatory.

See illustration bottom catalog page 16 for suggested installation.

The door is fitted with a mirror which is set in a *brass, chromium plated* frame. The inside of the cabinet is finished in white *Crystal Snow*. Three glass shelves are furnished.



No. 901

SPECIFICATIONS

Model	900	901	902	903	904
Mirror	none	10″x28″	26″	20″x26″	none
Overall	9 13/16″x26″	10 1/4″x28 1/4″	26″	29 1/8″x31 3/8″	24″x8″
Wall opening	9 3/16″x25 3/8″x4 3/8″	8 1/4″x24 1/2″x4 1/4″	none	28 1/2″x30 3/4″x4 3/8″	23 3/8″x7 3/8″x4 3/8″

[*See page 3 for additional specifications*]

MIAMI Towel Supply and Utility Cabinets

The location of the bathroom cabinet, above the lavatory, makes it impractical to install a long and large cabinet in this position, because the articles stored on the top shelves of the cabinet would be out of reach of the average individual.

Extra storage space is a necessity in many bathrooms. The models illustrated on this page, not only provide this extra space, but the large mirror, sixty inches in height, serves as a full length bathroom mirror, a feature appreciated by every woman building or remodeling a home.

MODELS 510-A and 510-B

These two models are designed for the luxurious bathroom. The beautiful mirror is set in a large *chromium plated* frame. The heavy air cushioned door is swung on *brass, chromium plated* piano hinges.

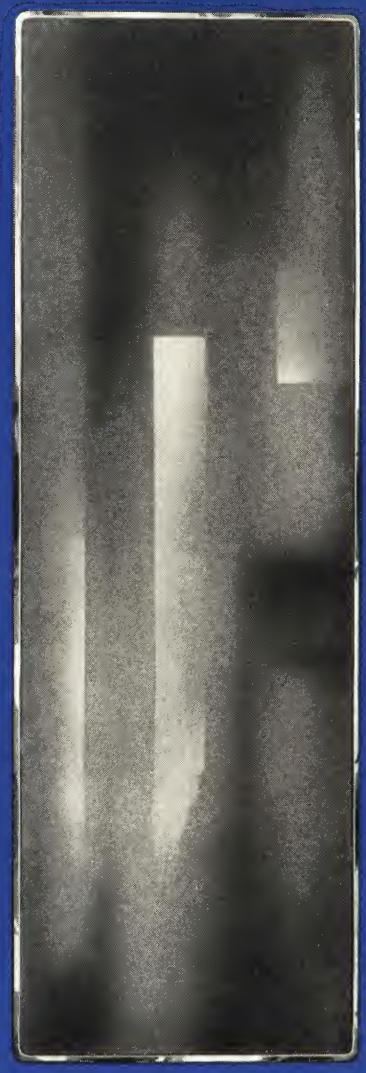
Model 510-A is eight inches deep. Model 510-B is six inches deep. Five plate glass shelves are furnished with each cabinet providing an abundance of shelf space for the storage of towels, other bathroom linen, extra toilet accessories and bathroom supplies.

SPECIFICATIONS

Model	510-A	510-B
Mirror	20″x60″	20″x60″
Wall opening	17¾″x57¾″x8″	17¾″x57¾″x6″
Overall	20¼″x60¼″x8⅝″	20¼″x60¼″x6⅝″

[*See page 3 for additional specifications*]



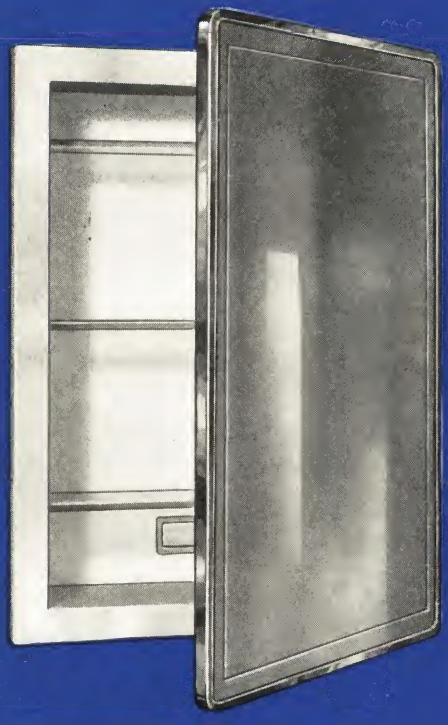




Illustrations show closed and open views, Models 510-A and 510-B.



Nos. 1000, 1050, 1075



Nos. 1100, 1150, 1175

MIAMI CABINETS

with Chromium-Framed Mirrors

Venetian Type



The deep brilliant lustre of chromium adds attractiveness to the modern bathroom, so that today we find almost all the bathroom fittings and accessories finished in chromium plate.

To keep pace with the trend of bathroom design and decoration, our craftsmen designed the Chrome Framed models illustrated on this page. They are beautiful cabinets with no knob, hardware or portion of the body visible. The one-piece mirror frames are brass with the chromium applied over nickel.

The one-piece frame used on all models illustrated on this page eliminates the necessity of ugly corner clips commonly used to cover open joints. The cabinet body and door back are finished in the famous Miami *Crystal Snow*, noted for its durability.

The heavy *chromium plated* piano hinges are capable of carrying many times the weight of the door — yet they are neat in appearance and are not visible when the door is closed.

SPECIFICATIONS

Model	1000	1050	1075
Overall.....	16¼″x26¼″	18¼″x28¼″	20¼″x32¼″
Mirror.....	16″x26″	18″x28″	20″x32″
Wall opening..	13¾″x19¾″x4¼″	15¾″x21¾″x4¼″	17¾″x25¾″x4¼″
Return flange.	¼″	¼″	¼″
Three plate glass shelves, two tooth brush racks, razor blade drop.			

Master Models

The Master Models illustrated at the left have the same specifications as the Venetian style illustrated above. These models are suggested for the bathroom where straight lines are required.

The two bottom shelf supports on all models on this page are so designed that they can be used as tooth brush racks. This arrangement does not interfere with the use of the bottom shelf brackets for the support of a shelf if the tooth brush rack is not required.

The Master Model is available in three sizes as listed below.

SPECIFICATIONS

Model	1100	1150	1175
Overall.....	16¼″x22¼″	18¼″x24¼″	20¼″x28¼″
Mirror.....	16″x22″	18″x24″	20″x28″
Wall opening..	13¾″x19¾″x4¼″	15¾″x21¾″x4¼″	17¾″x25¾″x4¼″
Return flange.	¼″	¼″	¼″
Three plate glass shelves, two tooth brush racks, razor blade drop.			

[*See page 3 for additional specifications*]

ALL MIRROR FRONT MODELS

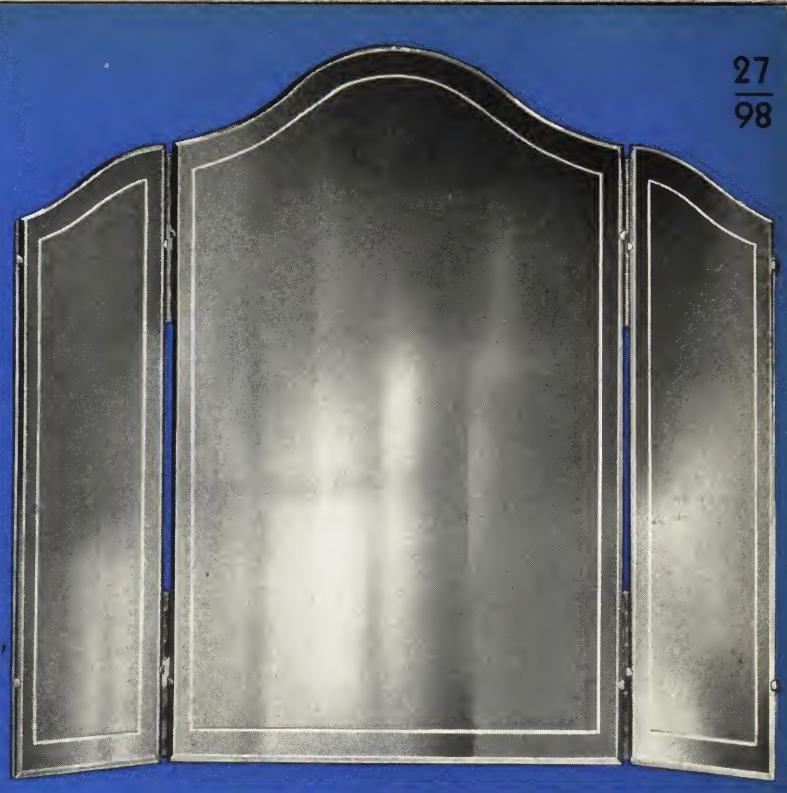
Venetian Model with Side Wings

In this model, beauty and utility are combined to an unusual degree to provide a cabinet that meets the requirements of the most exacting. The wing mirrors are adjustable, as are wing mirrors on a lady's dresser, so that perfect vision of the back of the head and shoulders is possible — an ideal arrangement to assist in dressing the hair. Used over the dressing table, the unit makes an attractive and practical vanity.

The cabinet is concealed behind the large center mirror. No portion of the cabinet is visible from the front.

SPECIFICATIONS

Model	770	780
Overall.....	32½″x26″	34½″x28″
Center mirror...	16″x26″	18″x28″
Wing mirrors...	8″x22″	8″x24″
Wall opening...	13¾″x19¾″x3½″	15¾″x21¾″x3½″
Return flange...	1″	1″
Three plate glass shelves, two tooth brush racks, razor blade drop.		



Nos. 770, 780

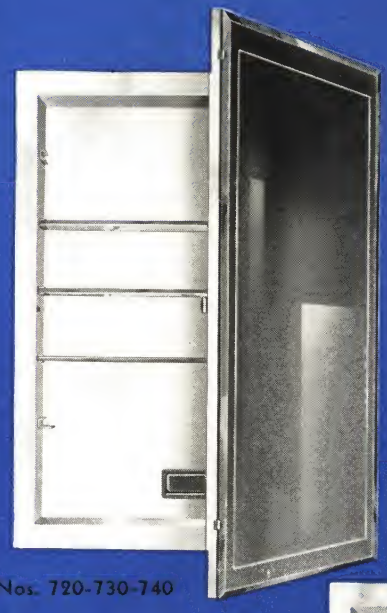
Simplicity Models

The square top models Nos. 720, 730 and 740, illustrated on the right, are designed for the bathroom where straight lines are used rather than curves or arches.

The mitered line mirrors as illustrated are furnished regularly unless otherwise specified. Plain beveled edge mirror is also available. Be sure and specify if the plain mirror is required.

SPECIFICATIONS

Model	720	730	740
Mirror.....	16″x22″	18″x24″	20″x28″
Wall opening.	13¾″x19¾″ x1¼″	15¾″x21¾″ x1¼″	17¾″x25¾″ x1¼″
Overall.....	16″x22″	18″x24″	20″x28″
Return flange	¼″	¼″	¼″
Three plate glass shelves, two tooth brush racks, razor blade drop.			



Nos. 720-730-740

Venetian Models

The models illustrated on the right are suggested for the bathroom where arches or curves are used. Set in the wall, these models resemble unusually handsome mirrors. No knob, hardware or portion of the cabinet is visible to indicate that a spacious cabinet is hidden behind the door. Note the extra large mirror on Model 750 (18″x30″). The mitered line mirror as illustrated is regular equipment. Plain bevel edge mirror is available. Be sure and specify type of mirror required.

SPECIFICATIONS

Model	710	750
Mirror.....	16″x26″	18″x30″
Wall opening...	13¾″x19¾″x1¼″	15¾″x21¾″x1¼″
Overall.....	16″x26″	18″x30″
Return flange...	¼″	¼″
Three plate glass shelves, two tooth brush racks, razor blade drop.		



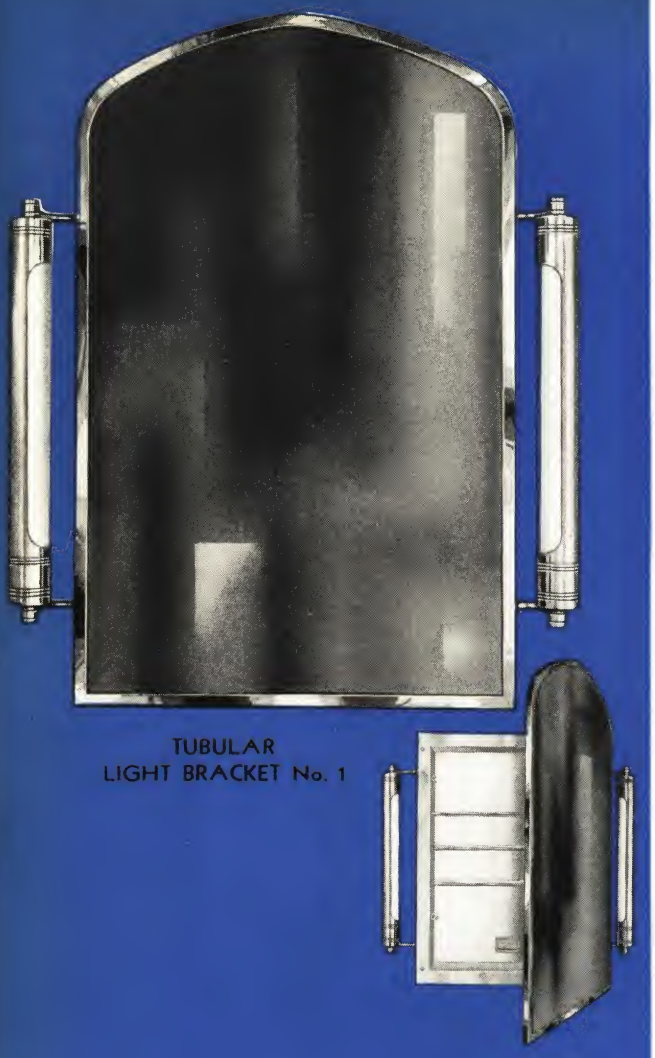
Nos. 710-750

[*See page 3 for additional specifications*]

TUBULAR LIGHT BRACKETS

The solution to effective bathroom lighting has been solved by Miami-Carey in the light fixtures illustrated on these two pages — fixtures to meet the designer's exacting demand for beauty of line, the interior decorator's desire for harmony and the architect's insistence on the practical.

Miami and Carey cabinets fitted with the attractive light fixtures illustrated on these pages bring new beauty to your bathroom, lighting it at attractive savings in installation cost. Only one electrical outlet is required in the bathroom fitted with a Miami-Carey electrically equipped cabinet. This outlet should be in the top of the wall opening provided for the cabinet.



TUBULAR
LIGHT BRACKET No. 1

TUBULAR LIGHT BRACKET No. 1

The illustration in the upper left hand corner of this page illustrates one of the larger models fitted with Tubular light bracket No. 1.

We recommend that this bracket, because of its size, be used on the following Miami and Carey cabinets: Nos. 1050, 1075, 1150, 1175, 730, 740, 750, 2020, 2040, 2050, 620, 650 and 670.



TUBULAR LIGHT BRACKET No. 2

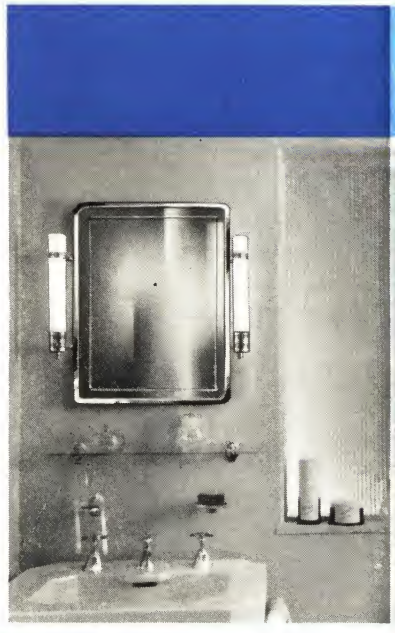
TUBULAR LIGHT BRACKET No. 2

The photograph in the lower left hand corner of this page illustrates a Miami cabinet fitted with Tubular light bracket No. 2. These brackets do not have the adjustable *chromium plated* shields. The glass shade over the light bulb is opal. Tubular light bracket No. 2 is available on all cabinets illustrated on the following pages: 12, 13 (except 770 and 780), 18, 20, 21, 22 and 23.

We suggest a Miami-Carey Cabinet fitted with either Tubular Light Brackets No. 1 or No. 2 for the large bathroom. For medium sized and smaller bathrooms, we suggest cabinets fitted with either Tubular Light Brackets No. 3 or No. 4.

All wiring for cabinets fitted with Light Brackets is completed at the factory, and is approved by the Underwriters' Laboratories.

Cabinets ordered with Light Brackets are fitted, on the return flange, with electric switch and convenience outlet, as illustrated in the lower right corner of Page 15 (opposite).

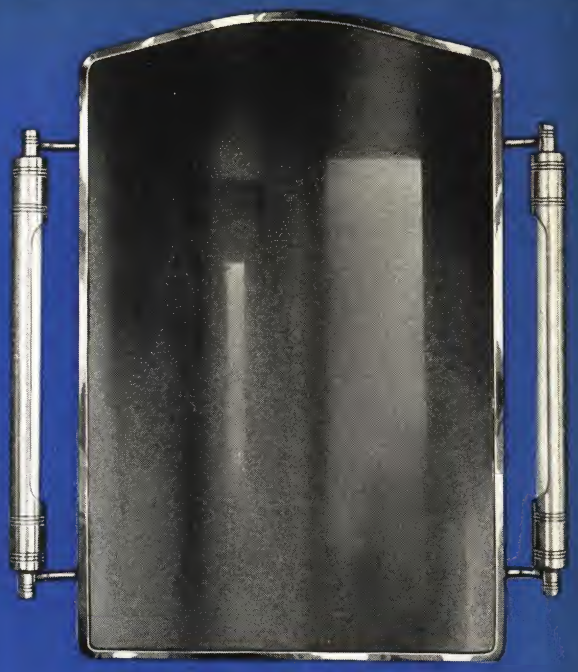


FOR MIAMI-CAREY CABINETS

The cabinet is wired complete at the factory. The light fixtures, the switch and electric convenience plug are all mounted on the cabinet at the factory. This eliminates the cost of three electrical outlets per bathroom.

The light brackets illustrated on these pages are correctly located so as to concentrate the light at the point where it is most needed and yet provide sufficient illumination for the entire bathroom.

Light brackets Nos. 1, 3 and 4 are fitted with *chromium plated* light shields which are adjustable in all arcs of a 180-degree angle, thus permitting the light to be directed onto the mirror, out into the room or to any intermediate degree desired.



TUBULAR LIGHT BRACKET No. 3

TUBULAR LIGHT BRACKET No. 3

The cabinet illustrated in the upper right hand corner of this page is fitted with Tubular light bracket No. 3, similar in appearance to bracket No. 1 but smaller in diameter. There is no glass shield over the bulb as in bracket No. 1. Frosted bulb T-8 should be used. This frosted bulb serves the same purpose as does the glass shield over the clear bulb.

Light bracket No. 3 is recommended for cabinets Nos. 1000, 1100, 710, 720, 2010, 2030, 610, 660, 701, 1622-BF, 1622-CF and for all models on page 23.

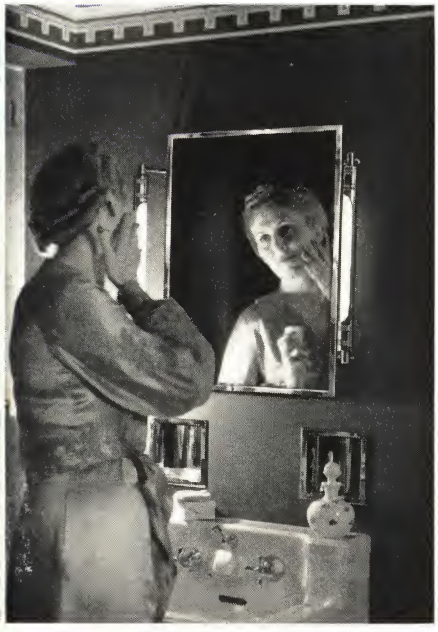
OVERHEAD LIGHT BRACKET No. 4

The photograph directly to the right illustrates a square top cabinet fitted with a single overhead Tubular light bracket No. 4. This type of bracket is recommended for the small bathroom and the downstairs lavatory.





OVERHEAD TUBULAR LIGHT BRACKET No. 4



Light bracket No. 4 is available for the following cabinets: Nos. 1100, 1150, 1175, 720, 730, 740, 640, 650, 2030, 2040, 2050, and for all models illustrated on page 23.

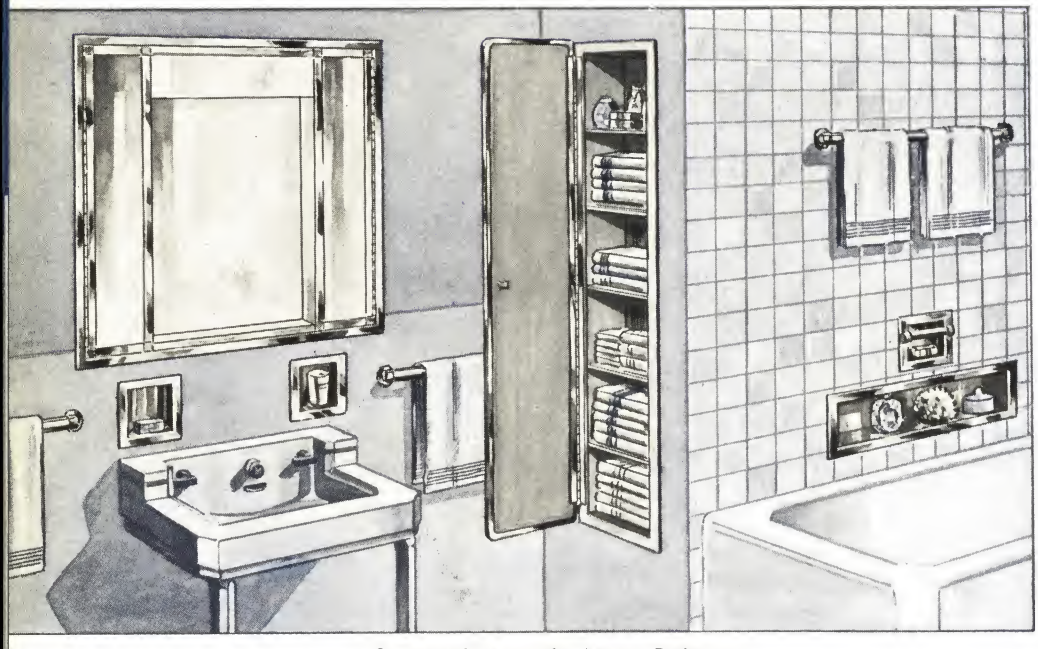
For tubular light brackets Nos. 1 and 2, use a T-8 clear bulb. For Tubular light brackets Nos. 3 and 4, use a T-8 frosted bulb. Cabinets are not equipped with bulbs. They can be purchased from electric shops. They are a regular bulb, differing only from the common light bulb in that they are Tubular in design.



SWITCH AND OUTLET

MIAMI CABINET

. . . Make Bathrooms



Suggested Layout for Master Bathroom

Over lavatory—Imperial cabinet, No. 6000 soap holder, No. 6001 tumbler holder. On each side of lavatory, towel bars No. 5002. On adjacent wall, towel supply cabinet No. 510-A or 510-B. Over the tub—No. 904 mirror lined recessed shelf, No. 6004 soap holder and grab bar, and No. 5003 towel bar.

ON these pages, we present a few examples which show the many combinations in which Miami-Carey units may be installed to advantage.

Architects and builders have long recognized the inadequacy of standard bathroom cabinets and accessories which make no provision for the numerous odds and ends that the housewife likes to keep in the bathroom. To overcome this deficiency, to provide an orderly place for every bathroom essential — to add new beauty and convenience, Miami-Carey ensembles and units were created.



Suggested Layout for Bathroom Used by More Than Two Individuals

Over the lavatory, No. 2010 cabinet with Tubular light brackets. On each side, install cabinet No. 901. On adjacent wall, No. 500 towel supply cabinet. Over the lavatory, soap holder No. 6000, tumbler holder No. 6001. On either side of the lavatory, No. 5004 towel bar. Over the tub — No. 904 mirror lined recess shelf, towel bars Nos. 5002 and 5003, soap holder and grab bar No. 6004.

ENSEMBLES

Complete

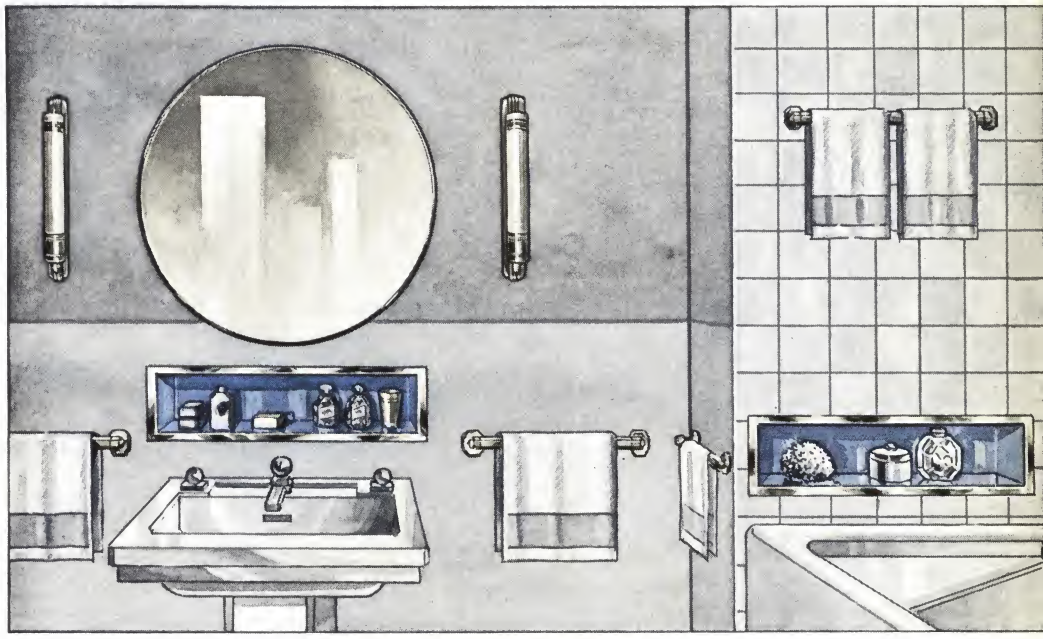




Suggested Layout for Large Master Bathroom

Over the lavatory, DuBarry ensemble consisting of center unit with concealed lighting and two No. 900 mirror lined recessed shelves. In adjacent wall, No. 901 side cabinet with mirror front door. Accessories over the lavatory and on adjacent wall — No. 6000 soap holder, No. 6001 tumbler holder, No. 5001 towel bar. Over the end of the tub, No. 900 mirror lined recessed shelf. Over the side of the tub No. 6004 soap dish and grab bar, No. 904 mirror lined recess shelf, two No. 5003 towel bars.

MIAMI-CAREY cabinets are produced in combination units in various shapes and sizes to conform to individual bathroom, architectural and family needs. With Miami-Carey units, you may supply a large cabinet for husband and wife; individual cabinets for children; recessed shelves for sponge, brush, bath salts and other supplies handy for the bath; a towel supply cabinet — all the delightful harmony in sizes that make efficient use of wall space and beautify the bathroom.

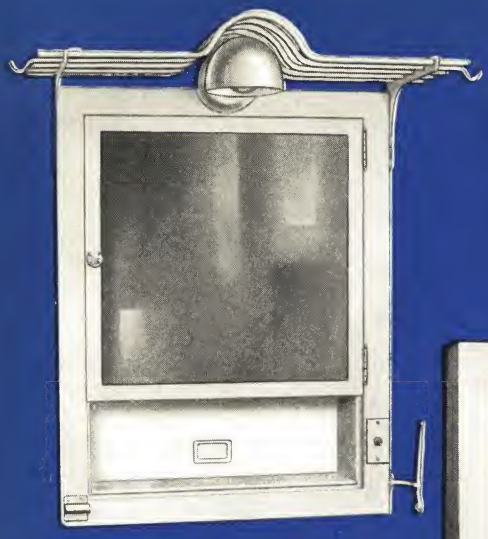


Suggested Layout for Guest Room

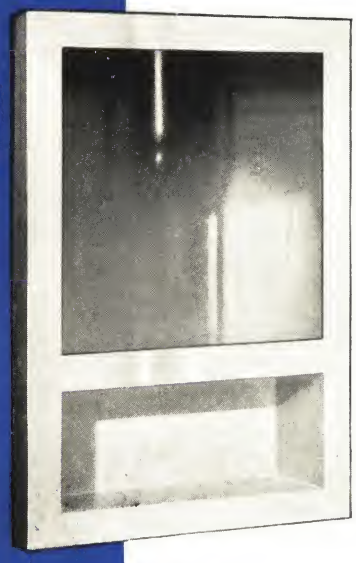
Over the lavatory, the Pompadour combination consisting of a circular mirror and No. 904 mirror lined recess shelf. Adjacent to the lavatory, three No. 5001 towel bars. Over the tub, one No. 5002 towel bar, and No. 904 mirror lined recess shelf.

HOTEL BATHROOM CABINETS AND MIRRORS

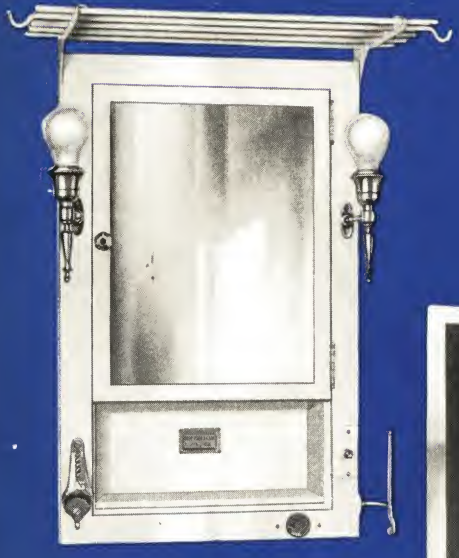
Models illustrated on this page were developed by Miami-Carey designers in co-operation with hotel architects. Design and equipment are based on long experience and thorough knowledge of hotel requirements. Thousands of these cabinets are installed in the world's leading hotels, clubs and public buildings. The models illustrated are practical. This is a proven fact. However, if you are designing a new hotel or remodeling an old one, the Miami-Carey organization will co-operate with you in working out your own ideas.



MODEL AS-110 - AS-410



MODEL 906



MODEL 905



MODEL 907 - 908 - 909

MODELS AS-110 AND AS-410

Regular equipment for the AS-110 and AS-410 consists of overhead curved towel tray with douche bag hooks, center light fixture complete with opal shade and electric convenience plug, white enameled combination soiled towel and razor strop hook, light switch, bottle opener, razor blade drop, three adjustable glass shelves and one *Vitrolite* shelf.

SPECIFICATIONS

Model	AS-110	AS-410
Mirror	16″x16″	12″x16″
Wall opening	17½″x24½″x3⅞″	13½″x24½″x3⅞″
Overall	20¾″x26¾″	16¾″x26¾″

MODEL 905

Regular equipment consists of overhead straight towel tray complete with douche bag hooks, two bronze, *chromium plated* light brackets, light switch, white enamel combination face towel and razor strop hook, electric convenience plug, combination bottle opener and cork screw, razor blade drop, three adjustable glass shelves and one *Vitrolite* shelf.

SPECIFICATIONS

Model	905
Mirror	12″x16″
Wall opening	13½″x24½″x3⅞″
Overall	16¾″x26¾″

MODEL 906

This is not a complete cabinet. It is a recessed shelf mirror, designed for the strictly commercial hotel where cabinet space is not required. The recessed shelf below the mirror provides a convenient storage space for the guest's toilet articles. This model may be fitted with all of the accessories illustrated on Models AS-110, AS-410 and 905. (Prices of this model so equipped on request.)

SPECIFICATIONS

Model	906
Mirror	16″x16″
Wall opening	16″x6½″
Recessed shelf	15½″x6″
Overall	18¾″x26⅜″

MODELS 907, 908 AND 909

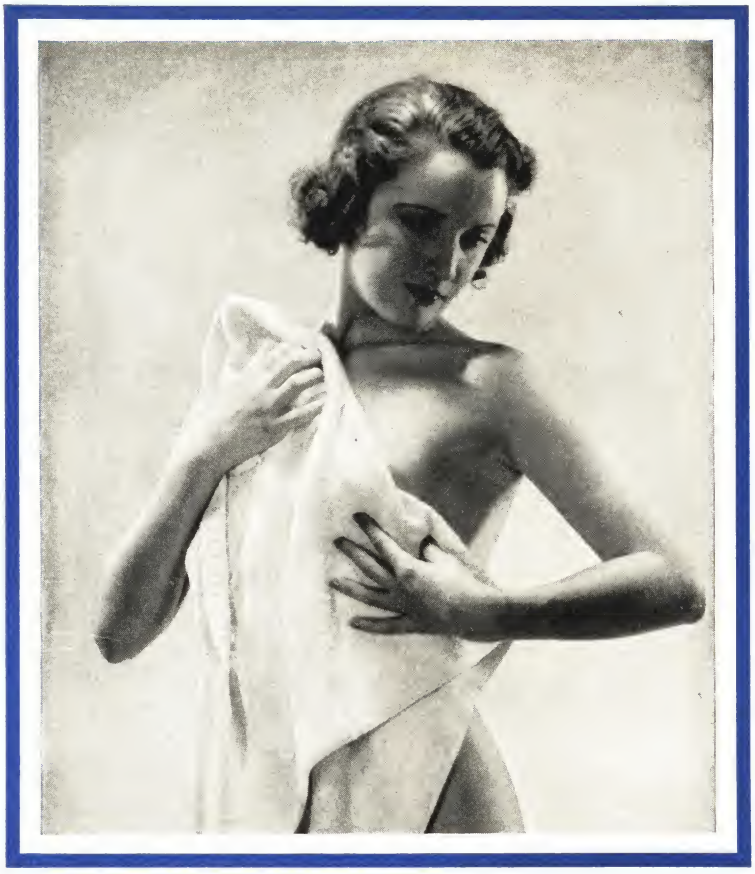
These models consist of a mirror fitted with key hole slots for concealed hanging on the wall, a projecting glass shelf and a towel bar underneath the shelf. Suggested for the inexpensive hotel guest room and for the public wash room where the only storage space required is for comb and brush and a few toilet articles that may be set on the projecting glass shelf. The towel bar underneath the glass shelf is long enough to accommodate the towels required for this type of room. The frame around mirror is steel, white enameled.

SPECIFICATIONS

Model	907	908	909
Mirror	12″x16″	14″x18″	16″x22″
Overall	13¼″x20¼″	15¼″x22¼″	17¼″x26¼″

[*See page 3 for additional specifications*]

Glorifying the American Bathroom



Carey BATHROOM CABINETS

ALL models illustrated on catalog pages 20 to 24, inclusive, are Carey cabinets. The Carey Line was introduced to the trade five years ago in response to insistent demand for a line of moderate priced cabinets manufactured in accordance with Miami standards. Next to the Miami cabinet, the best you can buy is a Carey cabinet. In manufacturing this line, we employ the same careful workmanship and attention to detail that you have learned to expect in Miami cabinets.

MIRRORS

All mirrors are No. 1 quality plate glass, manufactured in accordance with Commercial Standard CS-27-36. This is the second best mirror that can be purchased in this country. All Carey mirrors are *copper protected*, guaranteed for five years against silver spoilage.

HINGES

All door hinges, except the hinges for the flush door recessed models on page 23, are piano type *brass, nickel plated*. The hinges on the flush door recessed models are Butt type, *nickel plated*.

STEEL AND CONSTRUCTION

The steel used in the Carey Line is *Armco* prime sheets, 20-gauge specially prepared for enameling.

The bodies of Carey cabinets are of one-piece construction, no open seams or joints to rust or gather dirt.

Door strikes are *stainless steel*. Bullet door catches are *nickel plated*. Door stops are the bar type, *nickel plated*.

Shelf supports in the Carey Line are of steel, the "U" type of bracket, finished to match interior of the cabinet. The two bottom shelf brackets are designed to accommodate six tooth brushes.

PLATING

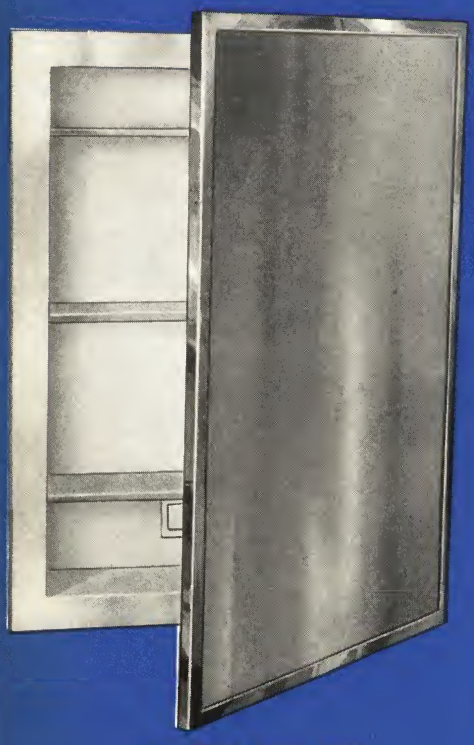
The frames on all framed models are *stainless steel* and are polished and buffed to a chrome finish.

FINISH

Carey cabinets are finished in three coats of first-quality *baked enamel* applied over rust-resisting undercoat.



Nos. 2010, 2020



Nos. 2030, 2040, 2050

CABINETS WITH FULL MIRROR DOORS

Framed in Stainless Steel

Gothic Top Models

The two models shown on this page are among the most popular in the whole line. They are moderately priced — yet have those features of construction that have made Miami-Carey Cabinets famous, not only throughout the United States, but throughout the world.

The *stainless steel* frames around the mirrors are absolutely non-rusting and may be kept clean and highly polished just by rubbing with a clean, dry cloth. No polish is necessary. Stainless steel is the perfect match for *chromium plated* bathroom fixtures; hence, the Gothic models as well as the square top models shown below are particularly recommended for bathrooms fitted with *chromium plated* fixtures where the budget does not permit the purchase of higher priced *chromium plated* models.

Plain mirror is regular equipment. Mitered line mirror may be had at additional cost. See price list.

The Gothic top model is available in two sizes as specified below.

SPECIFICATIONS

Model	Overall	Mirror	Wall Opening
2010	16⅝″x26⅝″	16″x26″	13¾″x19¾″x3½″
2020	18⅝″x28⅝″	18″x28″	15¾″x21¾″x3½″
Return flange 1 inch. Three bulb edge shelves, two tooth brush racks, used razor blade drop.			

Square Top Models

The square top *stainless steel* framed model illustrated on the left is recommended for the bathroom where the design is straight rather than arched or curved.

Plain mirror is regular equipment. Mitered line mirror may be had at slight additional cost. See price list.

This model is available in three sizes as specified below.

SPECIFICATIONS

Model	Overall	Mirror	Wall Opening
2030	16⅝″x22⅝″	16″x22″	13¾″x19¾″x3½″
2040	18⅝″x24⅝″	18″x24″	15¾″x21¾″x3½″
2050	20⅝″x28⅝″	20″x28″	17¾″x25¾″x3½″
Return flange 1 inch. Three bulb edge shelves, two tooth brush racks, used razor blade drop.			

[*See page 19 for additional specifications*]

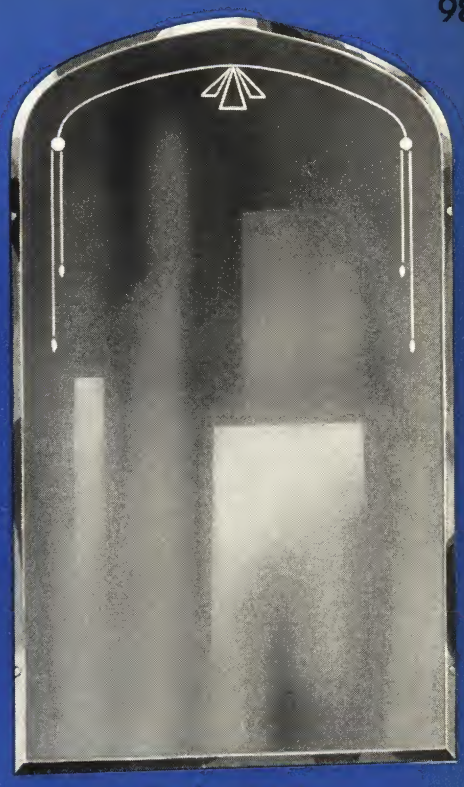
CABINETS WITH FULL MIRROR DOORS

Gothic Top Model

The model illustrated on the right is a Gothic Top all-mirror front cabinet with no knob, hinges or ugly screw heads to mar the face of the mirror. We recommend the Gothic in either of the two sizes specified below.

The beautiful mirror covers the entire cabinet so that when the cabinet is set in place, the appearance is that of a mirror hung on the face of the wall.

The mirror illustrated is regular equipment. Plain beveled edge mirrors or mitered line beveled edge mirrors are available. See price list for difference in cost.



Models 610, 620

SPECIFICATIONS

Model	Overall	Mirror	Wall Opening
610 620	16″x26″ 18″x28″	16″x26″ 18″x28″	13¾″x19¾″x3½″ 15¾″x21¾″x3½″
Return flange 1 inch. Three bulb edge glass shelves, used razor blade drop.			

Square Top Model

The model at the right, fitted with rectangular frameless mirror, is recommended for the bathroom built along simple lines. The mirror attached to the air-cushioned door with *stainless steel* mirror clips covers the entire front of the cabinet when the door is closed.

The mirror illustrated is regular equipment. Plain beveled edge mirrors or mitered line beveled edge mirrors are available. See price list for cost.

This model is available in two sizes as specified below.

Three bulb edge glass shelves and *chromium plated* razor blade drop.

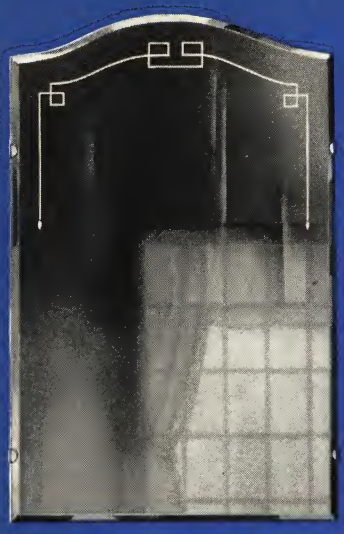


Models 640, 650

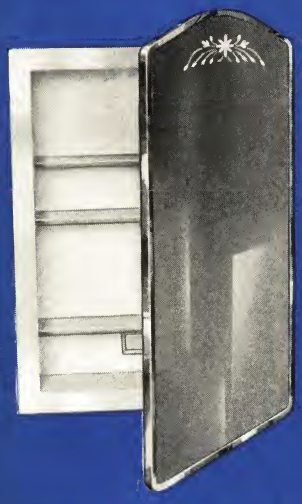
SPECIFICATIONS

Model	Overall	Mirror	Wall Opening
640 650	16″x22″ 18″x24″	16″x22″ 18″x24″	13¾″x19¾″x3½″ 15¾″x21¾″x3½″
Return flange 1 inch. Three bulb edge glass shelves, used razor blade drop.			

[*See page 19 for additional specifications*]



MODELS 660 - 670



MODELS 1622-BF - 1622-CF



MODELS 800 - 816

VENETIAN ARISTOCRAT MODELS

We present the Aristocrat all-mirror front Venetian type models designed for the home where price must be considered but where quality is also taken into consideration. Note the extra large mirror (18x30-inch) on Model 670.

The mirror as illustrated is regular equipment. Plain beveled edge mirrors are available.

SPECIFICATIONS

Model	Mirror	Wall Opening
660	16″x24″	13¾″x19¾″x3½″
670	18″x30″	15¾″x21¾″x3½″
Return flange 1 inch. Three bulb edge glass shelves, two tooth brush racks, used razor blade drop.		

Framed Venetian Models

Two models that are in keeping with the present trend towards greater use of metal in home building and home furnishing.

The mirror on the Model 1622-BF is set in a rich black enamel frame that harmonizes with black and white tile bathrooms or those fitted with black fixtures.

The mirror on the Model 1622-CF is set in a frame of *stainless steel* polished and buffed to a chrome finish — a budget model suggested for the moderate priced bathroom that is fitted with chrome plated accessories.

The mirror as illustrated is regular equipment. A plain mirror without etching is available.

SPECIFICATIONS

Model	Mirror	Wall Opening
1622-BF	16″x24″	13¾″x19¾″x3½″
1622-CF	16″x24″	13¾″x19¾″x3½″
Return flange 1 inch. Three bulb edge glass shelves, two tooth brush racks, used razor blade drop.		

Wall Surface Models

The models illustrated at the left are designed to hang flush on the wall and are recommended for use in old construction or in new construction where the thickness of the wall does not permit the use of a recessed type cabinet.

SPECIFICATIONS

Model	800	816
Mirror	14″x18″	12″x16″
Overall	18¾″x22¾″	16¾″x20¾″
Inside	15″x19″	13″x17″
Three bulb edge glass shelves and two tooth brush racks.		

[*See page 19 for additional specifications*]

Carey

FLUSH DOOR RECESSED MODELS

The cabinets shown here combine high quality with a price that represents an excellent value. These models are particularly recommended for public buildings, schools and hospitals; also for the modest bathroom. The same careful workmanship and high standard of materials that characterizes the more luxurious Miami-Carey Cabinets have been adhered to in the manufacture of these models.

These cabinets are made from heavy gauge *Armco* auto-body steel, finished in a first-quality *baked enamel* and equipped with air cushion doors that swing quietly on *nickel plated* hinges. Four *cadmium plated* installing screws are furnished. The mirrors are *copper protected*, guaranteed for five years against silver spoilage.

The Patented Miami-Carey drop for used razor blades is installed in all models. This feature, that solves for all time the question of what to do with the used razor blade, has won nation-wide approval of Architects, Contractors and Home Owners.



Bevel or plain mirrors may be had in any of these cabinets. When ordering, be sure to specify the type of mirror wanted. Bevelled mirrors cost slightly more than plain mirrors.

Model 250 is furnished regularly with bevel plate mirror. Plain plate mirror is available. Shelves are adjustable, heavy bulb edge glass.

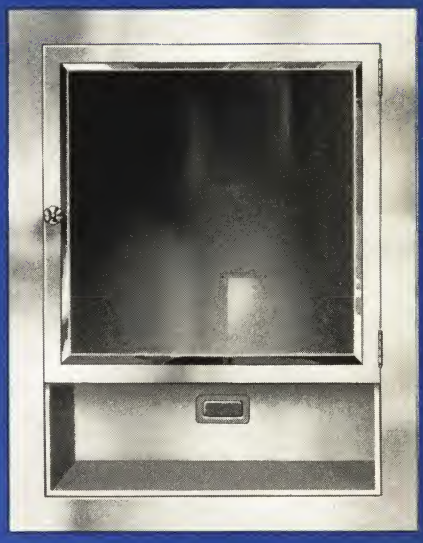
SPECIFICATIONS

Model	Mirror	Inside	Overall	Wall Opening	Shelves
250	16″x22″	17″x23″	20¾″x26¾″	17½″x23½″	3 Glass
240	16″x16″	17″x23″	20¾″x26¾″	17½″x23½″	3 Glass
220	14″x18″	15″x19″	18¾″x22¾″	15½″x19½″	3 Glass
230	14″x18″	15″x25″	18¾″x28¾″	15½″x25½″	3 Glass
200	12″x16″	13″x17″	16¾″x20¾″	13½″x17½″	2 Glass
210	12″x16″	13″x23″	16¾″x26¾″	13½″x23½″	2 Glass

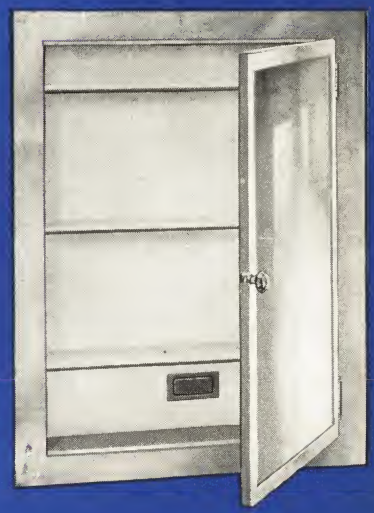
[*See page 19 for additional specifications*]



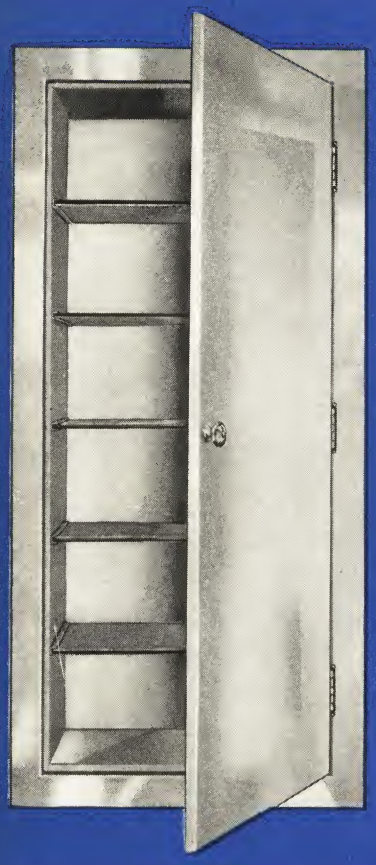
Model 250



Models 240, 230, 210



Models 200 and 220



Model 500

TOWEL SUPPLY and UTILITY CABINETS

The towel supply and utility cabinet illustrated on the left is designed and constructed for the less pretentious bathroom where extra storage space is required.

There is no mirror in the door of this model.

The cabinet is equipped with five glass shelves.

White enamel is the regular finish. However, this model may be had in any color desired to match the tile or other bathroom fixtures. See price list for extra cost of special color.

SPECIFICATIONS

Model	500
Door	14⅝″x34⅜″
Wall opening	14¾″x34½″x6″
Overall	18″x37¾″x6¾″

Return flange 1 inch. Five glass shelves furnished.

RECESSED SHELF — Model 410

The recessed shelf illustrated on the right is manufactured of *stainless steel.* It will retain its lustre forever and can be cleaned and polished with a dry cloth. The bottom of the shelf is fitted with an opal glass shelf. Recommended for installation over the bathtub, in the downstairs lavatory, under the medicine cabinet or wherever storage space is needed for toilet or bath accessories.



SPECIFICATIONS

	Overall	Wall Opening	Inside
Model 410	17½″x8½″	16″x7″x3¾″	15½″x6½″x3¾″

ELECTRIC BATHROOM HEATER



The heater is approved by the Fire Underwriters' Laboratories.

Heater Capacity — 1200 watts per hour. Furnished only for 110-120 volts, 60-cycle alternating current. Size of the wire to be used in connecting the heater is determined by the state or local building code. In most areas, a No. 14 two-wire connection is used.

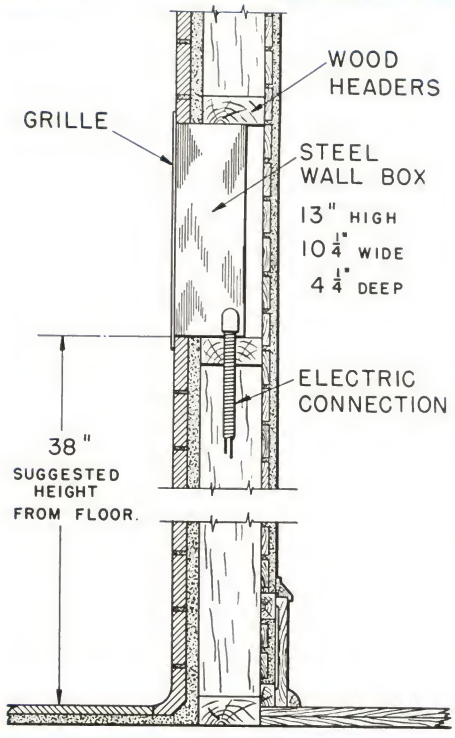
Framed in brilliant Chrome, the electric room heater illustrated at left rapidly removes the chill from the bathroom, dressing room or kitchen. Especially appreciated when the heating system is not in use.

The motor-driven fan behind the heating arrangement quickly distributes the heated air to every part of the room.

The attractively designed grille, with its close spacing, makes it impossible for even a small child to come in contact with the electrical or mechanical parts of the heater.

The warm air forced into the room by the motor-driven fan makes an excellent hair drying device, very much appreciated by the ladies.

The small motor which drives the fan offers no radio interference and requires no oiling.





COLONIAL BATHROOM CABINETS

IN the Fall of 1937 and in the Spring of 1938, we conducted a survey with a view of finding out what the cost of the average residence was that was being financed through F.H.A. loans. We learned that approximately 68% of F.H.A. financed residential construction was for houses costing $6,000 and less. With this information, Miami-Carey designers set to work to develop a line of good steel bathroom cabinets that could be offered for sale at prices that would be well within the reach of the owners of these low cost houses.

August 1, 1938, we introduced the Colonial Line as illustrated on pages 26, 27 and 28. In our humble opinion, the Colonial Line represents the greatest value ever offered to the low cost residential market.

STEEL AND CONSTRUCTION

Colonial cabinets are constructed of *Armco* steel 22-gauge prime sheets. The bodies are manufactured of one piece of steel with no open seams to catch dust and dirt.

MIRRORS

Model 405 — the mirror in Model 405 (formerly 701-F) is crystal glass 3/16 inch thick, *selected* silvering quality, with protective copper coating guaranteed for five years against silver spoilage.

The mirrors in all other models in the Colonial line are sheet glass, selected silvering quality, with protective copper coating guaranteed for five years against silver spoilage.

FINISH

Colonial cabinets are finished in two coats of first-quality *baked enamel* applied over rust-resisting undercoat.

HINGES

Colonial cabinet door hinges are butt type *nickel plated* with *brass* pin, concealed behind the door. They will never bind.

FRAMED MODELS

Model 404 has a steel white enameled frame around the mirror.

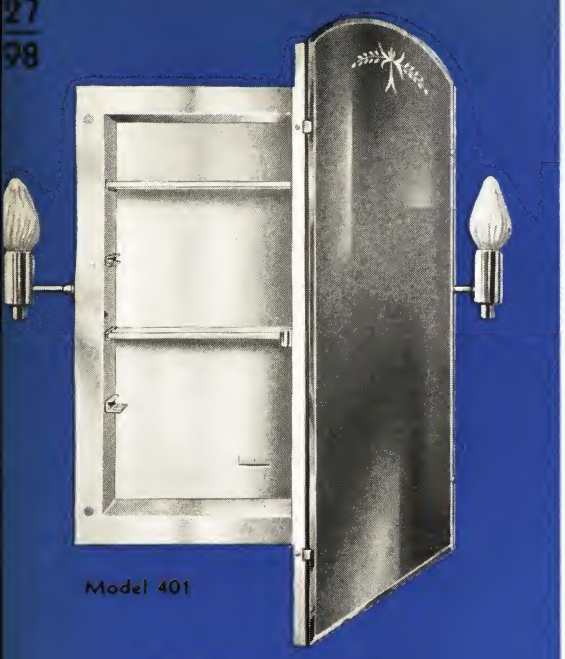
Models 400-CF, 400-BF, 403 and 402 are fitted with *stainless steel* frames polished and buffed to a chrome finish. These are continuous one-piece frames.

COLONIAL LIGHTED CABINETS

The Colonial cabinets fitted with light brackets are complete in every respect. In addition to the light fixtures, these models are also fitted with switch to control the lights and an electric convenience plug for razors, curling irons and other electrical appliances. The light brackets are *brass, chromium plated.* Bulbs are not furnished. Any regular bulb may be used. The T-10 frosted tubular light bulb may be used also.

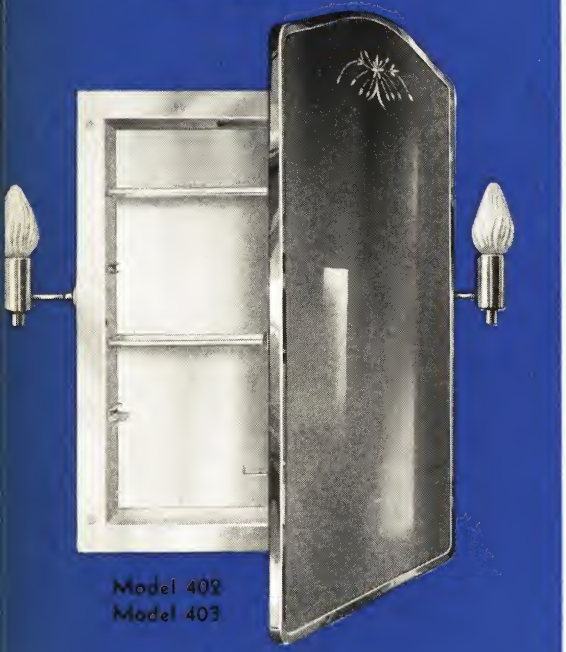
The lighted models are assembled complete at the factory, including the wiring. Electrical outlet box is on top of the cabinet behind the front flange.

27
98



Model 401





Model 402
Model 403

COLONIAL BATHROOM CABINETS

MODEL 401

Colonial Cabinet Model 401, illustrated on the left, is an all-mirror front electrically equipped cabinet, including Colonial lights, switch to control the lights and an electric convenience plug. The combination of cabinet, light fixtures, switch and convenience plug in the one unit wired complete at the factory means a saving of anywhere from $2.00 to $4.00 per bathroom when compared to the cost of the cabinet without lights, plus the installation of the switch, the light fixtures and electric convenience plug on the wall. This saving is brought about in that it is only necessary to provide for one electrical outlet in the bathroom when this and other electrically equipped models are installed.

MODEL 402

Model 402 has a rich black enamel frame around the mirror. It is ideal for installation in bathrooms where black and white tile is used or in bathrooms fitted with black accessories.

MODEL 403

Model 403 is likewise a framed model. The frame around the mirror is *stainless steel*, the everlasting metal, polished and buffed to a chrome-like finish, a perfect match for bathrooms fitted with chrome plated bathroom accessories.

Models 402 and 403 are electrically equipped with lights, switch and convenience plug.

SPECIFICATIONS

Model	Mirror	Wall Opening	Overall
401	16″x22″	13¾″x19″x3½″	16″x22″
403	16″x22″	13¾″x19″x3½″	16¼″x22¼″
402	16″x22″	13¾″x19″x3½″	16¼″x22¼″
Two bulb edge glass shelves, die stamped razor blade drop, two tooth brush racks, bar type door stop.			

[See page 25 for additional specifications]

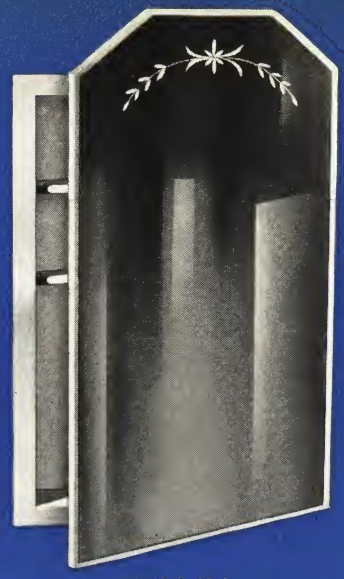
COLONIAL BATHROOM CABINETS

MODEL 404

Model 404 (formerly 700-F) is an inexpensive recessed cabinet designed for the low cost home or apartment — a budget model. Mirror set in a white enamel frame.

SPECIFICATIONS

Model	Mirror	Wall Opening
404	15¼″x22¾″	13¾″x18¾″x3½″
Regular Equipment: Door stop, one tooth brush rack, razor blade drop, two white enamel steel shelves.		



Model 404

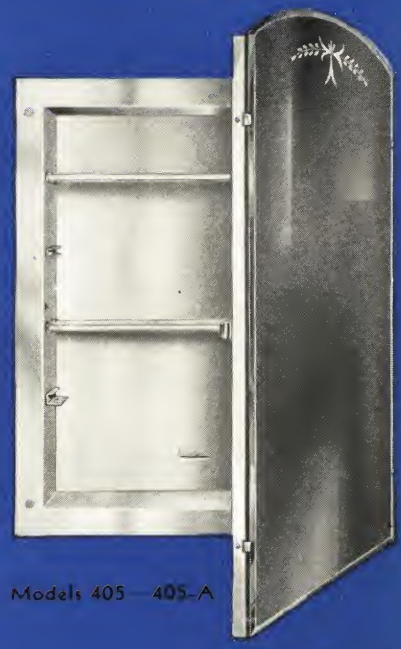
MODELS 405 — 405-A

Model 405 (formerly 701-F), illustrated on the right, is an all-mirror front model, the mirror covering the entire front of the cabinet. This cabinet is designed for the moderate priced home for which a cabinet without a frame around the mirror is required. The mirror clips with which the mirrors are attached to the doors are *stainless steel.*

This model can be furnished with No. 1 *selected* plate glass mirror *copper protected*, guaranteed for five years against silver spoilage. The model number for this cabinet so equipped is 405-A. See price list for cost.

SPECIFICATIONS

Model	Mirror	Wall Opening
405 — 405-A	16″x22″	13¾″x18¼″x3½″
Regular equipment: Two bulb edge glass shelves, bar type door stop, razor blade drop, two tooth brush racks.		



Models 405 — 405-A

MODELS 400-CF — 400-BF

Model 400-CF, illustrated at right, is a framed cabinet, the mirror set in a *stainless steel* frame polished and buffed to a chrome-like finish. An ideal model for the inexpensive bathroom in which chrome accessories are used.

Model 400-BF, illustrated at the right, has a rich black enamel frame around the mirror. The correct model to use where the accessories are other than chrome and where a black bullnose is used in the tile or as a decoration strip.

SPECIFICATIONS

Model	Mirror	Wall Opening	Overall
400-CF	16″x22″	13¾″x18¼″x3½″	16¼″x22¼″
400-BF	16″x22″	13¾″x18¼″x3½″	16¼″x22¼″
Regular Equipment: Two bulb edge glass shelves, two tooth brush racks, bar door stop and razor blade drop.			

[*See page 25 for additional information*]



Model 400-CF
Model 400-BF

COLONIAL BATHROOM CABINETS



Models No. 1 and No. 3

(Left)

An inexpensive arched top wall hung cabinet covered with an all mirror front door.

Available in two sizes as listed below:

SPECIFICATIONS

Model	Mirror Size	Body Size
No. 1	12″x18″	11½″x15¾″
No. 3	14″x20″	13½″x17¾″

Mirror, 3/16″ crystal glass, selected silvering quality; regular equipment, two bulb edge glass shelves.

Model No. 2

(Right)

An all mirror front straight top inexpensive wall hung cabinet to hang on the face of the wall.

Available in one size as listed below:



SPECIFICATIONS

Model	Mirror Size	Body Size
No. 2	12″x16″	11½″x15¾″

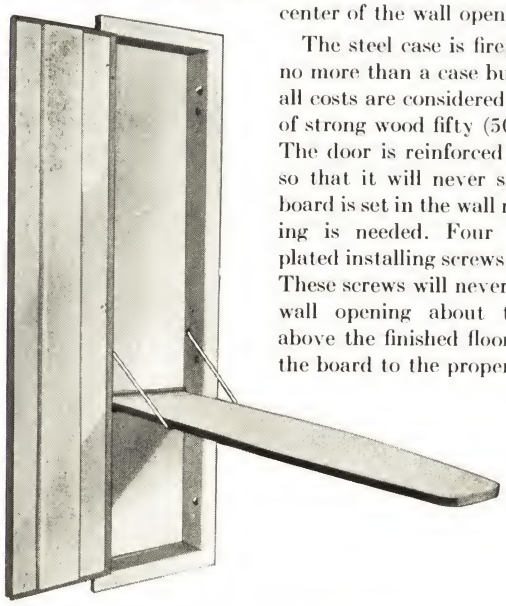
Mirror, 3/16″ crystal glass, selected silvering quality; regular equipment, two bulb edge glass shelves.

[*See page 25 for additional specifications*]

Carey Built-in Ironing Board

The Carey Ironing Board Cabinet is a real step saver in the kitchen or laundry. It is made to fit between standard studding and when not in use it may be folded back, out of the way.

The cabinet is regularly finished in prime coat so that it can be painted to match the room trim. It may also be had in *Crystal Snow* finish if desired. At a small extra charge the cabinet may be fitted with a convenience hot plug and a sleeve board. If the convenience hot plug is desired, bring the house wires into top center of the wall opening.



The steel case is fireproof. It costs no more than a case built of wood, if all costs are considered. The board is of strong wood fifty (50) inches long. The door is reinforced on the inside so that it will never sag. When the board is set in the wall no outside casing is needed. Four (4) cadmium plated installing screws are furnished. These screws will never rust. Cut the wall opening about twelve inches above the finished floor line to bring the board to the proper height.

SPECIFICATIONS

Overall	16¾″x59¾″
Wall opening	14¼″x57¾″x4½″
Board	11½″x50″

Carey Laundry Chute

The Carey Laundry Chute door, designed to replace the old-fashioned bulky and unsightly wood door, is indeed a worth-while addition to any home. It will never warp or get out of square. Painted to match the color scheme of the home, it is a welcome successor to the unsightly, old-fashioned wood door.

The Carey Laundry Chute Door is manufactured of heavy gauge *Armco* autobody steel, finished in prime coat. The unit arrives at the job all ready to install, no hardware to buy, no doors to fit. Four *cadmium plated* installing screws are furnished. These screws will never rust. The four corners of the body are reinforced with steel angles so that the unit will never sag. The door is held with a brass bullet catch. This complete unit costs less than the old-style wood door. It can be installed in five to ten minutes' time.



SPECIFICATIONS

Overall	11¼″x11¼″x1½″
Wall opening	9″x12″
Door size	8⅞″x12″



MIAMI

CHROMIUM BATHROOM ACCESSORIES

Brilliantly Beautiful

A FEW years ago, the bathroom fitted with *chromium plated* accessories was the exception rather than the rule. Today, the picture is different. *Chromium plated* bathroom accessories have arrived — they are the rule rather than the exception. WHY? They are brilliantly beautiful. They match *chromium plated* fixtures. They add the final touch to today's bathroom. They are easier to install. Fitted with front flanges, they eliminate open joints. They will not crack or craze. They can be removed for replacement without damaging the finished wall.

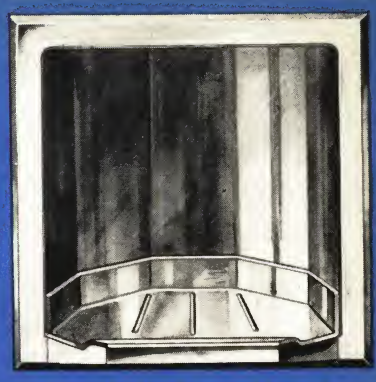
Miami Accessories illustrated on pages 29, 30 and 31 are manufactured of *selected brass*, over which is applied, first, a thick coating of nickel, and then a covering of hard chromium — the "Everlasting Accessory."

When ordering Miami Accessories, be sure and specify the type of bracket required by adding the prefix "L" to the Model Number for the lug type. Add the prefix "S" to the Model Number for screw-on type.

RECESSED ACCESSORIES

Accessories Nos. 6000, 6001, 6002, 6003 and 6004 are recessed models. They can be appropriately built into any style wall by making arrangements in advance for their installation. When installed, they become a part of the wall itself. These recessed pieces may be had in the screw-on type or in the lug type. Wall opening on all recessed accessories 5¼"x5¼", overall size 6¼"x6¼.

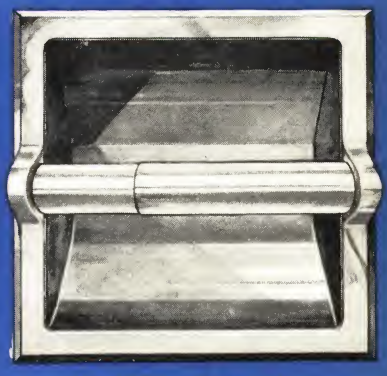
No. 6000 soap holder and No. 6004 soap and grab bar are fitted with non-breakable trays.



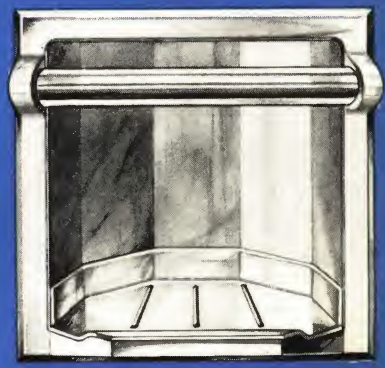
No. 6000 — Soap holder with non-breakable tray.



No. 6001 — Tumbler holder.



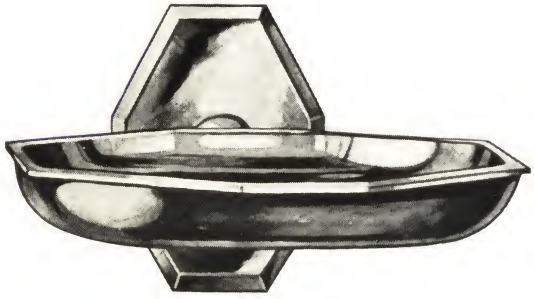
No. 6002 — Paper holder, chrome roller.
No. 6003 — Paper holder, wood roller.



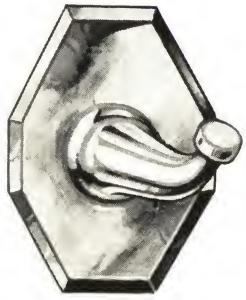
No. 6004 — Combination soap and grab bar with non-breakable tray.

PROJECTION TYPE ACCESSORIES

All accessories illustrated on this page and the following page are furnished with "L" lug type brackets for installing fixtures permanently into the wall or the "S" screw-on type that fasten readily to practically any surface. The installing screws used with the "S" accessories are concealed by the front plate of the bracket.



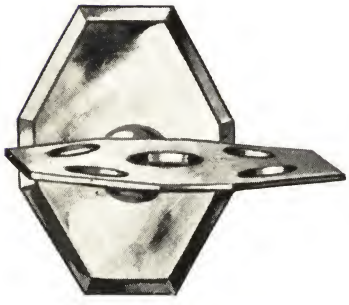
No. 5005 Soap Dish
No. 5006 Soap Dish with Drain Holes



No. 5010
Single Robe Hook



No. 5008
Tumbler and Tooth-Brush Holder



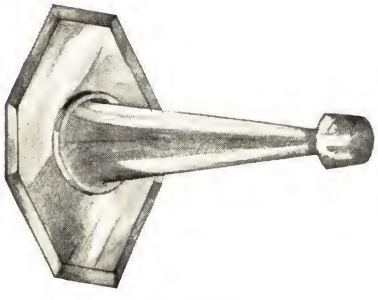
No. 5009
Tooth-Brush Holder



No. 5007
Tumbler Holder



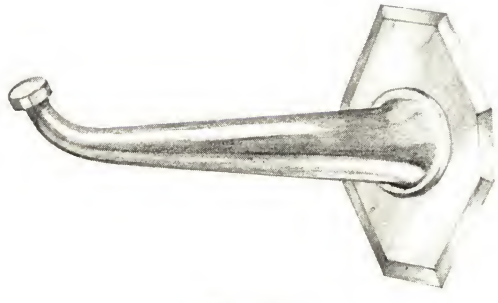
No. 5011
Double Robe Hook



No. 5041
Door Stop



No. 5042
Razor Strop Hook



No. 5043
Towel Hook 5″ Projection

MIAMI Chromium Bathroom Accessories

PROJECTION TYPE ACCESSORIES

TOWEL BARS



OCTAGON CHROMIUM PLATED BARS — CHROME BRACKETS

No. 5000 — ⅞″x8″ Octagon Grab Bar

No. 5001 — ⅞″x18″ Octagon Towel Bar
No. 5002 — ⅞″x24″ Octagon Towel Bar
No. 5003 — ⅞″x30″ Octagon Towel Bar
No. 5004 — ⅞″x36″ Octagon Towel Bar



SQUARE CRYSTAL GLASS TOWEL BARS — CHROME BRACKETS

No. 5018 — ⅞″x18″ Square Glass Bar
No. 5019 — ⅞″x24″ Square Glass Bar
No. 5020 — ⅞″x30″ Square Glass Bar
No. 5021 — ⅞″x36″ Square Glass Bar



ROUND CRYSTAL GLASS TOWEL BARS — CHROME BRACKETS

No. 5032 — ⅞″x18″ Round Glass Bar
No. 5033 — ⅞″x24″ Round Glass Bar
No. 5034 — ⅞″x30″ Round Glass Bar



SQUARE CHROMIUM-PLATED BARS — CHROME BRACKETS

No. 5022 — ⅞″x8″ Square Grab Bar

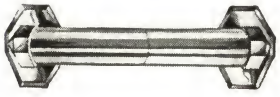
No. 5023 — ⅞″x18″ Square Towel Bar
No. 5024 — ⅞″x24″ Square Towel Bar
No. 5025 — ⅞″x30″ Square Towel Bar
No. 5026 — ⅞″x36″ Square Towel Bar



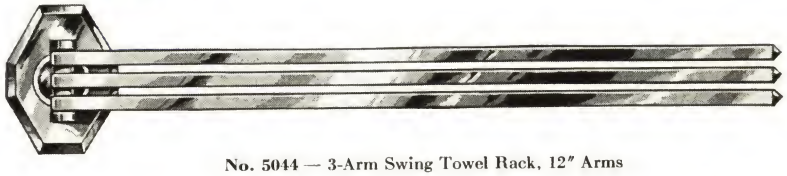
ROUND CHROMIUM-PLATED BARS — CHROME BRACKETS

No. 5027 — ⅞″x8″ Round Grab Bar

No. 5028 — ⅞″x18″ Round Towel Bar
No. 5029 — ⅞″x24″ Round Towel Bar
No. 5030 — ⅞″x30″ Round Towel Bar
No. 5031 — ⅞″x36″ Round Towel Bar



No. 5012 — Paper Holder with Chromium Roller
No. 5013 — Paper Holder with Wood Roller

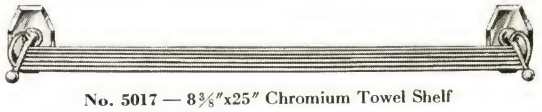


No. 5044 — 3-Arm Swing Towel Rack, 12″ Arms



CRYSTAL GLASS SHELVES

No. 5014 — ⅜″x5″x18″ Glass Shelf — Chrome Brackets
No. 5015 — ⅜″x5″x24″ Glass Shelf — Chrome Brackets
No. 5016 — ⅜″x5″x30″ Glass Shelf — Chrome Brackets
No. 5035 — 5/16″x5″x18″ Glass Shelf — Chrome Brackets
No. 5036 — 5/16″x5″x24″ Glass Shelf — Chrome Brackets
No. 5037 — 5/16″x5″x30″ Glass Shelf — Chrome Brackets

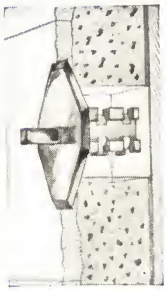


No. 5017 — 8⅜″x25″ Chromium Towel Shelf

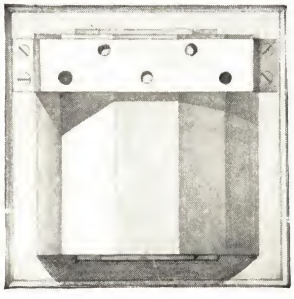
When ordering accessories, specify the type of bracket required, by adding the prefix "L" to the model number for the lug type, or the prefix "S" to the model number for the screw-on type.

INSTALLATION DETAILS OF MIAMI ACCESSORIES

L TYPE

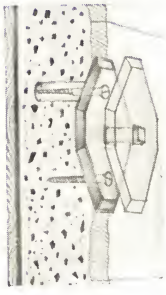


This detail shows the method of installing fixture permanently into wall with cement. Available in all projecting styles shown in this catalog. If wanted, add prefix "L" to fixture model number.



All recessed fixtures which carry prefix "L" are so designed to "key" permanently into the wall with cement or mortar. The Soap and Grab Bar No. 6004 has the additional reinforcing bar shown at left for additional strength. Recessed fixtures are also made in "S" type for attaching to recess cut in wall, with screws or toggle bolts.

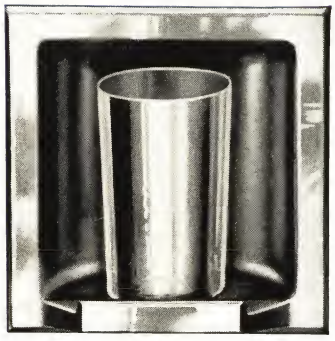
S TYPE



This detail shows method of installing fixtures to the surface of the wall with screws or toggle bolts. Available in all projecting styles shown in this catalog. If wanted, add prefix "S" to fixture model number.

COLONIAL BATHROOM ACCESSORIES

RECESSED TYPE ACCESSORIES



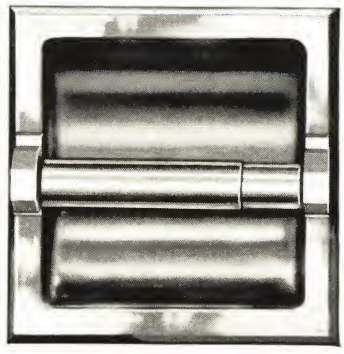
Model 4023
Tumbler Holder

PRESENTING — in the latest design — Miami-Carey COLONIAL Bathroom Accessories.

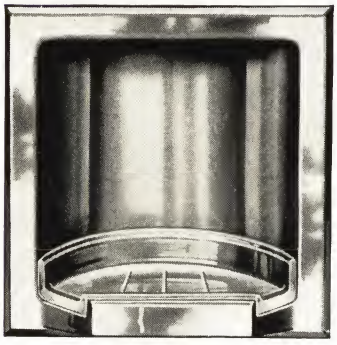
Colonial accessories in the designs illustrated on this and following pages were designed for us by one of the nation's outstanding architects.

The Colonial accessories are manufactured of "*Zamac*" metal, developed by the New Jersey Zinc Company, and now recognized to be the cleanest alloy of metals that can be found. There are practically no impurities in Zamac. It has great strength and shows no depreciation from age. It is non-corrosive and is used extensively in automobiles, electrical appliances, business machines and other equipment that must stand hard usage.

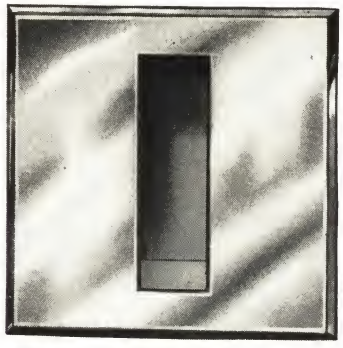
Finish — Colonial accessories are triple coated. First, a heavy coating of pure *copper plating*. Second, a coating of *nickel* and, finally, a heavy coating of pure *chromium*. The result is the finest plating job yet offered the trade.



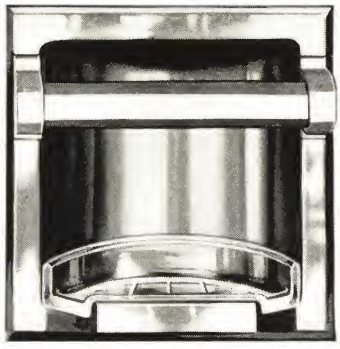
Model 4020
Paper Holder — Wood Roller
Model 4021
Paper Holder — Chrome Roller



Model 4022
Soap Dish with Non-breakable Tray



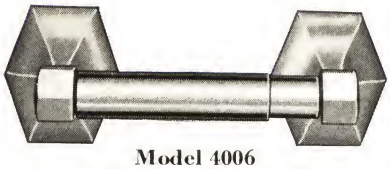
Model 4025
Paper Holder for Folded Sheet Paper



Model 4024
Soap Dish and Grab Bar with Non-breakable Tray

All COLONIAL Recessed Accessories illustrated above have overall dimensions $6\frac{5}{8}$" x $6\frac{5}{8}$". Wall openings are $5\frac{1}{2}$" x $5\frac{1}{2}$"x2". They can be appropriately built into any style wall by making arrangements in advance for their installation. Recessed accessories are available in either "S" (screw-on) type or "L" (lug) type. **Specify Type required when ordering.**

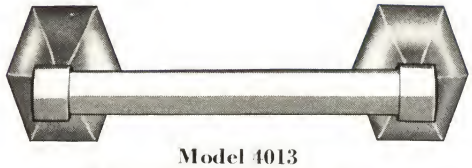
PROJECTION TYPE ACCESSORIES



Model 4006
Paper Holder with Wood Roller
Model 4007
Paper Holder with Chrome Roller

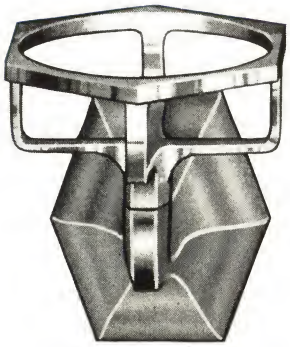


Model 4018
Powdered Soap Dispenser — wall type

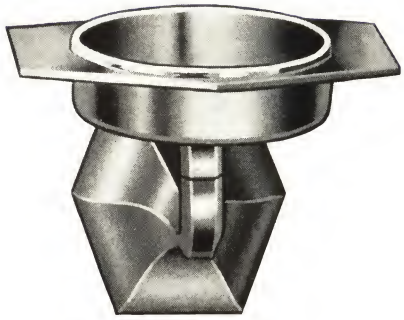


Model 4013
8" Grab Bar — Hexagon Design

PROJECTION TYPE ACCESSORIES



Model 4000
Open Type Tumbler Holder



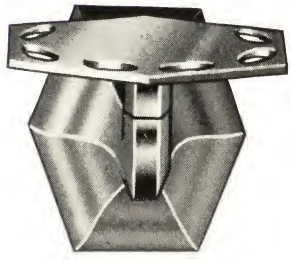
Model 4001
Closed Type Tumbler Holder



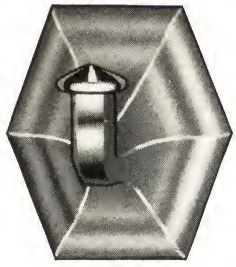
Model 4002
Closed Type Combination Tumbler and Tooth Brush Holder



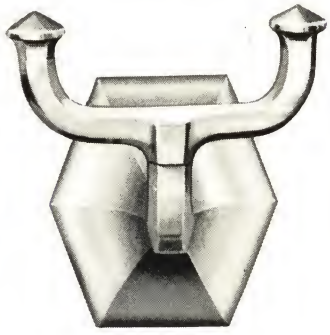
Model 4003 — Soap Dish
Model 4004
Soap Dish with Drain Holes



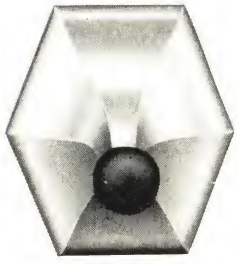
Model 4005
Tooth Brush Holder



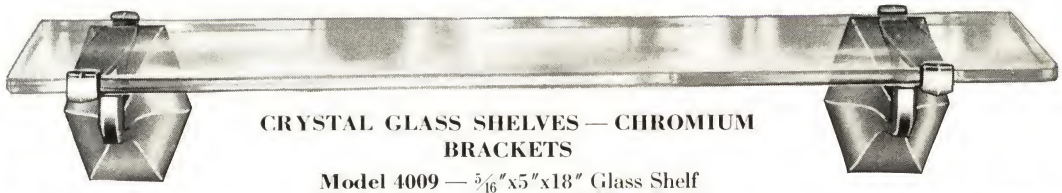
Model 4008
Single Robe Hook



Model 4019
Double Robe Hook

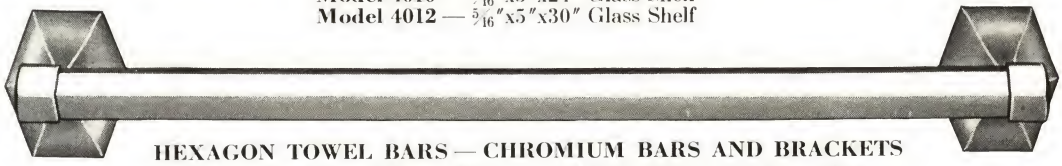


Model 4011
Door Stop



CRYSTAL GLASS SHELVES — CHROMIUM BRACKETS

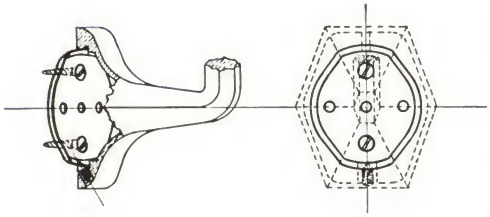
Model 4009 — 5/16″x5″x18″ Glass Shelf
Model 4010 — 5/16″x5″x24″ Glass Shelf
Model 4012 — 5/16″x5″x30″ Glass Shelf



HEXAGON TOWEL BARS — CHROMIUM BARS AND BRACKETS

Model 4014 — 18″ Towel Bar
Model 4015 — 24″ Towel Bar
Model 4016 — 30″ Towel Bar
Model 4017 — 36″ Towel Bar

METHODS OF INSTALLING PROJECTION TYPE ACCESSORIES

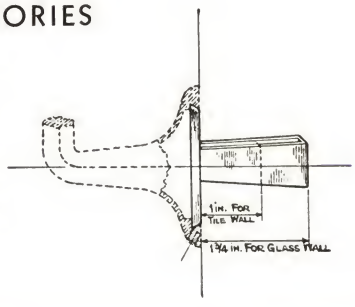


The illustration at left shows the method of attaching "S" type (which is the screw-on fixture) to the wall.

Illustration at right shows method of installing "L" type accessories in the wall.

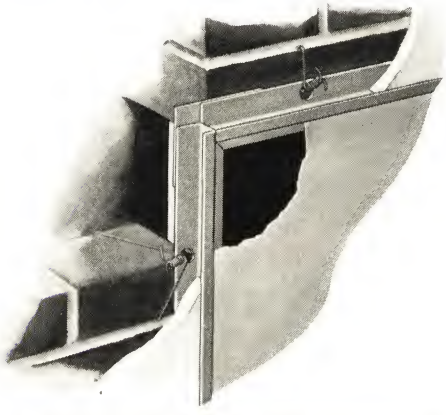
When ordering projecting type accessories, it is not necessary to specify "L" or "S" type. We furnish both the "L" and "S" type installing plates with each projecting accessory. You may use whichever plate meets your installation requirements.

Only Miami-Carey furnishes this service.

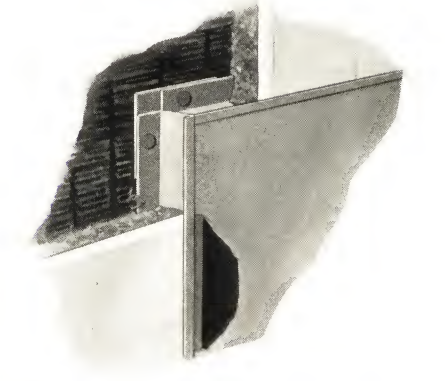




The above illustration shows access door open, exposing "back out" type cam lock; fixed and operative pivot; frame with plaster key flange "A" and reinforced corners.



The illustration above shows Carey Access door with "A" type flange in masonry wall with plastered face.



Where walls are faced with marble or tile or similar material plaster key flange is set back from face of door 1½" to allow for ample bed of mortar. This type flange is known as "B".

Hinged Door Type

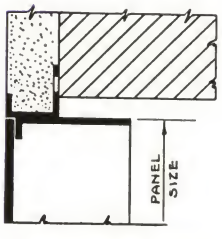
Carey Hinged Access Doors permit quick, easy access to pipes, plumbing valves, air shafts, electric wiring, etc. They come as a unit, ready to place in wall or ceiling without special framework or bucks. Frames are of sixteen (16) U. S. gauge galvanized steel, reinforced at corners and with perforated key or fastening flanges for plastered surfaces. Frames may also be had for walls faced with marble or tile or for masonry walls requiring face flange only. Lids are of fourteen (14) gauge leveled steel and are equipped with fixed and operative pivot as well as cam lock which automatically backs lid from frame when exposed, flush screw head bolt in door is turned.

Carey Access Doors fit flush with wall surface and may be papered or decorated over. They receive a shop coat of enamel baked on before leaving factory.

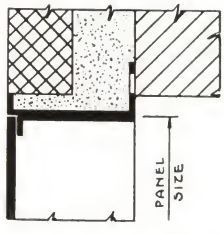
SPECIFICATIONS

Model	Panel Size	Wall Opening	Weight
711	7½"x11½"	8"x12"	6 lbs.
1216	12½"x16½"	13"x17"	10 lbs.
1418	14½"x18½"	15"x19"	14 lbs.
1824	18½"x24½"	19"x25"	25 lbs.
1830	18½"x30½"	19"x31"	30 lbs.

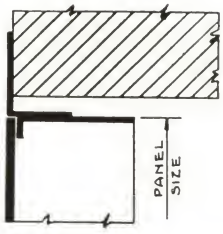
Carey Access Doors with "A" type flange for plastered walls are carried in stock ready for immediate shipment. Access Doors for marble and tile faced walls and plain flanged type ("C") are carried knocked down and require a few days for assembly. When ordering be sure to designate type flange (A, B or C) wanted. When not specifically mentioned "A" type will be furnished.



Type "A" plaster key flange for all types of walls faced with plaster.



Type "B" key flange set back from face of panel for tile or marble faced walls.



Type "C" has one inch face flange: only for glazed brick or unfinished masonry walls.

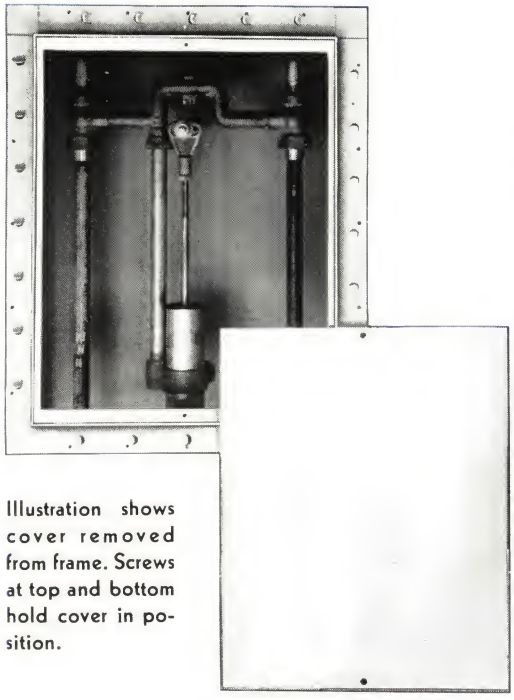


Illustration shows cover removed from frame. Screws at top and bottom hold cover in position.

CAREY ACCESS DOORS

Screw Door Type

Access doors permit quick, easy access to pipes, plumbing valves, air shafts, electric wiring, etc. The frames are heavy gauge *Armco* autobody steel. All corners are reinforced. Frames are fitted with plaster hooks. They may also be nailed or screwed to wood studs.

The door is 14-gauge *Armco* autobody steel. Door fits snugly against inside sill of the frame. The edges of the frame and door are flush with plaster. Doors can be covered with wallpaper or painted so as to be almost invisible. A screw driver is the only tool needed to open the door. The removable door can then be put aside out of the way of men working.

When ordering state whether doors are to be set in plaster-faced walls or in walls faced with marble or tile. Flange depths are set back for tile or marble walls.

SPECIFICATIONS

Model	Panel Size	Wall Opening	Weight
812	7½″x11½″	8″x12″	6 lbs.
1317	12½″x16½″	13″x17″	12 lbs.
1519	14½″x18½″	15″x19″	16 lbs
1925	18½″x24½″	19″x25″	27 lbs.
1931	18½″x30½″	19″x31″	33 lbs.

MIAMI WALL HUNG MIRRORS



Models 1-N, 2-N, 3-N

The mirrors illustrated here are for hanging on the surface of the wall above the lavatory or wherever a mirror is required.

STEEL FRAMED MIRRORS

Models 1-N, 2-N and 3-N, illustrated at the left, are steel framed, the frame finished in first-quality white *baked enamel*. These frames may be had in special color if required. Plain mirrors are also available.

CHROME FRAMED MIRRORS

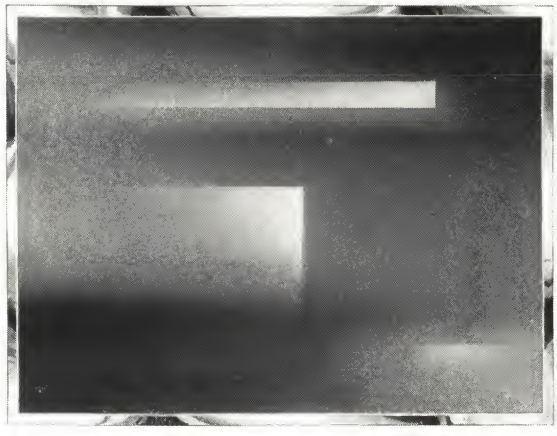
The model illustrated below, available in six sizes, is a plain plate mirror set in a *brass, chromium plated* frame, channel type. Backing behind the mirror is steel.

Frame is 9/16″x½″x9/16″.

All models fitted with key hole slots for concealed hanging on the wall.

All mirrors illustrated on this page are No. 1 *selected* plate *copper sealed*, guaranteed for five years against silver spoilage.

Mirrors fitted with brass angle frame and theft proof device are available in the sizes listed in the specifications box. Prices on request.



Models 10, 11, 12, 13, 14, 15

SPECIFICATIONS

Model	Mirror	Overall
1-N	16″x22″	17¼″x23¼″
2-N	14″x18″	15¼″x19¼″
3-N	12″x16″	13¼″x17¼″
10	12″x18″	12⅝″x18⅝″
11	14″x20″	14⅝″x20⅝″
12	16″x20″	16⅝″x20⅝″
13	16″x22″	16⅝″x22⅝″
14	18″x24″	18⅝″x24⅝″
15	20″x28″	20⅝″x28⅝″

MIAMI CABINETS

A PARTIAL LIST OF MIAMI-CAREY DISTRIBUTORS

We regret that limited space prevents us from listing all Miami-Carey Distributors.

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Birmingham, The Philip Carey Co., L. G. Baumhauer, P. O. Box 1822
Birmingham Sash & Door Co., 9th Ave. and 28th St.

CALIFORNIA
Los Angeles, The Philip Carey Company, 337 So. Anderson St.
Warren & Bailey Co., 337 So. Anderson St.

CANADA
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Denver, The Philip Carey Co., C. V. Oglevie, 4369 DePew

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Indianapolis, The Philip Carey Co., 1111 E. 19th St.

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Seattle, The Philip Carey Co., 820 Fairview Place
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Wheeling, The Philip Carey Co., Chapline at 18th St.

WISCONSIN
Appleton, The Philip Carey Co., H. B. Johnson, 522 No. Garfield St.
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MIAMI CABINET DIVISION
The PHILIP CAREY COMPANY
Middletown, Ohio.

MORTON BATHROOM CABINETS • KITCHEN CABINETS •

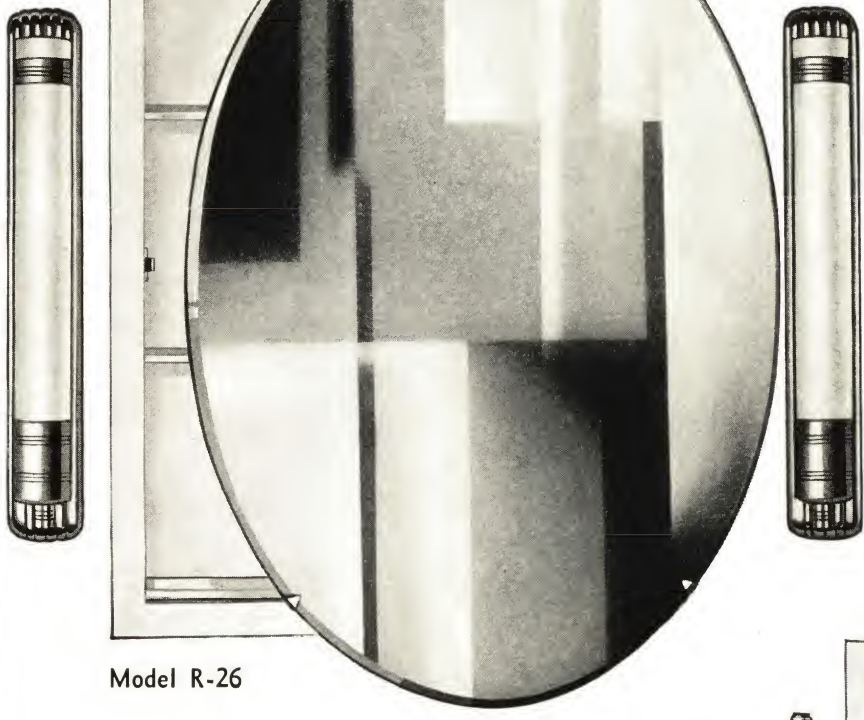
THE CURTAIN RISES ON A BRILLIANT CAST



27
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MORTON DE LUXE

MODERN BEAUTY EXPRESSED



Model R-26

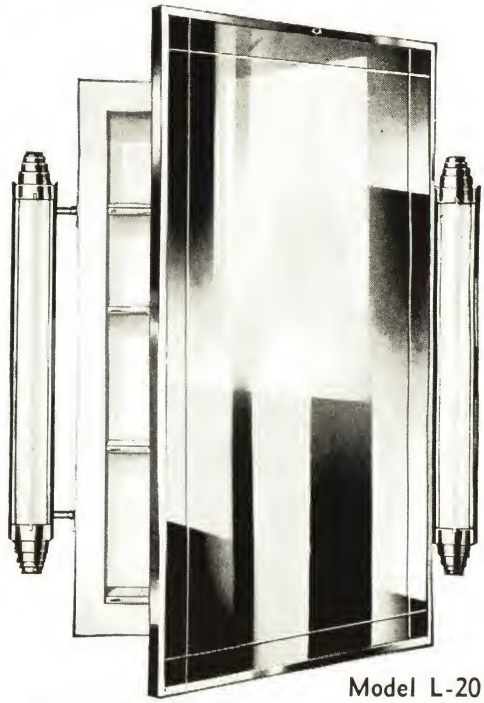
The round mirrored cabinet Model R-26, illustrated at the left, justifies the modern trend towards the use of a circular mirror. This mirror is held with stainless steel ratchet clips (patent applied for). This cabinet has a specially designed tooth brush compartment; used razor blade box; glass shelf on the bottom of the cabinet and sturdy hinge which allows door to be opened to a 90° angle.

The side lights shown in conjunction with the Model R-26 cabinet are not connected to the cabinet, but are sold separately in pairs. The overall height of the fixture is 16 in., width 2½ in. The T-8 bulb which is not furnished is housed in an opalescent glass tube. Each side light is controlled by a switch at the base.

MORTON De Luxe Cabinets are the result of a determination to build the finest cabinets available. The artistry of their design conveys an impression of modernity and luxury—while their simplicity and dignified good taste enable them to blend in with the designs of all styles of bath rooms.

Outstanding among the many features of De Luxe craftsmanship are the cushioned doors which prevent mirror breakage and assure smooth, hushed closing, and the sturdy steel construction which results from welding all parts into one complete unit. All are finished in the special "Mortelite" baked enamel—all have mirrors of finest plate glass with copper-processed backs—all carry a five-year guarantee.

Chromium plated piano-type hinges, removable glass shelves with bulb edges, and a glass shelf to cover the bottom of the Cabinet are other features of quality. A convenient removable razor blade box and aluminum tooth brush holder are included with each De Luxe Cabinet.



Model L-20

FLUORESCENT LIGHT FIXTURES

Worthy of special attention is the unique and important development shown above in Model L-20. In this graceful unit Morton offers, for the first time in the bathroom cabinet field—Fluorescent lights—the most perfect lighting science has yet developed. Fluorescent light closely approaches 99% of the complete spectrum—in other words the purest artificial light known.

Fluorescent light is continuous and the surface diffusion is complete throughout the bulb.

Fluorescent lights are long lived and very economical, using no more current than is consumed by an ordinary 20-watt bulb.

Model L-20 carries a convenience outlet in the cabinet proper and the Fluorescent lights are controlled by individual switches.



DIMENSIONS AND WEIGHTS

Model	Plate Mirror Size, In.	Outside Dimensions, In.	Wall Opening, In.	No. of Shelves	Shipping Weight, Lbs.
R-26	26 Diam.	18x18	16½ x 16½	2	45
L-20	20 x 31	19⅛x29⅞	17½ x 28½	3	75

Model R-26 and L-20: Overall depth 4½ in., return flange 1 in., making a 3½-in. recess depth.
NOTE: All Models can be obtained with plain mirrors.

Cabinets having light fixtures are approved by the Underwriters Laboratories, Inc.

MORTON

STEEL CABINETS

IN FINEST CRAFTSMANSHIP

27
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THE illustrations below are graphic evidence of the wide range of sizes and designs in which Morton De Luxe Cabinets are available. From this complete array can be selected a Cabinet which exactly harmonizes with the design and size of the bathroom in which it is to be used.

Model F. A delightful design of cabinets in which the mirrored doors completely cover the recessed cabinets.

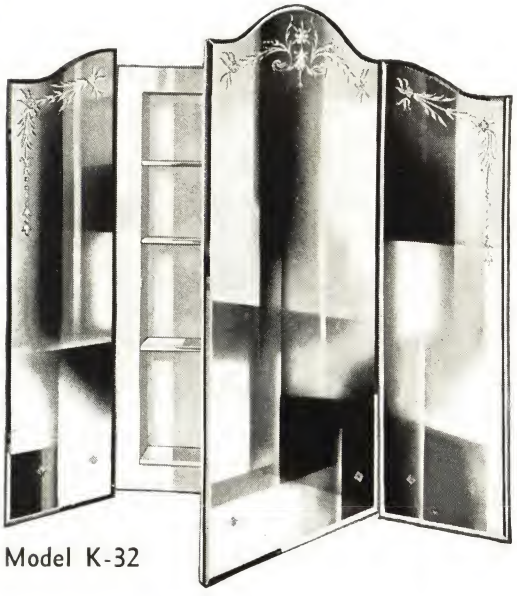
Model K-32 has two graceful, charmingly etched movable wings.

Model C-31 as shown at the bottom of the page is truly a modern cabinet with its welded one piece chromium plated framed mirror door.

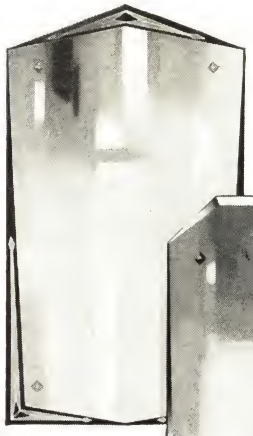
Regardless of design or size, all are built to one standard of quality, *the highest.* And all mirrors are backed by the five-year guarantee which gives absolute protection to the architect, contractor and owner.



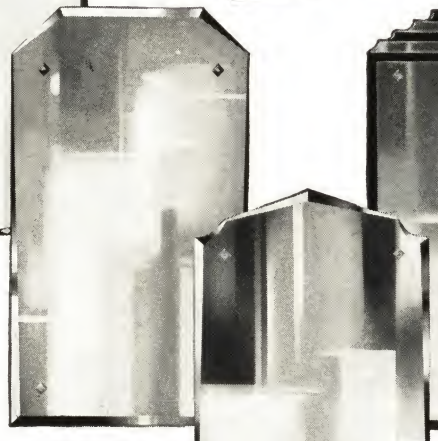
Model F



Model K-32



Model F
Design 12



Model F
Design 15



Model F
Design 13



Model F
Design 16



Model C-31

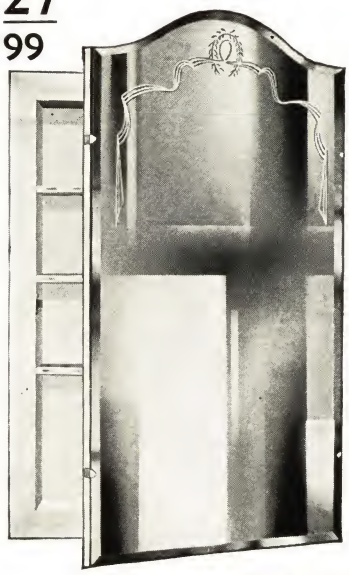
DIMENSIONS AND WEIGHTS

Model	Plate Mirror Size, In.	Outside Dimensions, In.	Wall Opening, In.	No. of Shelves	Shipping Weight, Lbs.
C-31	20 x 31	19⅛ x 29⅞	17½ x 28½	3	65
F-26	18 x 26	17⅛ x 21¾	15½ x 20½	3	50
F-32	18 x 32	17⅛ x 27⅞	15½ x 26½	3	55
F-28	20 x 28	19⅛ x 23⅛	17½ x 21½	3	60
F-34	20 x 34	19⅛ x 29⅞	17½ x 28½	3	65
K-32	18 x 32 Center 8 x 29½ Wings	17⅛ x 27⅞	15½ x 26½	3	75

All Models Above: Overall depth 4½ in., return flange, ½ in., making a 4-in. recess depth.
NOTE: All Models can be obtained with plain mirrors.



27
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Model 164

MORTON STANDARD

STRIKINGLY beautiful and artistically designed, Morton Standard Cabinets add grace and beauty to the bathroom. The highest standards of construction and the best materials are used throughout.



Model 162

Like the De Luxe Cabinets, they are electrically welded into one permanent unit. Standard Cabinets carry a specially designed cushioned door and "Mortelite" baked enamel finish. Mirrors are of highest quality plate glass with copper-processed backs. A five-year guarantee protects the user. The mirrors are held in place by a removable ratchet type stainless steel clip. (Patent applied for.) They are equipped with bulb-edged plate glass shelves, concealed piano hinge and door stop and with each goes the removable razor blade box and aluminum tooth-brush holder.

Those models having tubular light fixtures are equipped with tubular light mountings made of brass with a chromium finish. These hold the opalescent glass tubes which are closed at top to prevent dust accumulation on the light bulb or interior of the tubes. A recent improvement in all Morton Bathroom Cabinets with light fixtures is in the addition of a new type of toggle switch in the base of the light bracket on one side which controls both lights. On the other bracket is a convenience outlet for the many electrical appliances used in the bathroom today.



Models LM-164, 186, 192

MODEL 164—This Cabinet is a very popular size. It has an etched mirror door, with laurel wreath design, which covers the complete Cabinet.

MODEL 162—This Cabinet has a square-top etched mirror in which the severity of modern lines is relieved by the grace of the Venetian etching.

MODELS 186 AND 192—These two models have a spacious cabinet as well as a large mirror completely covering the door. The etching on the mirror is particularly tasteful and meets the demands of the most fastidious.

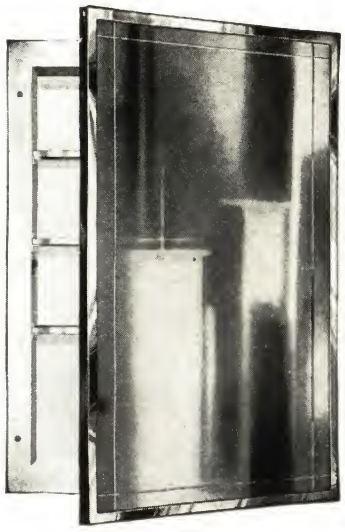
MODELS LM-164, 186, 192—These models have tubular light fixtures and mitre line mirrors. The mirror entirely covers the door of the cabinet and is held in place by stainless steel clips (Patent applied for).



Models 186, 192



STEEL CABINETS

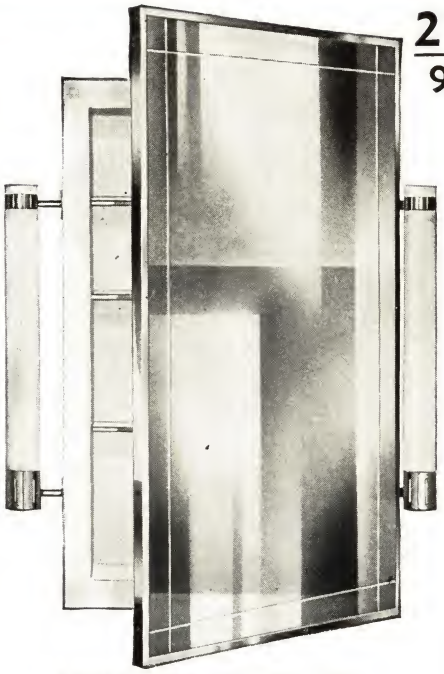


Models SM-162, 184, 190

MODELS SM-162, 184, 190—With their square lines and simplicity of etching, as well as the stainless steel frame, these Cabinets harmonize beautifully with bathrooms following the modern trend.

MODELS LSM-162, 184, 190—These Cabinets also are equipped with tubular lights and a mitre line mirror, but in these models the mirror is held in place by a stainless steel frame.

MODELS 184 AND 190—Where a particularly large mirror and spacious cabinet are desired, these models fully meet all requirements, and offer the attractiveness of an artistically designed mirror.



Models LSM-162, 184, 190

MODEL 216—With a beautiful Venetian mirror door concealing the Cabinet, and two movable mirrored side wings, the Model 216 adds grace and beauty to any home. It is produced only in the one size as shown in the specifications below.

DIMENSIONS AND DESCRIPTION

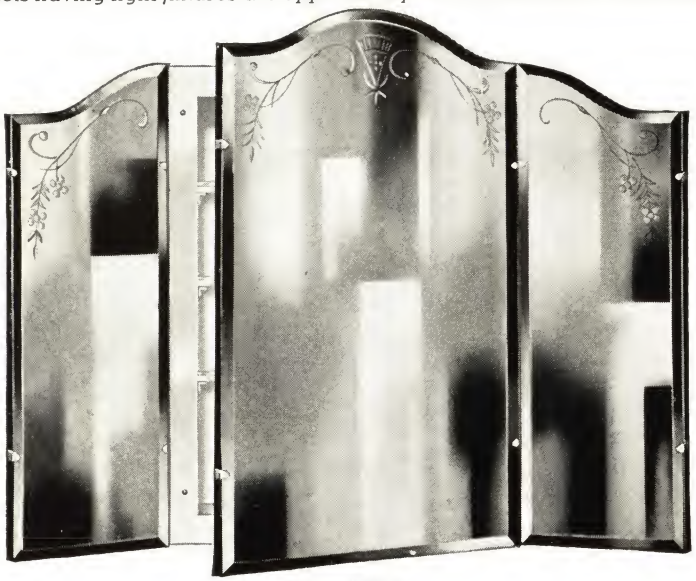
Model	Plate Mirror Size, In.	Outside Dimensions, In.	Wall Opening, In.	No. of Shelves	Shipping Weight, Lbs.
162	16 x 22	15⅛ x 21½	13½ x 20¼	3	40
164	16 x 24	15⅛ x 21½	13½ x 20¼	3	40
184	18 x 24	17⅛ x 23	15½ x 21¾	3	45
186	18 x 26	17⅛ x 23	15½ x 21¾	3	45
190	18 x 30	17⅛ x 27⅞	15½ x 26½	3	50
192	18 x 32	17⅛ x 27⅞	15½ x 26½	3	50
216	16 x 24 center 8 x 22 wings	15⅛ x 21½	13½ x 20¼	3	50

ALL ABOVE MODELS: Overall depth 4½ in., return flange 1 in., making a 3½-in. recess depth. L means tubular light fixtures; S means stainless steel frame; M means mitre line mirror; model numbers indicate size of mirror, outside dimension and wall opening. All models can be obtained with plain mirrors.

Cabinets having light fixtures are approved by the Underwriters Laboratories, Inc.



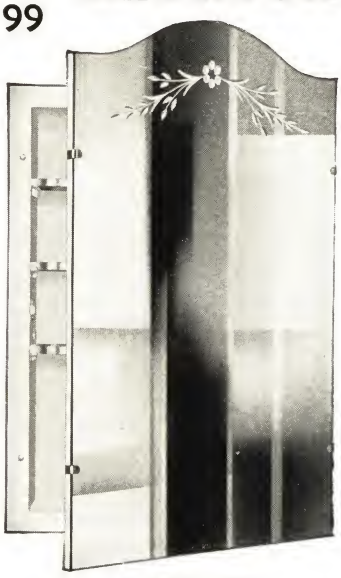
Models 184, 190



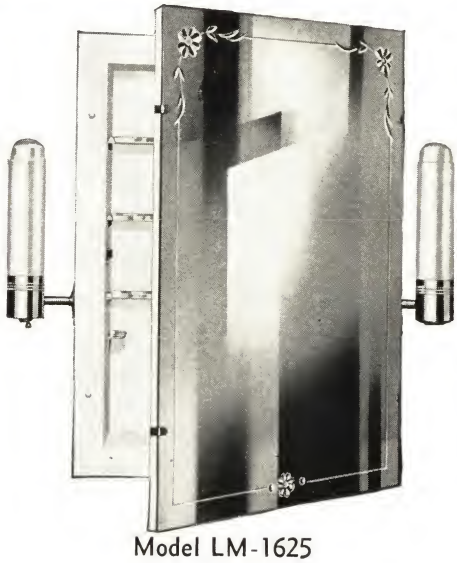
Model 216



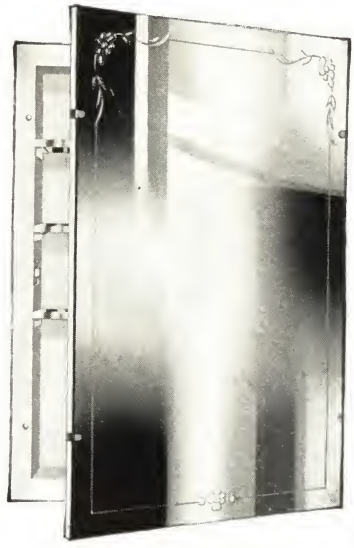
27/99 MORTON ECONOMY STEEL CABINETS



Models 1645-1865

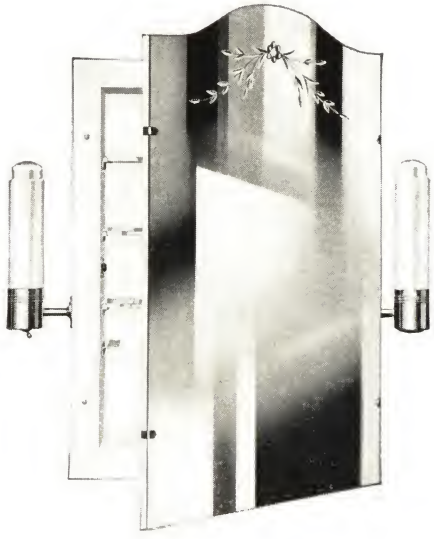


Model LM-1625



Models 1625-1845

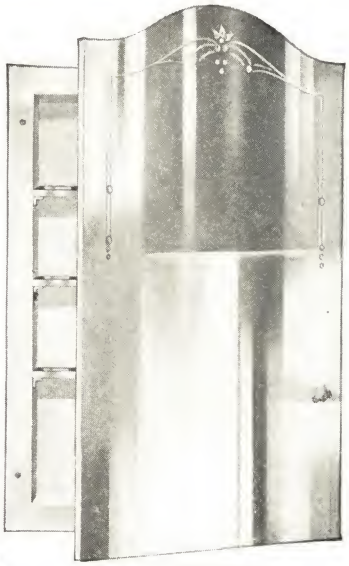
The ECONOMY Cabinets are also made from high-grade furniture steel, being slightly lighter in weight than our STANDARD Cabinets, electrically spot-welded into one complete unit and finished in our special "Mortelite" baked enamel. The Cabinet embodies a specially designed back to prevent mirror breakage, which mirror is held to the back by removable stainless steel clips of the new ratchet design (Patent applied for); all mirrors are coppered and carry a five-year guarantee, with the exception of Models 1001 and 1005; bulb-edged glass shelves; drop for used razor blades; aluminum tooth brush holder; concealed hardware.



Model LM-1645

The newest members of the Morton "Economy" family are the **Models 1625, 1645, 1845 and 1865.** They offer the improvement of mirrors of seamed-edge, finest quality plate glass with copper processed backs. Never before has such a quality feature been available at an "Economy" price.

These Cabinets are also available, as illustrated, with a beautiful new type of tubular light. Each light is supported from its base by a chromium bracket and on the bracket at one side is the new toggle switch which controls both lights, while the bracket at the other side offers a convenience outlet.



Models 1640-1860

The Model 1640 or 1860 Cabinet illustrated at left is one of the most beautiful of the Economy Cabinets. Its simple dignity is enhanced by a delicate touch of etching.

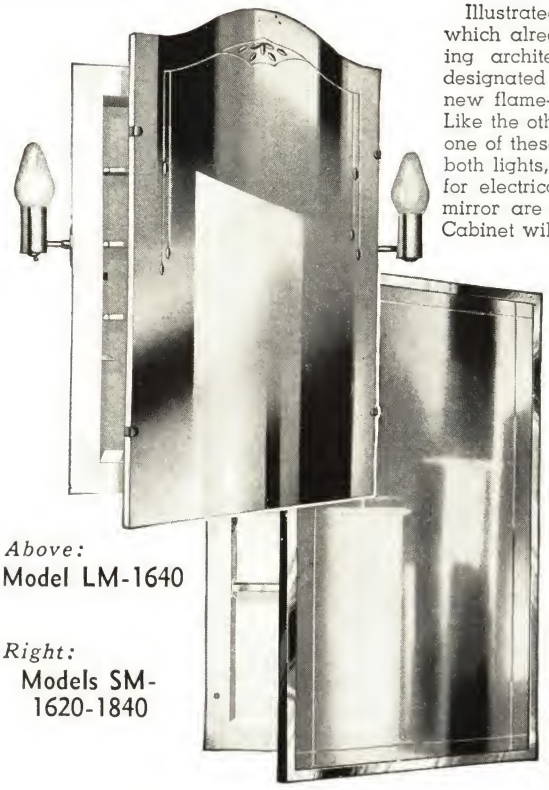
The Model 1620 Cabinet illustrated at right conveys an impression of modernity and simplicity because of its square lines but its austerity is delightfully softened by the smart tasteful etching at the top of the mirror. **The Model 1840** is identical in appearance but slightly larger in size.



Models 1620-1840



CABINET TO MATCH THE STYLE AND PURSE



Above:
Model LM-1640

Right:
Models SM-1620-1840

Illustrated at left is another new Economy Cabinet which already has won the approval of discriminating architects, builders and home owners. It is designated as the **Model LM-1640** and features the new flame-type bulbs on both sides of the Cabinet. Like the other types of sidelights on Morton Cabinets, one of these lights carries a toggle switch controlling both lights, and the other offers a convenience outlet for electrical appliances. The graceful lines of this mirror are accentuated by the mitre line, and this Cabinet will appeal to "hard-to-please" who demand something distinctive yet dignified.

The Models SM-1620 and SM-1840 are similar to the Models 1620 and 1840, except that the mirror carries a mitre line and has a frame of stainless steel, as illustrated.



Models 1001 and 1005

The Models 1001 and 1005 shown at right are an inexpensive Venetian type of cabinet having a shock mirror and steel shelves. Model 1001 is for wall mounting while Model 1005 is of the recess type. They are suitable for summer homes, tourist cabins and other locations where cost is a primary factor.

DIMENSIONS AND WEIGHTS

Model	Mirror Size, In.	Outside Dimensions, In.	Wall Opening, In.	No. of Shelves	Shipping Weight, Lbs.
1625	16 x 22 Plate	15⅛ x 21½	13½ x 20¼	3	35
1645	16 x 24 Plate	15⅛ x 21½	13½ x 20¼	3	35
1845	18 x 24 Plate	17⅛ x 23	15½ x 21¾	3	40
1865	18 x 26 Plate	17⅛ x 23	15½ x 21¾	3	40
1620	16 x 22 Crystal	15⅛ x 21½	13½ x 20¼	3	35
1640	16 x 24 Crystal	15⅛ x 21½	13½ x 20¼	3	35
1840	18 x 24 Crystal	17⅛ x 23	15½ x 21¾	3	40
1860	18 x 26 Crystal	17⅛ x 23	15½ x 21¾	3	40
1001	13 x 20 Shock	13¼ x 18¼	None	2	14
1005	15 x 23 Shock	15¼ x 20¼	13¾ x 18¾	2	17

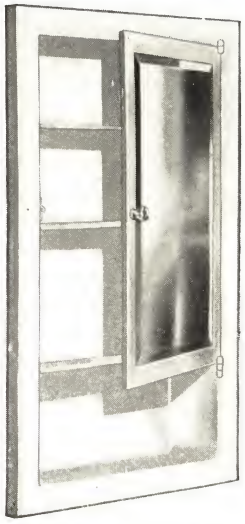
Above Models Overall depth 4½ in., return flange 1 in., making a 3½-in. recess depth. L means tubular light fixtures; S means stainless steel frame; M means mitre line mirror; Model number indicates size of mirror, outside dimensions and wall opening. All models except 1001 and 1005, can be obtained with plain mirrors.

Cabinets having light fixtures are approved by Underwriters Laboratories Inc.

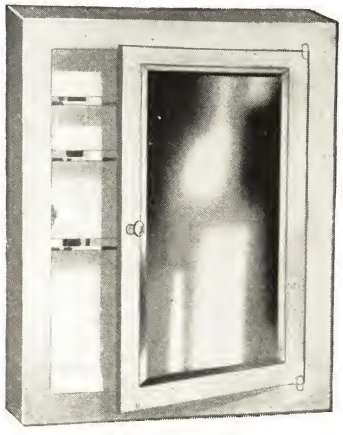
MORTON SERVICE STEEL CABINETS



Models A-12-14-16



Models B-12-14-16



Model E-12

The Cabinets are low-priced yet very attractive and admirably suitable for the small home, remodeling job, apartment, hospital, hotel or other locations where a serviceable Cabinet is required.

Cabinets have exceptionally heavy grade steel, plate mirrors, with coppered backs which carry a five-year guarantee.

Model "A" is a neat compact medicine Cabinet, produced in three standard sizes as listed in table at right. **Model "B"** is same as Model "A" except for the addition of a convenient shelf below the door which provides ample room for shaving equipment, comb and brush, etc. **Model "E"** is exactly the same as Model "A," except that it is provided with a collar for mounting on the surface of the wall.

DIMENSIONS AND WEIGHTS

Model	Plate Mirror Size, In.	Outside Dimensions, In.	Wall Opening, In.	No. of Shelves	Shipping Weight, Lbs.
A-12	12 x 16	17⅛ x 21⅛	15 x 19	2	35
B-12	12 x 16	17⅛ x 27⅞	15 x 25½	3	40
E-12	12 x 16	17⅛ x 21⅛	None	2	40
A-14	14 x 18	19⅛ x 23⅛	17 x 21	3	40
B-14	14 x 18	19⅛ x 29⅞	17 x 27½	3	45
A-16	16 x 20	21⅛ x 25⅛	19 x 23	3	45
B-16	16 x 20	21⅛ x 31⅞	19 x 29½	3	50

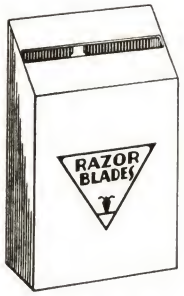
Overall depth 4½ in., return flange 1 in., making a 3½-in. recess depth. Above models can be obtained with plain mirrors.



MORTON

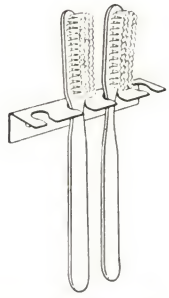
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99

MORTON FEATURES



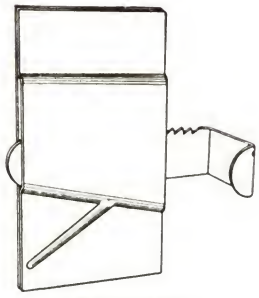
Razor Blade Box

One of the convenient features incorporated in the Morton Cabinets is the removable used-razor-blade container shown above. (Patent applied for)



Aluminum Toothbrush Holder

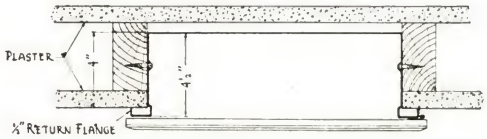
The toothbrush holder solves the problem of sanitation and neat arrangement of the toothbrush in the bathroom.



Ratchet Clips

The stainless steel removable ratchet clips assure absolute ease in properly applying and centering the mirror at the time of installation. (Pat. applied for)

INSTALLATION DETAILS

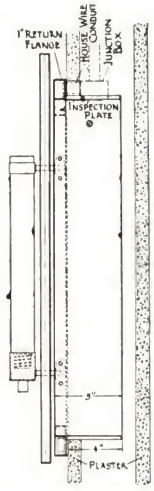


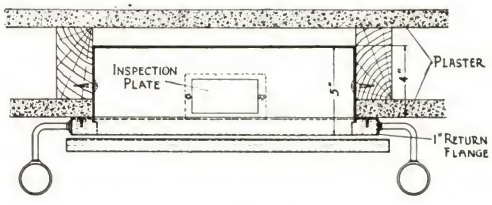


Cabinet diagrams above and left show method of applying recessed cabinet into wall.

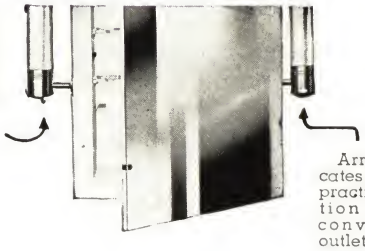
On right and below cabinet diagrams show method of installing cabinets with light fixtures.

Dimensions shown vary slightly in the various Morton cabinets.





Arrow indicates convenient location of toggle switch controlling both side lights.



Arrow indicates the very practical location of the convenience outlet.





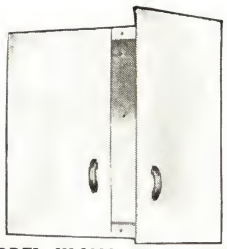
MORTON IRONING BOARD CABINETS

The illustration presents a Morton Adjustable Ironing Board built into a steel cabinet. The main and sleeve boards are made of Selected No. 1 white pine—the cabinet is made of furniture quality steel.

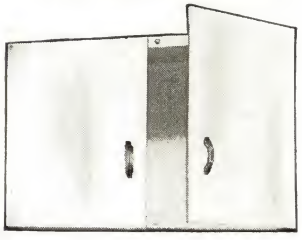
This model is a complete unit—ready for installation. No trim is required as the steel moulding around the cabinet is 1½ in. wide and has a ¾-in. return flange. Overall dimensions 15¾ in. by 68 in.; wall opening 14 in. by 66 in. Bottom trim 14½ in. above finished floor. The standard finish is a white baked enamel.

The board swings a full half-circle and can be adjusted to any angle without the use of set screws or any other mechanical devices. The cabinet can also be installed next to the wall or in a corner and still render a real service where no other board would operate.

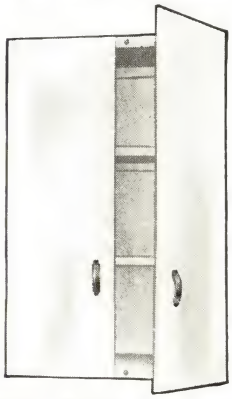
MORTON "KIT-UNETTE" CABINETS



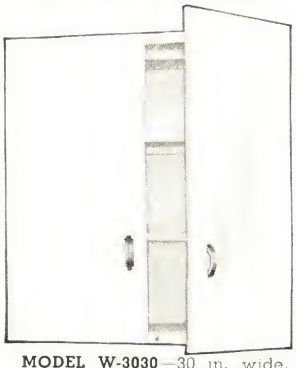
MODEL W-2118—21 in. wide, 18 in. high, 13⅜ in. deep.



MODEL W-3018—30 in. wide, 18 in. high, 13⅜ in. deep.



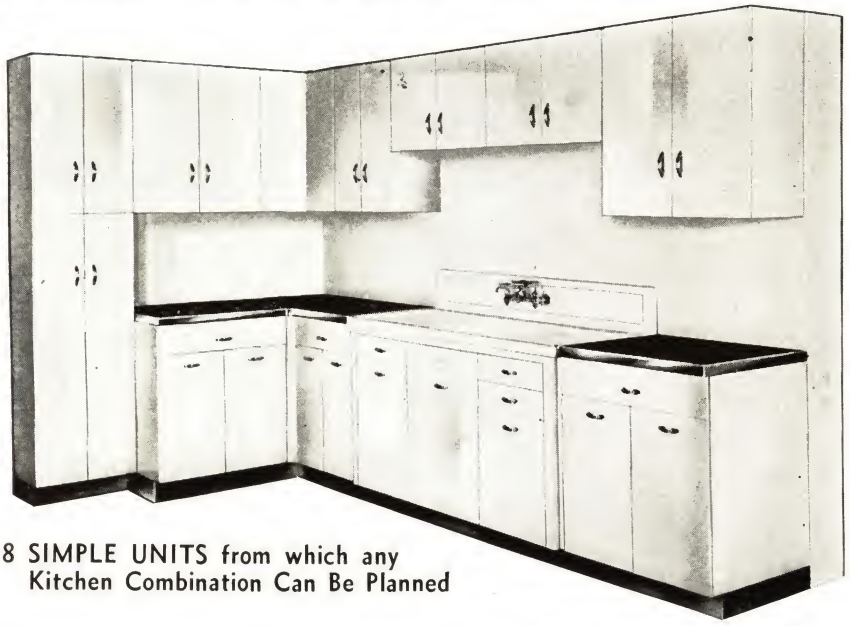
MODEL W-2130—21 in. wide, 30 in. high, 13⅜ in. deep.



MODEL W-3030—30 in. wide, 30 in. high, 13⅜ in. deep



MODEL C-1430—Corner Cabinet. 24⅝ in. wide, 30 in. high.



8 SIMPLE UNITS from which any Kitchen Combination Can Be Planned

"KIT-UNETTE" is the result of a careful, painstaking study of "kitchen-traffic" (the motions and paths followed during a typical day in the kitchen). From this study grew the Morton Cabinet designs to provide the most efficient, space-and-step-saving storage arrangements for every important article in kitchen use.

"KIT-UNETTE"—Morton's new "Package Plan at a Package Price"—is a revolutionary idea in the kitchen Cabinet field.

By the Morton Plan, only 8 basic units are required—yet these 8 units can be arranged into an almost infinite variety of kitchen combinations, **as easily as building with blocks!** Purchase price is lowered—assembly costs are cut—utmost efficiency in every grouping is assured—and dealer stocks are held to a minimum!

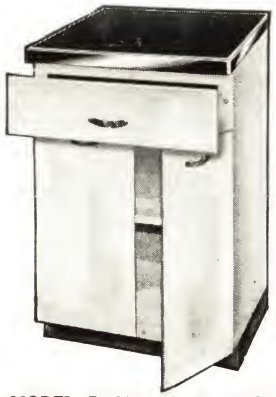
On this page and the following two pages are shown but a few representative examples of the countless thousands of arrangements possible with "KIT-UNETTE" Units. Study the construction—see how every detail has been engineered to cut down installation time.

Materials and Description—Worthy of special emphasis is the fine quality of materials.

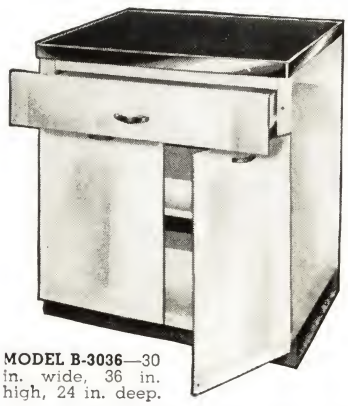
All Morton base and wall cabinets are made of heavy fine quality No. 20 and 22 gauge furniture steel treated with "Mortelite" baked enamel finish. All base cabinets are complete, having an all steel top of No. 18 gauge metal covered with high grade black linoleum work top trimmed with stainless steel rim. Black recessed base is attached to the cabinet. All doors and drawers on both Morton wall and base cabinets are thoroughly sound deadened. The hardware is beautifully designed with plated satin silver finish. Additional features are the semi-concealed hinges, double pan bottom construction and recessed backs to allow flush wall mounting of the wall cabinet. The steel hanger is furnished with each wall cabinet which greatly facilitates ease of installation.



MODEL BC-2186—21 in. wide, 86 in. high, 13⅜ in. deep.



MODEL B-2136—21 in. wide, 36 in. high, 24 in. deep.



MODEL B-3036—30 in. wide, 36 in. high, 24 in. deep.



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MORTON "KIT-UNETTE"

COMBINATION SINK AND CABINET—UNDERSINK CABINETS



Model SU4825



Model U4225



Model U6025

Model SU4825—A sink and cabinet combination of the same enduring quality and clean design found in all Morton Cabinets. The sink has a double compartment and measures 48 x 25 in. overall. The top is of linoleum trimmed with stainless steel and carries a 6-in. back splash panel.

The porcelain enamel sink basins are 17¾ x 16¾ x 7¾ in. Sumps are drilled for flat or dual strainers. The top is drilled for shelf type fixtures mounting on 8-in. centers with extra hole for spray fixture. This unit is furnished without fittings. Cabinet is of deluxe construction and has louvred ventilation panel and 2 doors for storage space. The cabinet is finished in white Mortelite baked enamel. Black base is recessed 4 in. for toe space.

Model U4225—Morton Cabinet for 42-in. sink has drawer 4½ in. deep with cutlery compartment and 20-in. door enclosed cupboard under drainboard. Louvred ventilation panel under basin and convenience cupboard with large sized rag compartment attached to inside of door. Overall dimensions 40½ in. wide, 24¼ in. deep, and 35¼ in. high with base.

Model U6025—Morton Cabinet for 60-in. sink has on the right two drawers 4½ in. deep, one with 4 cutlery compartments, and 20-in. door enclosed cupboard. One drawer 4½ in. deep on left and one door 24½ in. high concealing bread board, vegetable bin (18 x 14 x 6 in.) and auxiliary storage space. Louvred ventilation panel and single door convenience cupboard under basin. Drawers are thoroughly sound deadened. Overall dimensions 58½ in. wide, 24¼ in. deep, 35¼ in. high with base.

General—All Morton under-sink cabinets are made of heavy gauge steel and all drawers and doors are sound-deadened. The fronts are flush fitting and are made with rounded corners. Streamlined door and drawer pulls are finished in satin silver and black. Black bases are given 4 in. recess. All are finished in "Mortelite" baked enamel.

Morton under-sink cabinets are furnished for the following sinks:

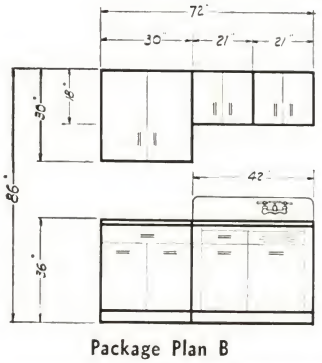
42-in. Size: Briggs "Dallas," Crane, "Homemaker," Kohler, "Cymbria," Standard Sanitary, "Hostess."

60-in. Size: Briggs, "Dallas," Crane, "Sunnyday," Kohler "Camberley," Standard Sanitary, "Hostess."

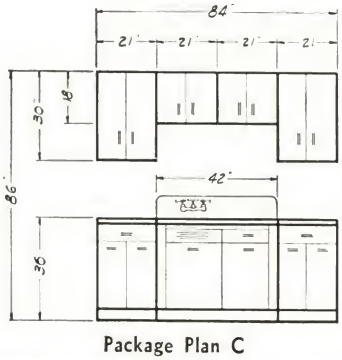
Any size sink fronts furnished upon request.



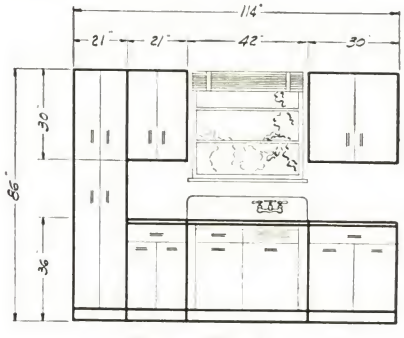
MORTON "KIT-UNETTE" PACKAGE PLAN GROUPS



Package Plan B

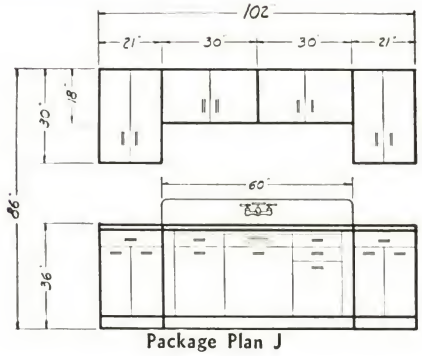


Package Plan C

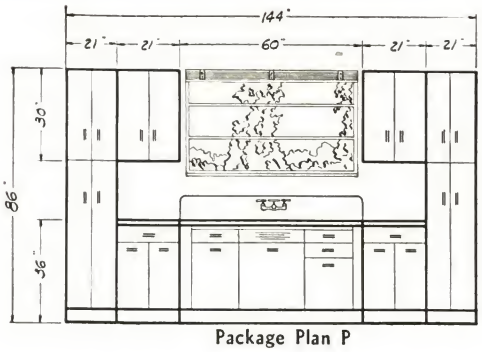


Package Plan E

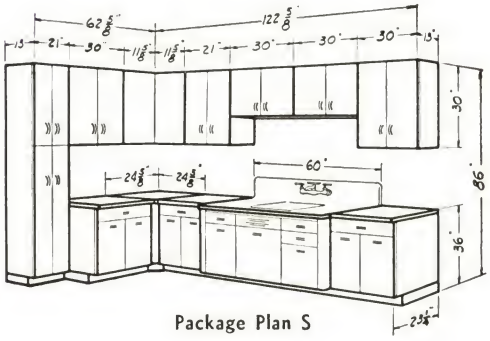
CABINET TO MATCH THE STYLE AND PURSE



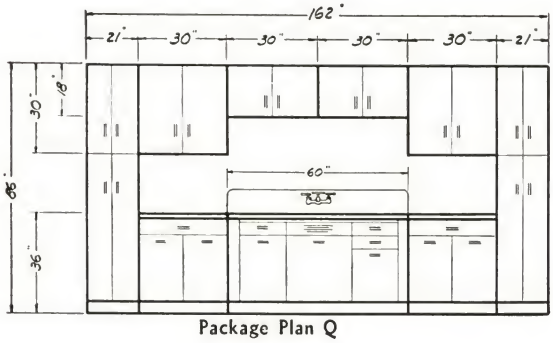
Package Plan J



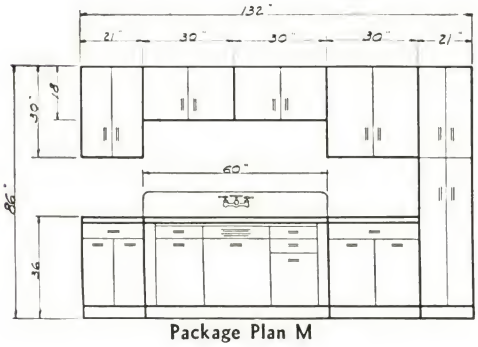
Package Plan P



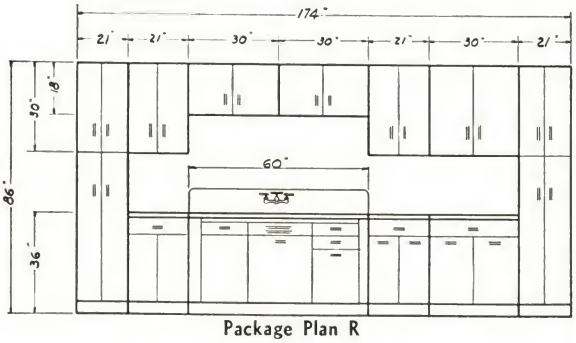
Package Plan S



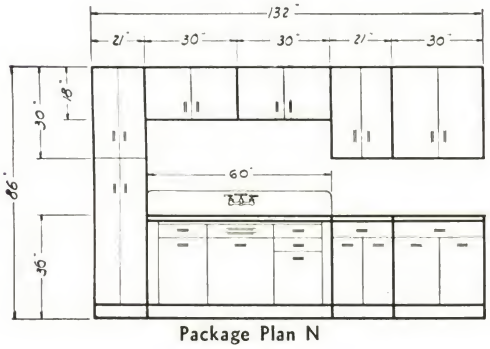
Package Plan Q



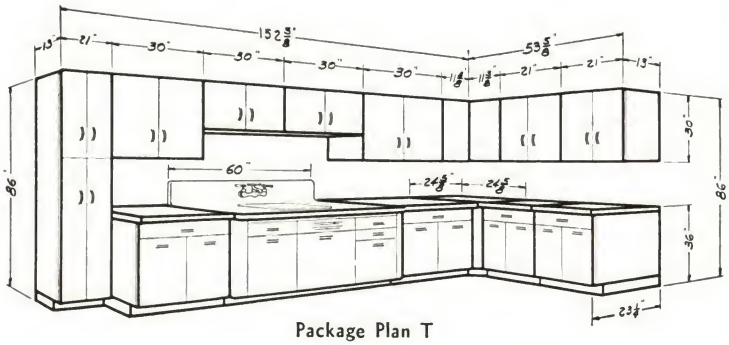
Package Plan M



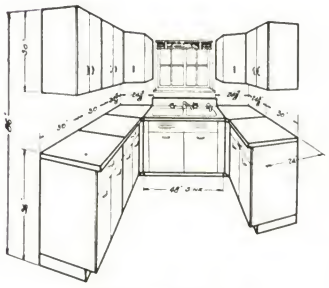
Package Plan R



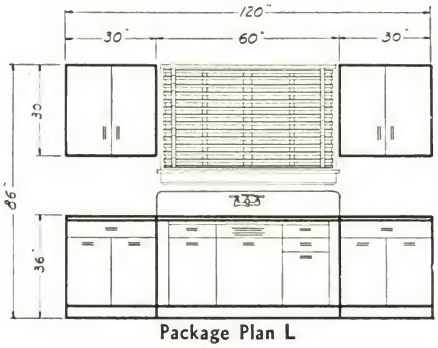
Package Plan N



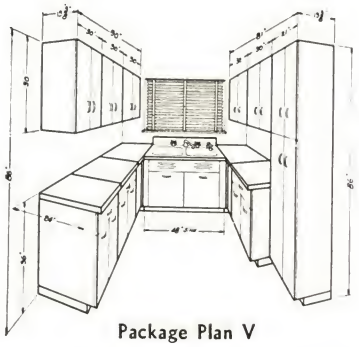
Package Plan T



Package Plan U



Package Plan L



Package Plan V



REPRESENTATIVES

ALABAMA
MOBILE, Ben Toomer, 1832 Dauphin Street

ARKANSAS
TULSA, OKLA., Ray Trimble Company, 307 Philcade Bldg.

CALIFORNIA
LOS ANGELES, Donald H. Holm, 2257 E. 15th Street

COLORADO
DENVER, L. B. Putnam Company, 509 17th Street

CONNECTICUT
ALBANY, N. Y., Iroquois Millwork Company

DISTRICT OF COLUMBIA
WASHINGTON, Hudson Supply & Equipment Co., 7th and "T" Streets, N.E.

DELAWARE
NEWARK, N. J., Fred W. Lee Company, 108 W. Runyon Street

FLORIDA
MIAMI, N. H. Riker, 3072 S. W. 21st Terrace

GEORGIA
ATLANTA, Ingram Mantel & Tile Co., 507 Peachtree Street, N. E.

IDAHO
DENVER, COLO., L. B. Putnam Company, 509 17th Street

ILLINOIS
CHICAGO, Morton Mfg. Company, Leamington and Lake Streets

INDIANA
GARY, R. H. Ellsworth, 730 Buchanan Street
HUNTINGTON, R. W. Morgan, 1451 Poplar Street

IOWA
DES MOINES, J. A. McCoy, 1436 41st St. Place

KANSAS
KANSAS CITY, T. L. Bruton, 2918 Parkwood
TOPEKA, Ray Anderson, P. O. Box No. 53

KENTUCKY
LOUISVILLE, Central Glass Company, 30th and Broadway

MARYLAND
BALTIMORE, Consolidated Supply Co., 1102 No. Charles Street

MASSACHUSETTS
ALBANY, N. Y., Iroquois Millwork Company
ARLINGTON, MASS., John E. Allen Company, 16 Mill Street

MICHIGAN
DETROIT, R. I. Edwards, 806 Washington Blvd. Bldg.
GRAND RAPIDS, R. G. Kitzsteiner, 64 Arthur Avenue, N. E.

MINNESOTA
ST. PAUL, W. W. Haldeman Company, 2694 University Avenue

MISSOURI
KANSAS CITY, KAN., T. L. Bruton, 2918 Parkwood
ST. LOUIS, MO., Builders Specialty Co., 4377 McPherson Avenue

MONTANA
DENVER, COLO., L. B. Putnam Company, 509 17th Street

NEBRASKA
HASTINGS, R. W. Kerr Company, 220 So. Burlington Avenue

NEW HAMPSHIRE
ARLINGTON, MASS., John E. Allen Company, 16 Mill Street

NEW JERSEY
NEWARK, Fred W. Lee Company, 108 W. Runyon Street

NEW MEXICO
DENVER, COL., L. B. Putnam Company, 509 17th Street

NEW YORK
ALBANY, Iroquois Millwork Company
BUFFALO, Vitrolite Ettlinger Company, 305 Delaware Avenue
NEWARK, N. J., Fred W. Lee Company, 108 W. Runyon Street

NORTH CAROLINA
CHARLOTTE, Edwin C. Boyette, Jr.

NORTH DAKOTA
ST. PAUL, MINN., W. W. Haldeman Company, 2694 University Avenue

OHIO
AKRON, Akron Vitrolite & Tile Company, 214 W. Exchange Street
CINCINNATI, Colco Building Equipment Co., 1203 Times Star Tower
CLEVELAND, A. D. Porter, Union Building
DAYTON, Allen C. Harris, 1130 Oakwood Avenue

OKLAHOMA
TULSA, Ray Trimble Company, 307 Philcade Bldg.

PENNSYLVANIA
UPPER DARBY, George W. Cadwallader, 7040 Terminal Square

SOUTH DAKOTA
ST. PAUL, MINN., W. W. Haldeman Company, 2694 University Avenue

TENNESSEE
CHATTANOOGA, George Wallace, Jr., 718 Cherry Street
KNOXVILLE, Charles M. Allen & Company, 2221 White Avenue

TEXAS
DALLAS, T. J. Thornhill, 6355 Belmont Avenue

UTAH
DENVER, COLO., L. B. Putnam Company, 509 17th Street

VERMONT
ALBANY, N. Y., Iroquois Millwork Company

VIRGINIA
LOUISVILLE, KY., Central Glass Company, 30th and Broadway

WEST VIRGINIA
LOUISVILLE, KY., Central Glass Company, 30th and Broadway

WISCONSIN
MADISON, Steel Sales Service, Room 309, Gay Building
MILWAUKEE, Builders Specialties, Inc., 2551 W. Fond du Lac Avenue

WYOMING
DENVER, COLO., L. B. Putnam Company, 509 17th Street

CANADA
MONTREAL, QUEBEC, Lyman Tube & Supply Co., 920 Ste. Sophie Lane

EXPORT
CHICAGO, ILL., Central States Export Assn., 1112 Merchandise Mart



Chicago Plant of The Morton Manufacturing Company

MORTON MANUFACTURING COMPANY

Leamington and Lake Streets

CHICAGO, ILLINOIS

Printed in U. S. A.

PARKER

BATHROOM

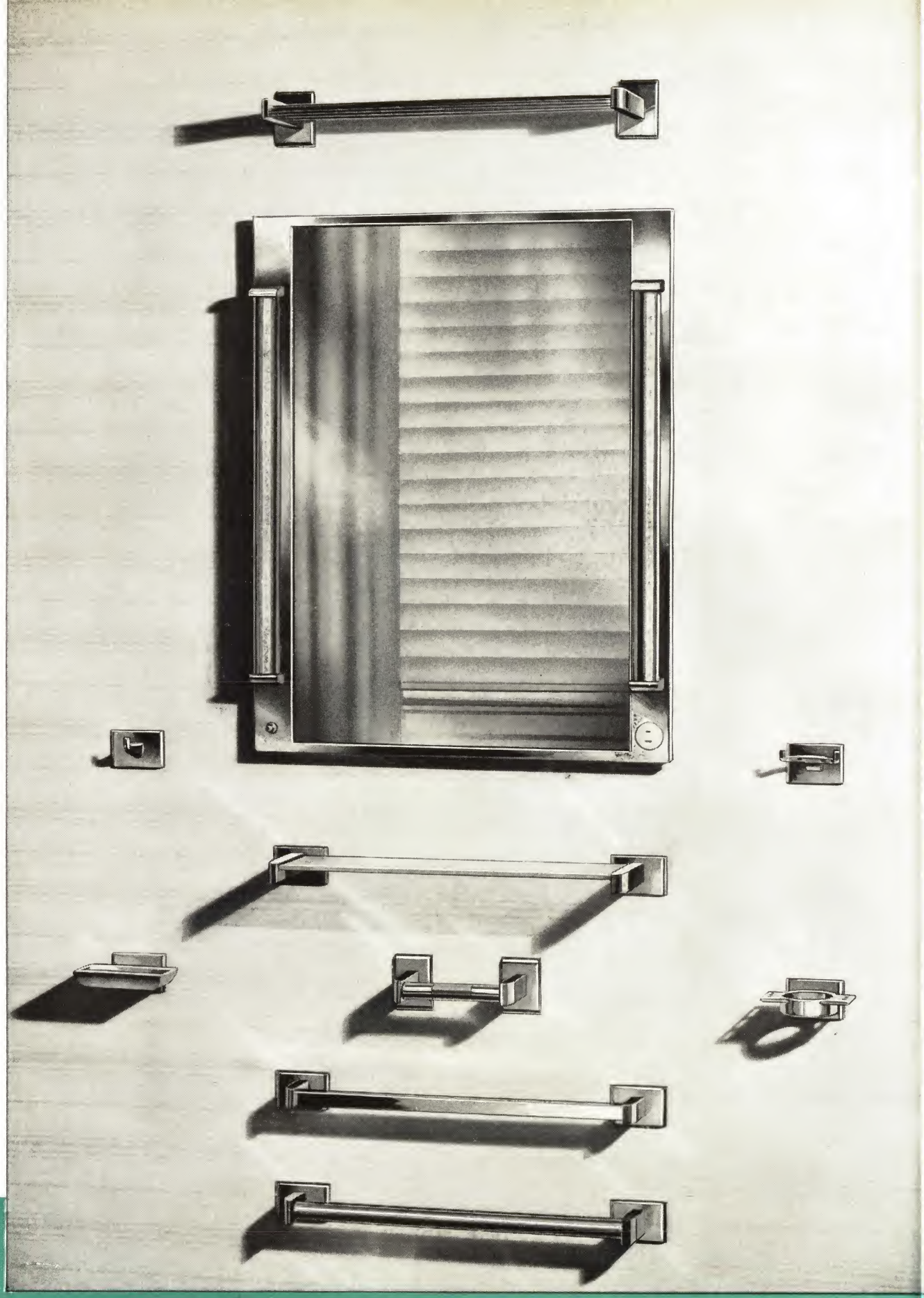
ACCESSORIES

CABINETS

MIRRORS



MERIDEN, CONN.



THE CHARLES PARKER COMPANY

MANUFACTURERS OF BATHROOM ACCESSORIES

The Charles Parker Company of Meriden, Connecticut, established in 1832 by Charles Parker has grown from a small stone shop to a modern plant covering four city blocks. By maintaining a tradition of uniform quality, the company has established itself as a leader in the production of wood screws, vises, special wood items, and a complete line of bathroom accessories.

SERVICE TO ARCHITECTS

The knowledge gained by our long experience in manufacturing bathroom fixtures is available to architects without obligation to assist them in planning and selecting the fixtures best suited to the job. Our representative will gladly call to discuss these problems or submit typical specifications covering the type of building in question. We are also especially well equipped to design and manufacture special items that the architect might desire for unusual conditions.

MATERIALS

The accessories are forged, cast, or die-cast of bronze or brass. Nickel Silver is furnished on special order. Mirror frames are of brass. Cabinet recesses are of selected auto body steel rigidly inspected. Mirror clips, catches, and hinges are of stainless steel or brass.

FINISHES

All accessories, mirror and cabinet door frames are bright Chromium Plated over Bright Nickel Plate in accordance with Federal Government Specification. Satin Chromium supplied on special order at 10% additional charge. Cabinet recess steel is thoroughly degreased, Bonderized rust-proofed, and finished with separate spray coats of pyroxalin lacquer or high temperature baked enamel as noted in specifications.

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THE CHARLES PARKER CO.

MERIDEN • CONNECTICUT

101 PARK AVENUE, N. Y. C.

THE PARKER 6000 LINE



No. 6001

Cat. No.	Mirror	Rough Open.	List Price
6001	20 x 26	18 x 24 x 4	$45.00
6001-A	18 x 24	16 x 22 x 4	35.00



No. 6002

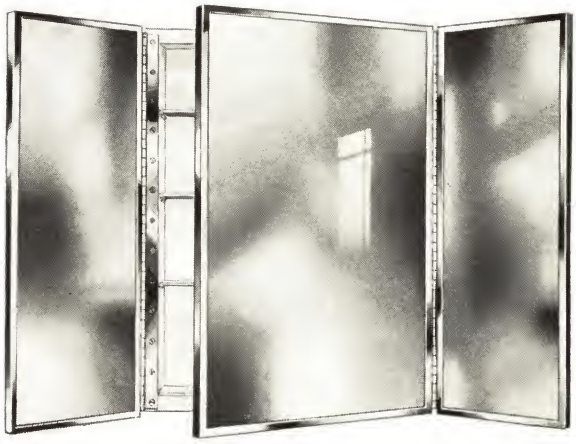
Cat. No.	Mirror	Rough Open.	List Price
6002	20 x 32	18 x 24 x 4	$50.00
6002-A	18 x 28	16 x 22 x 4	45.00



No. 6003

Cat. No.	Mirror	Rough Open.	List Price
6003	20 x 26	18 x 24 x 4	$45.00
6003-A	18 x 24	16 x 22 x 4	35.00

No. 6000 Line Cabinets recesses are made of heavy gauge auto body steel of one piece type welded construction showing no seams or joints. Six coats of Parkeroid a pyroxalin base lacquer applied on Bonderized rust proofed steel produces a beautiful and durable finish. Chromium plated heavy gauge brass piano hinge is set in hinge depression. Three plate glass shelves are supported by chromium plate brass adjustable brackets. Plate glass Bottom Shelf. The hold back stay and bullet catch are chromium plated brass.

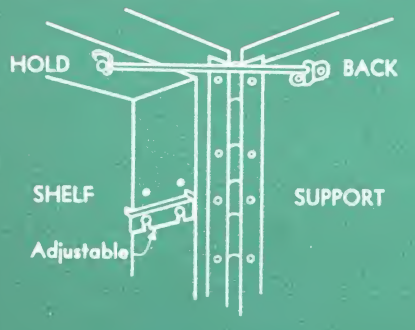


No. 6000—CABINET WITH SIDE WINGS

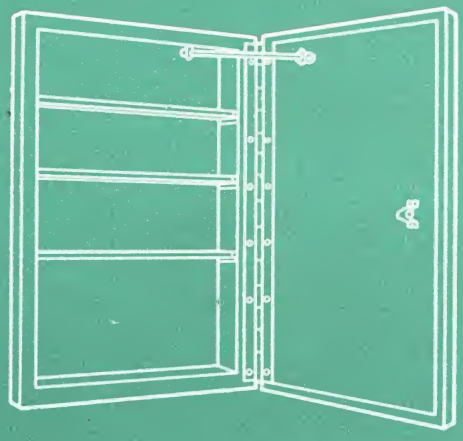
Cat. No.	Overall	Rough Opening	Center Mirror	Side Mirrors	List Price
6000	39¾ x 26	18 x 24 x 4	19 x 26	9 x 26	$90.00
6000-A	33¾ x 24	16 x 22 x 4	17 x 24	8 x 24	80.00

Mirror is ¼" polished plate "A" quality electro copper backed. Chromium Plated Brass door frames where furnished are ⅜" x ½" x ⅝" channel with return angles front and back making very rugged and tightly packed door construction. Frameless cabinet mirrors have polished bevel and polished edges. Mirror secured to door by cushioned rosettes which protects mirror plate from all shock.

Recesses and door backs furnished in color to match. Add $5.00 list. Left-hand hinge furnished at no extra charge but not stocked. For price of mirrors less cabinet use 60% of list price.





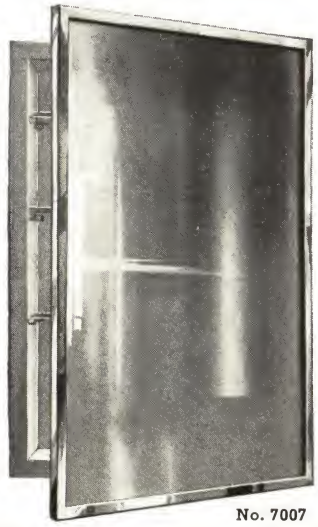








THE PARKER 7000 LINE



No. 7007

Mirror	Rough Open.	List Price
17 x 25	15¼ x 23¼ x 4	$23.00



No. 7013

Cat. No.	Overall	Rough Open.	List Price
7013	20 x 32	17¾ x 23¾ x 4	$30.00
7013-A	18 x 28	15¾ x 21¾ x 4	26.00
7013-B	16 x 26	13¾ x 19¾ x 4	24.00

Add $1.50 to List Price for Mitre Line.



No. 7014

Cat No.	Overall	Rough Open.	List Price
7014	20 x 26	17¾ x 23¾ x 4	$27.00
7014-A	18 x 24	15¾ x 21¾ x 4	25.00
7014-B	16 x 22	13¾ x 19¾ x 4	23.00

Add $1.50 to List Price for Mitre Line.



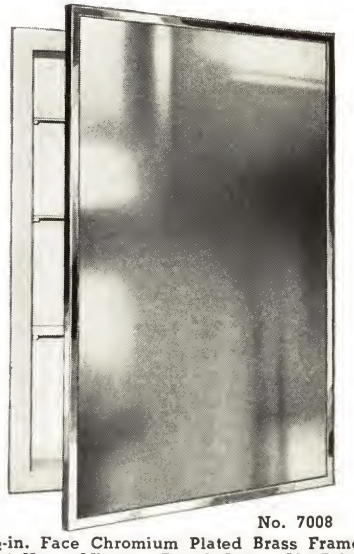
No. 7010

Cat.No.	Mirror	Overall	Rough Open.	List Price
7010	14x18	17½x27½	15¾x25¾x4	$14.50
7010-A	12x16	15½x25½	13¾x23¾x4	13.00

No. 7000 Line cabinet recesses are made of heavy gauge autobody steel of one piece type welded construction showing no seams. The steel is bonderized and finished with a newly developed High Temperature baked enamel having permanent resistance to solvents, discoloration and chipping. Chromium plated brass piano hinge is furnished except on 7007 and 7010. The No. 7007 has a concealed type hinge. The No. 7010 has butt hinges. Three bulb edge shelves are supported on chromium plated brass adjustable brackets. The holdback stay and bullet catch are chromium plated brass.

Mirror is ¼" polished plate high quality electro copperbacked. The No. 7008 door frame is ½ in. brass channel, the No. 7007 is ½ x ⅝ brass angle. Frameless mirrors have polished bevel and edges secured to door by adjustable chromium plated brass clips.

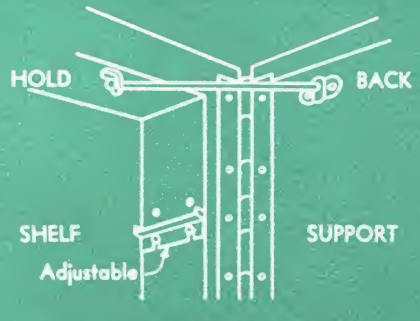
Return flange regularly furnished ½" except 7010 which is 1¼". Recesses and door back furnished in color at $5.00 list extra. Lefthand hinge furnished at $5.00 list extra.



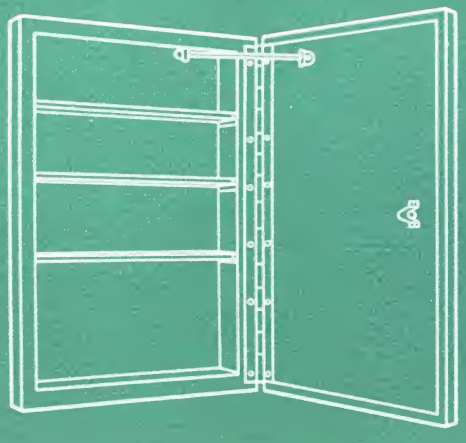
No. 7008

½-in. Face Chromium Plated Brass Frame

Cat. No.	Mirror	Rough Open.	List Price
7008	20 x 28	17¾ x 25¾ x 4	$32.00
7008-A	18 x 24	15¾ x 21¾ x 4	27.00
7008-B	16 x 22	13¾ x 19¾ x 4	24.00





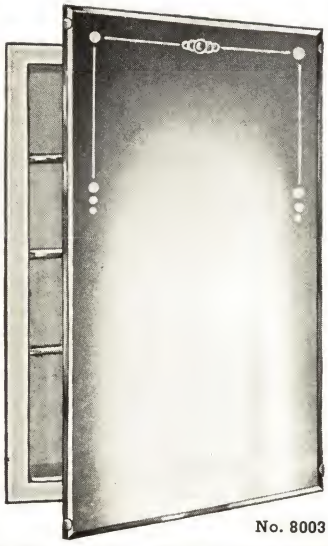








THE PARKER 8000 LINE



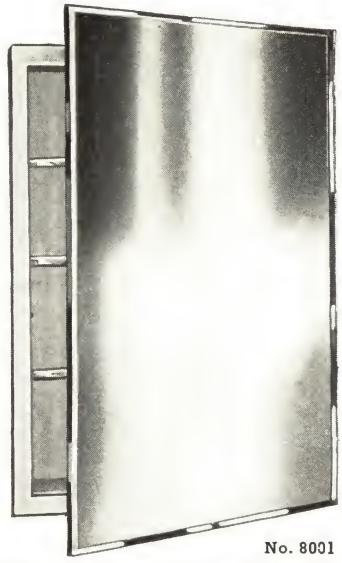
No. 8003

Cat. No.	Mirror	Wall Opening	List Price
8003	18 x 24	15¾ x 21¾ x 4	$17.50
8003-A	16 x 22	13¾ x 19¾ x 4	14.50



No. 8004

Cat. No.	Mirror	Wall Opening	List Price
8004	18 x 28	15¾ x 21¾ x 4	$25.50
8004-A	16 x 24	13¾ x 19¾ x 4	19.00



No. 8001

Cat. No.	Mirror	Wall Opening	List Price
8001	18 x 24	15¾ x 21¾ x 4	$24.00
8001-A	16 x 22	13¾ x 19¾ x 4	18.50



No. 8002

Cat. No.	Mirror	Wall Opening	List Price
8002	18 x 26	15¾ x 21¾ x 4	$19.00
8002-A	16 x 24	13¾ x 19¾ x 4	15.50

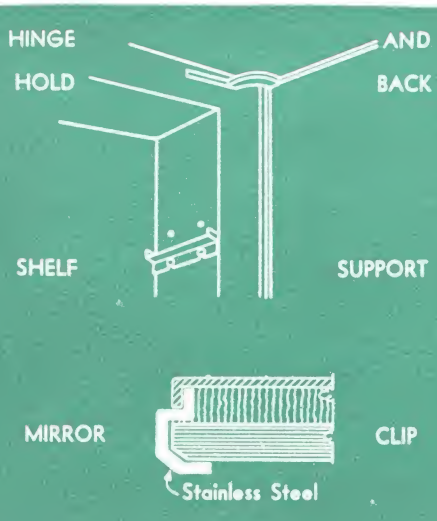
No. 8000 Line cabinet recesses are made of medium gauge autobody steel of one piece type welded construction showing no seams. The steel is bonderized and finished with a newly developed High Temperature baked enamel which has permanent resistance to solvents, discoloration and chipping. The larger size box is equipped with 3 bulb edge shelves and the smaller box with 2. Concealed hinge is of stainless steel as is mirror clips and door catch.

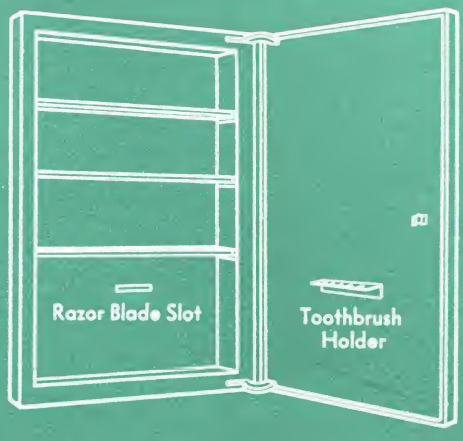
Mirror is ¼" polished plate glass guaranteed against silver spoilage for 5 years. Nos. 8001 and 8004 are furnished with ⅜ x ⅝ brass chromium plated frames. Nos. 8002, 8003 and 8007 are frameless, regularly furnished with etching; also available in plain plate. Razor blade drop and toothbrush holder regularly furnished. Return flange regularly furnished ½"; 1¼" available when called for. Left-hand hinge furnished at $5.00 list extra.

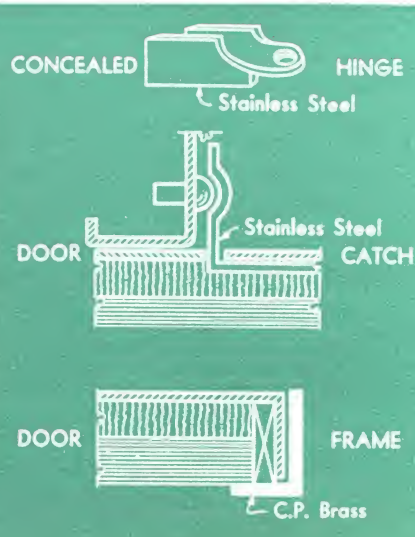


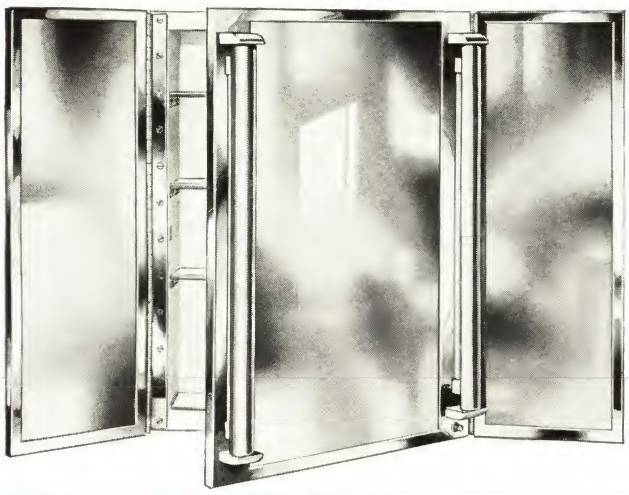
No. 8007

Cat. No.	Mirror	Wall Opening	List Price
8007	18 x 28	15¾ x 21¾ x 4	$20.00
8007-A	16 x 24	13¾ x 19¾ x 4	14.50











No. 7002—LUMILINE CABINET WITH SIDE WINGS

Center Mirror	Side Mirrors	Rough Opening	List Price
17 x 23	10 x 23	15¾ x 21¾ x 4	$85.00

No. 7044—LUMILINE CABINET WITH SIDE CABINETS

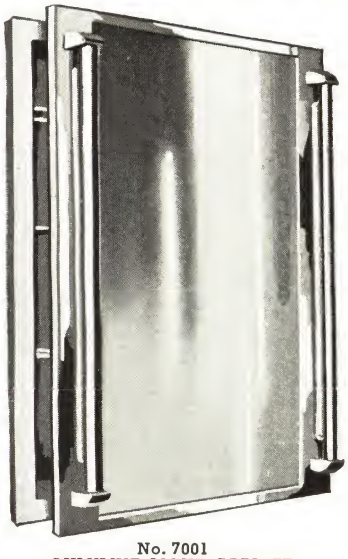
Center Mirror	Side Mirrors	Center Rough Opening	Side R. O.	List Price
17 x 23	10 x 23	15¾ x 21¾ x 4	8¼ x 21¼ x 4	$100.00

No. 7003—LUMILINE MIRROR WITH SIDE CABINETS

Center Mirror	Side Mirrors	Side Rough Opening	List Price
17¾ x 23	10 x 23	8¼ x 21¼ x 4	$80.00

No. 7005—LUMILINE MIRROR WITH SIDE MIRRORS

Center Mirror	Side Mirrors	List Price
17¾ x 23	10 x 23	$65.00



No. 7001
LUMILINE LIGHT CABINET
Pat. DES.-102,414

LUMILINE LIGHT CABINETS

These cabinets furnish balanced indirect light for entire height of mirror eliminating all shadows. Swivel shades prevent all glare, and control light intensity. Light slot in door back illuminates inside of cabinet.

Mirror plate is ¼" polished electro copperbacked. Three glass shelves are supported on adjustable chromium plated brass shelf supports. Door frame and shades are chromium plated brass. 18" 60-watt Lumiline bulbs are required. No bulbs furnished.

Splice box is at top of cabinet for wiring connection. Wiring should be brought to top center of rough opening for connection to cabinets (see diagram for mirrors).

No. 7001—LUMILINE LIGHT CABINET

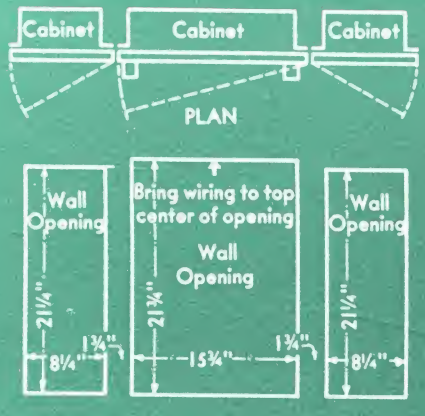
Cat. No.	Overall	Rough Opening	List Price
7001	17¾ x 23¾	15¾ x 21¾ x 4	$42.00

For convenience outlet, add $2.00 list. For switch, add $1.00 list.

No. 7000—LUMILINE LIGHT CABINET. Illustrated on Page 2.

7000	22 x 28	20 x 26¾ x 4	$65.00

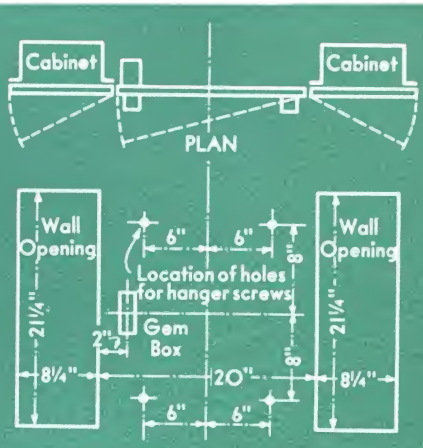
Furnished regularly with switch and convenience outlet.



INSTALLATION DIAGRAM
No. 7004



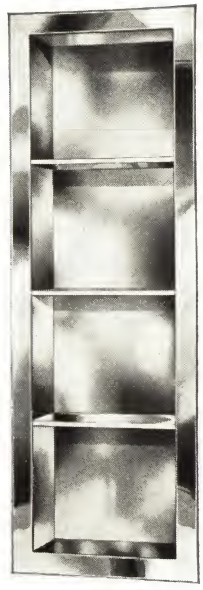
No. 7001



INSTALLATION DIAGRAM
FOR No. 7003

LIGHT CABINETS





No. 6030
MIRRORED RECESS

Overall	Rough Open.	List Price
9 x 26	8¼ x 25¼ x 4	$30.00

6001-IL INDIRECT LIGHT CABINET

Cat. No.	Overall	Rough Opening	Center Mirror	Side Mirrors	List Price
6001-IL	31¾ x 25¾	30 x 24 x 4	19 x 25¾	6 x 25¾	$130.00

This cabinet is constructed with light troughs on either side of center cabinet. The source of light is not visible to user. It is diffused through opal glass and reflected by side wing mirrors. The side wings have mirrors back to back presenting only a mirrored surface when cabinet is not in use. Switch and convenience outlet are located at bottom of left light trough. The construction and general specification of this cabinet is same as No. 6001 on page 4. Wiring connection is made at top center of rough opening. Cabinet completely wired.

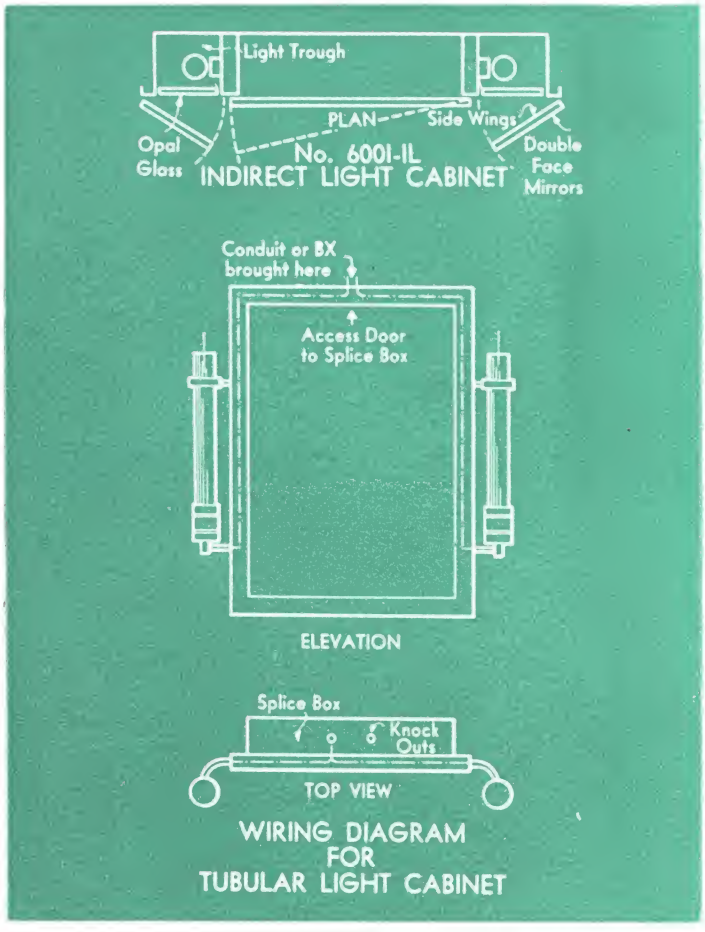


TUBULAR LIGHT BRACKETS

Brackets are furnished of chromium plated brass with opal shades to take T-8 clear bulbs either 40 or 60 watts. Convenience outlet and switch are included on return flange.

Wiring connection made at top center of rough opening. Cabinet completely wired.

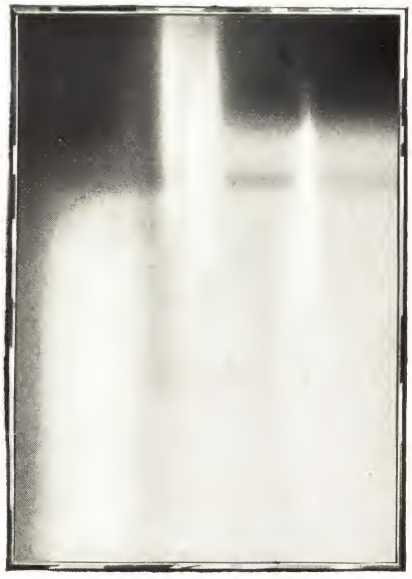
These brackets are available on following cabinets: 6001, 6002, 6003, 7008A, 7013A, 7014A, 8001, 8002, 8003, 8004, 8007. At $25.00 Additional List Price.



ELECTRO COPPER BACKED



No. 3031
COMBINATION MIRROR AND SHELF



No. 3020
WALL TYPE MIRROR



No. 3032
COMBINATION MIRROR AND SHELF WITH TOWEL SHELF

No. 3031 COMBINATION MIRROR AND SHELF			
Mirror	Overall	Plain	Bevel
16 x 22	18 x 24	$18.00	$19.50
Crystal Glass Shelf 18 x 4 x 1/2 in.			

No. 3020 FRAME ASSEMBLY ONLY NO MIRRORS	
Overall Size	List Price
12 x18	$ 5.80
16 x 20	6.80
18 x 24	7.70
20 x 26	9.30
24 x 48	15.70
20 x 60	22.30

No. 3020 WALL TYPE MIRROR Angle Frame 3/8 x 5/8		
Overall Size	Chromium Plated Plain	Chromium Plated Bevel
12 x 18	$ 8.00	$ 9.20
16 x 20	10.30	11.80
18 x 24	12.90	14.60
20 x 26	15.50	17.40
24 x 48	30.00	33.70
20 x 60	37.50	42.50

No. 3028 RECESSED TYPE MIRROR T Shape Frame		
Overall Size	Chromium Plated Plain	Chromium Plated Bevel
12 x 18	$10.00	$11.20
16 x 20	12.90	14.40
18 x 24	16.00	17.70
20 x 26	19.40	21.30
24 x 48	37.50	41.20

No. 3032 COMBINATION MIRROR AND SHELF WITH TOWEL SHELF			
Mirror	Overall	Plain	Bevel
16 x 22	18 x 24	$24.00	$25.50
Towel Shelf 18 x4 Crystal Glass Shelf 18 x 4 x 1/2			

WALL TYPE AND RECESS TYPE MIRRORS

NO. 3020 WALL TYPE—Mirror plates are 1/4" polished plate glass electrolytically copper backed over silvering. Frames are brass with brazed mitres polished smooth, heavily chromium plated over nickel plate. Non-ferrous metal backs are soldered to frame and furnished with concealed hangers. For mirror frames only, pan back construction is furnished for easy mirror plate installation.

NO. 3028 RECESS TYPE—Same construction as above, except 1" face by 5/8" return T-shape frame is used. See detail below.

THEFT-PROOF MIRRORS FOR PUBLIC BUILDINGS

This patented device (Pat. No. 1,883, 834) prevents the removal of mirrors from the wall unless a special key is used. In all public spaces its use is an assurance against stealing and a safeguard against accidents in schools, hospitals and prisons.

A set screw through a hole in the bottom of mirror frame locks together two flanges—one secured to the wall, the other fastened to the bock of the mirror. See detail below of 3020 mirror.

Add 50c to No. 3020 list above for theft-proof device.

VETERANS ADMINISTRATION BUREAU MIRRORS

Type "A"

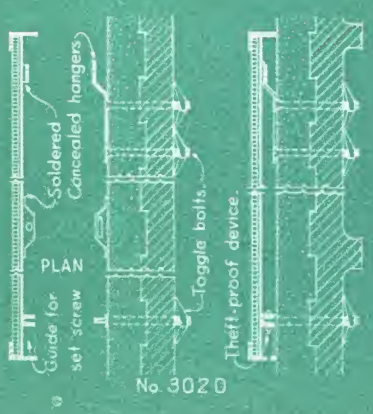
See No. 3028 with theft-proof exposed screws and steel buck.

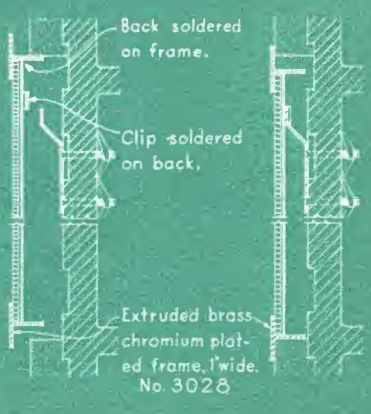
Overall Size 12 x 18 List Price $12.50
Overall Size 15 x 24 List Price $17.00

Type "B"

See No. 3020 furnished with theft-proof device and steel buck.

Overall Size 12 x 18 List Price $10.50
Overall Size 15 x 24 List Price $15.00



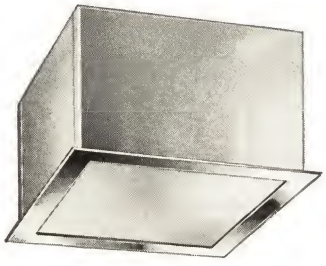


27
100



WALL TYPE POWDER ROOM UNIT
No. 6016

Overall	List Price
20 x 38	$40.00
No. 6016-A	
20 x 28	$35.00
No. 6016-B	
15 x 22	$30.00



No. 5011
FLUSH RECESS CEILING LIGHT

Overall	Recess Size	List Price
10 x 10	9¼ x 9¼ x 6⅜	$12.00
9 x 26	8¼ x 25¼ x 6⅜	20.00

Furnished complete with junction box, opal glass and chromium plated 1 in. brass frame.



No. 5008-2
DOUBLE LIGHT
Diameter 3½ in., length 16 in.
List Price $9.00
Gem box required.



No. 5008
SINGLE LIGHT
Diameter 3½ in.
8 in. length—List Price $6.00
12 in. length—List Price 7.50
For vertical or horizontal mounting.
Gem box required.



No. 67
HOOK
Height 5¾ in.
List Price $2.20

No. 66
HOOK
Height 3½ in.
List Price $2.00

No. 65
HOOK
Height 2⅞ in.
List Price $1.80



No. 30
HOOK
Height ⅝ in.
List Price $0.50



No. 7
HOOK
Height 5¾ in.
List Price $1.30

No. 6
HOOK
Height 3½ in.
List Price $0.90

No. 18
HOOK
Height 2⅞ in.
List Price $0.70



No. 4
HOOK
Height 1⅜ in.
List Price $0.60



At Left:
No. 203
TUBULAR LIGHT BRACKET
Height 21½ in., width 2½ in.
List Price $10.00
For T-8 clear bulbs, 40 or 60 watts.
Gem box required.
Switch or Outlet $1.00 list extra



"LATHURN" DISPENSER
Dispenses lather from any liquid soap. Leakproof as valve is at top.
List Price $6.50



No. 7015
UTILITY CABINET AND HAMPER

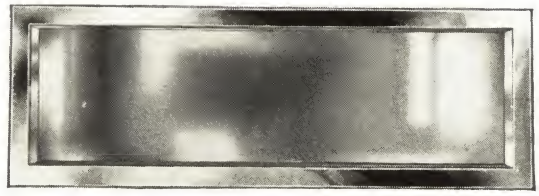
Overall	Rough Opening	List Price
20 x 60	17¾ x 57¾ x 4	$100.00

Add $20.00 list for each additional 4 in. of depth.

No. 7016
UTILITY CABINET
Same as above, without hamper

Overall	Rough Opening	List Price
20 x 60	17¾ x 57¾ x 4	$80.00

Add $20.00 list for each additional 4 in. of depth.



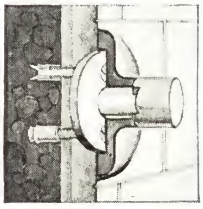
No. 6032
RECESSED MIRRORED SHELF

Overall	Rough Opening	List Price
9 x 26	8¼ x 25¼ x 4	$25.00

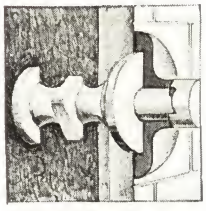
BATHROOM ACCESSORIES

Six complete lines designed to meet every requirement are available. The Hexagon Design for the best residential and monumental work. The Round Design for hospitals, public and institutional building and better residential work. The Simplicity Design a functional design for standard quality residential, apartment, and hotel projects. The Doric Design economically made for projects where a moderate priced fixture is required. The Cadet Design originated especially for low cost housing and for service quarters.

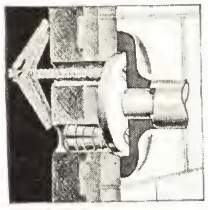
THE PARKER CONCEALED SCREW DEVICE



View of Tampin Shield



View of Anchor Post

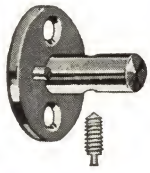


View of Expansion Shield and Toggle Bolt

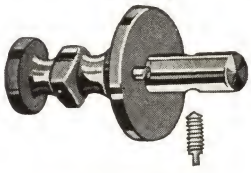
THREE TYPES
OF
WALL FASTENERS

This patented device (Pat. No. 1,893,729) consists of a brass plate with extending stud which fastens to the wall. The fixture is slipped over the stud and plate and is locked to it by means of a set screw. The set screw enters a hole in the bottom side of fixture engaging in the drilled and tapped stud for its entire height. The conical tipped set screw slides into the conical recess at top of the fixture making a three point fastening and allowing for any necessary adjustment. No vibration can loosen this positive fastening. Slotted screw head is furnished regularly on set screw. THEFT-PROOF SCREW used with key are furnished when specified.

- Easily installed on any type wall construction insuring stability of fixture.
- Sanitary cannot collect dirt.
- Theft-proof for public buildings, apartments, hotels, prisons, and psychiatric hospitals.
- Mounting device can be installed first and fixture later for protection against damage or theft.
- Fixture easily removed for redecorating.
- Distinctive appearance of otherwise well designed fixtures insured by this device.



Detail of Screw Plate



Detail of Cast Anchor

METHODS OF MOUNTING FIXTURES

Walls with wood backing use Regular Plate and wood screws. Plaster walls on hollow terra cotta or stud partitions use Regular Plate and toggle bolts.

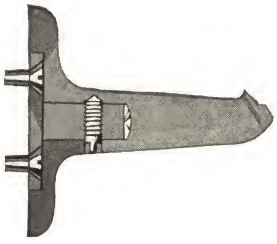
Ceramic Tile walls use of Anchor Plate is recommended although expansion shield or tampin shield can be used successfully with Regular Plate.

Solid Masonry Walls same as above.

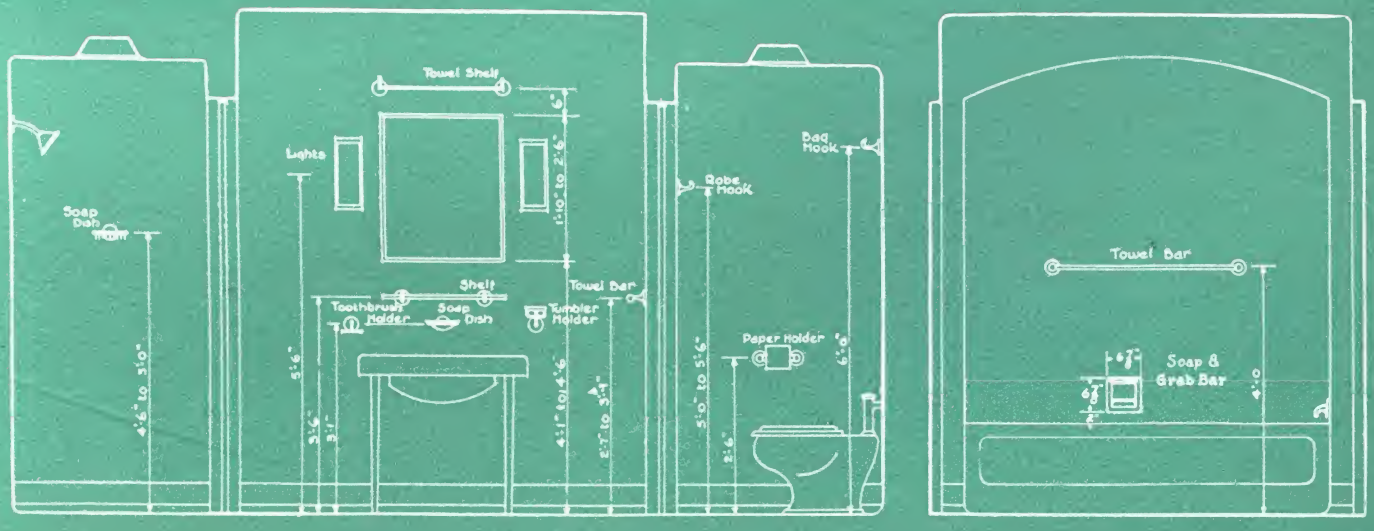
Structural Glass walls recommend use of Anchor Plate (specify if greater length than 1½" is required).

Marble or Glass partitions use Regular Plate and brass sleeve with machine screws for back to back mounting and thru bolts with hex nuts for single mounting.

Specify if Anchor Plate required as Regular Plate furnished otherwise. Additional charge is made for toggle bolts, etc., other than wood screws and anchors.



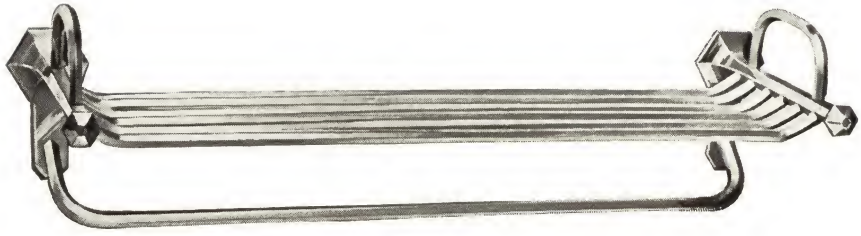
Cross Section of Screw Device and Fixture Showing Method of Installation



THE CHARLES PARKER COMPANY

27
100

THE HEXAGON DESIGN



No. 707-H
TOWEL SHELF
Length 25 in. Width 8¾ in.
List Price $24.00



No. 59-H
SINGLE HOOK
List Price $2.00



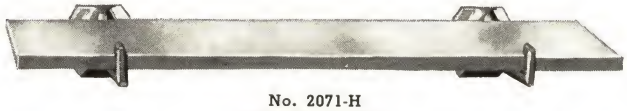
No. 977-H
TOOTH BRUSH HOLDER
List Price $2.20



No. 976-H
TOOTH BRUSH HOLDER
List Price $3.35



No. 46-H
DOUBLE HOOK
List Price $3.00

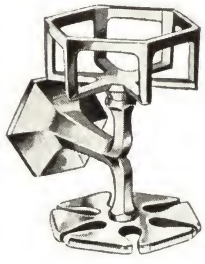


No. 2071-H
CRYSTAL GLASS

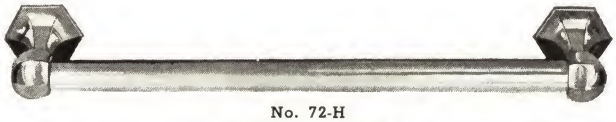
Size	Crystal	Black
½ x 5 x 18	$ 9.60	$10.20
½ x 5 x 24	10.30	11.20
½ x 5 x 30	11.00	12.20



No. 476-H
TUMBLER HOLDER
List Price $4.80



No. 972-H
TUMBLER AND
TOOTH BRUSH HOLDER
List Price $6.50

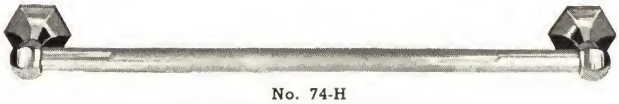


No. 72-H
1-IN. ROUND TOWEL BAR

Size	Brass	Crystal	Black
1 x 9	$6.10	....	....
1 x 12	6.30	....	....
1 x 18	6.70	$6.50	$6.90
1 x 24	7.10	6.80	7.30
1 x 30	7.50	7.10	7.70

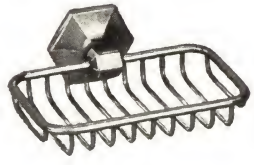


No. 576-H
SOAP HOLDER
Projection 5½ in.
Overall length 5⅞ in.
Crystal Liner $5.00
Black Liner 5.00
Metal Liner 6.10

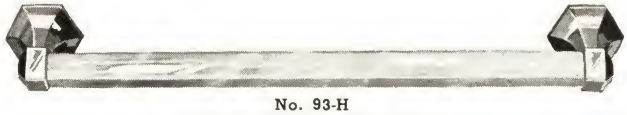


No. 74-H
¾-IN. ROUND TOWEL BAR

Size	Brass	Crystal	Black
¾ x 18	$6.30	$6.00	$6.20
¾ x 24	6.70	6.20	6.50
¾ x 30	7.10	6.40	6.80

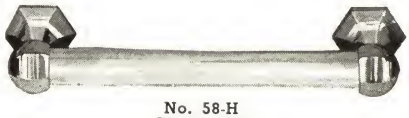


No. 282-H
SOAP HOLDER
List Price $3.80
Size 6 x 3½ x 1 in.



No. 93-H
⅞-IN. SQUARE TOWEL BAR

Size	Brass	Crystal or Black
⅞ x 18	$7.40	$10.00
⅞ x 24	7.90	11.00
⅞ x 30	8.40	12.00

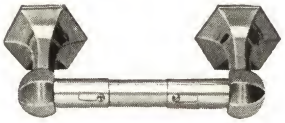


No. 58-H
GRAB BAR

Size	Brass	Crystal	Black
1¼ x 9	$8.30	$8.30	$ 9.90
1¼ x 12	8.70	8.90	10.80

No. 80-H
GRAB BAR

Size	Brass	Crystal	Black
1½ x 9	$9.00	$ 9.40	$10.00
1½ x 12	9.40	10.20	11.00



No. 1026-H
PAPER HOLDER
List Price $6.00



No. 64-H
TOWEL PIN
List Price $2.90
Projection 6½ in.

THE ROUND DESIGN



No. 59-R
HOOK
Height 2 in.
List Price $1.25



No. 505-R
TOWEL SHELF
Length 25 in. Width 8⅜ in. List Price $11.00



No. 46-R
HOOK
Height 1⅝ in.
List Price $2.10



No. 476-R
TUMBLER HOLDER
List Price $3.50



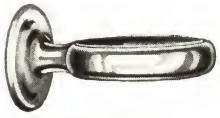
No. 977-R
TOOTH BRUSH HOLDER
List Price $1.80



No. 976-R
TOOTH BRUSH HOLDER
List Price $2.00



No. 972-R
COMBINATION TUMBLER AND TOOTH BRUSH HOLDER
List Price $4.10



No. 855-R
TUMBLER HOLDER
Inside diam. 2¾ in.
List Price $2.50



No. 2071-R
CRYSTAL SHELF—Projection 5½ in.

Size	Crystal	Black	Size	Crystal	Black
5/16 x 5 x 18	$6.00	$6.50	½ x 5 x 18	$7.00	$7.60
5/16 x 5 x 24	6.50	7.30	½ x 5 x 24	7.70	8.60
5/16 x 5 x 30	7.00	8.10	½ x 5 x 30	8.40	9.60



No. 581-R
SOAP DISH
Size 4⅝ x 2¾ x ⅞
List Price $3.20

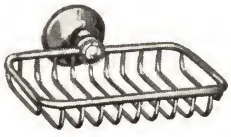


No. 576-R
SOAP DISH
Projection 5½ in.
Overall length 5⅞ in.
Crystal Liner $4.00
Black Liner 4.00
Metal Liner 5.10

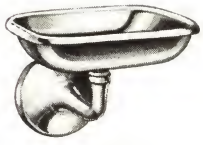


No. 93-R
⅞-IN. SQUARE TOWEL BAR

Size	Brass	Crystal	Black
⅞ x 18	$6.00	$8.00	$ 8.60
⅞ x 24	6.50	8.60	9.60
⅞ x 30	7.00	9.20	10.60



No. 282-R
SOAP HOLDER
Size 6 x 3½ x 1
List Price $3.00



No. 271-R
SOAP DISH
Size 4¾ x 3¾
Removable Drain
List Price $3.10



No. 72-R
1-IN. ROUND TOWEL BAR

Size	Brass	Crystal	Black
1 x 18	$5.00	$4.80	$5.20
1 x 24	5.40	5.10	5.60
1 x 30	5.80	5.40	6.00

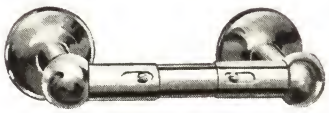


No. 64-R
TOWEL PIN
Projection 6½ in.
List Price $2.00

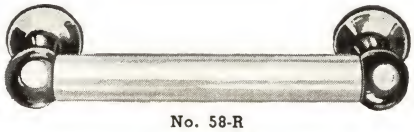


No. 74-R
¾-IN. ROUND TOWEL BAR

Size	Brass	Crystal	Black
¾ x 18	$4.60	$4.30	$4.50
¾ x 24	5.00	4.50	4.80
¾ x 30	5.40	4.70	5.10



No. 1026-R
PAPER HOLDER
List Price $4.60



No. 58-R
GRAB BAR

Size	Crystal	Brass	Black
1¼ x 9	$5.30	$5.30	$6.90
1¼ x 12	5.90	5.70	7.80

27
100

THE SIMPLICITY DESIGN

Pat. No. Des. 101,210



No. 210
SOAP HOLDER
Specify if drain hole is wanted
List Price $2.40



ANCHOR PLATE
Specify if required



No. 202—TOWEL SHELF

Size	6x18"	6x24"
List Price	$6.90	$7.20



CONCEALED PLATE
Furnished Regularly



No. 215
TUMBLER AND TOOTHBRUSH HOLDER
List Price $2.40



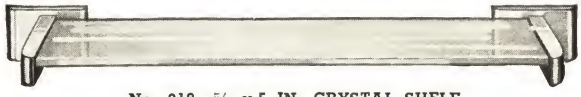
At Left:

No. 224

VERTICAL GRAB BAR

For use with shower and tub combination
1" diameter

18"	$4.20
24"	4.80
30"	5.40
36"	6.00



No. 218—$\frac{7}{16}$ x 5 IN. CRYSTAL SHELF

	Crystal			Black		
Length	18	24	30	18	24	30
List Price	$4.50	$4.70	$5.00	$5.70	$6.40	$7.10



No. 220—$\frac{3}{4}$-IN. SQUARE TOWEL BAR

	All Metal			Crystal		
Length	18	24	30	18	24	30
List Price	$4.00	$4.30	$4.70	$4.50	$4.80	$5.20



No. 221—1-IN. ROUND TOWEL BAR

	Crystal			Black			All Metal		
Length	18	24	30	18	24	30	18	24	30
List Price	$4.30	$4.50	$4.80	$4.70	$5.00	$5.40	$4.80	$5.10	$5.50



No. 222—$\frac{3}{4}$-IN. ROUND TOWEL BAR

	Crystal			Black			All Metal		
Length	18	24	30	18	24	30	18	24	30
List Price	$3.50	$3.60	$3.70	$3.80	$4.00	$4.20	$3.50	$3.70	$4.00



No. 223—ALL METAL BAR

Length	18	24	30
List Price	$3.20	$3.50	3.80



At Right:

No. 200

LUMILINE LIGHT BRACKET

Swivel Metal Shade Bracket Caps and Shade complete $10.00

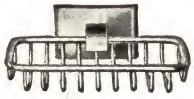
18 inch Lumiline bulb required, 40 or 60 watts. No bulb furnished. Gem box required.



No. 226
SINGLE HOOK
List Price $1.20



No. 227
DOUBLE HOOK
List Price $1.50



No. 213—SOAP HOLDER
For Shower
List Price $3.00



No. 211—SOAP HOLDER
With removable liner.

Crystal	$3.00
Metal	4.30
Black	3.00



No. 212—GRAB BAR
7/8"x9" List Price $4.10

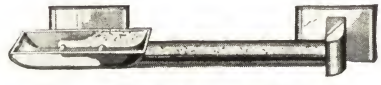


No. 217
PAPER HOLDER

Wood Roller	$2.90
Metal Roller	3.90

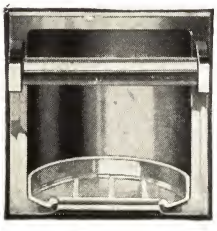


No. 216
TOOTHBRUSH HOLDER
List Price $1.50



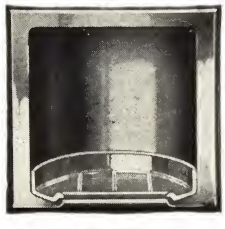
No 219—SOAP AND GRAB BAR
7/8"x9" List Price $4.80

RECESSED ITEMS



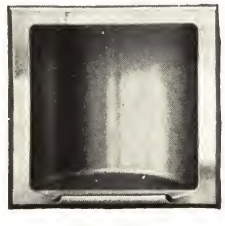
No. 230
SOAP AND GRAB
List Price $3.80

Recess Size
5½"x5½"x2"



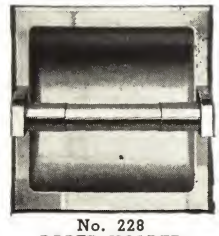
No. 229
SOAP HOLDER
List Price $2.70

Unbreakable crystal liners furnished.



No. 231
TUMBLER HOLDER
List Price $2.40

Overall size
6⅛"x6⅛"



No. 228
PAPER HOLDER
Wood Roller $2.70
Metal $3.40

Furnished regularly for keying into masonry. Specify if for wood construction

THE DORIC DESIGN

(Patent Pending)



No. 115
TUMBLER AND TOOTHBRUSH HOLDER
List Price $1.55

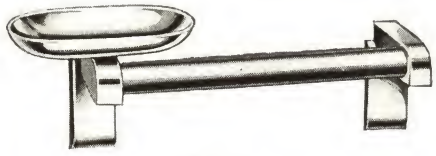


No. 110
METAL SOAP HOLDER
List Price $1.55

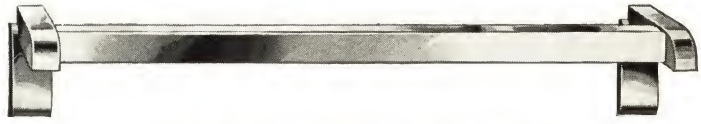


No. 118—¼ x 5 IN. CRYSTAL SHELF

	Crystal			Black		
Length	18	24	30	18	24	30
List Price	$2.75	$2.95	$3.25	$3.95	$4.65	$5.35



No. 119
SOAP AND GRAB BAR
List Price $3.50



No. 120—¾-IN. SQUARE TOWEL BAR

	Crystal			Black			All Metal		
Length	18	24	30	18	24	30	18	24	30
List Price	$3.40	$3.70	$4.10	$3.70	$4.10	$4.60	$2.90	$3.20	$3.60



No. 117
PAPER HOLDER
Wood Roll
List Price $1.80



No. 127
DOUBLE HOOK
List Price $1.00



No. 122—¾-IN. ROUND TOWEL BAR

	Crystal			Black			All Metal		
Length	18	24	30	18	24	30	18	24	30
List Price	$2.55	$2.65	$2.75	$2.85	$3.05	$3.25	$2.55	$2.75	$3.05

THE CADET DESIGN

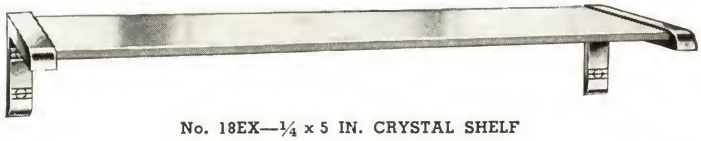
(Patent Pending)



No. 15EX
TUMBLER AND TOOTHBRUSH HOLDER
List Price $1.30



No. 10EX
METAL SOAP HOLDER
List Price $1.30

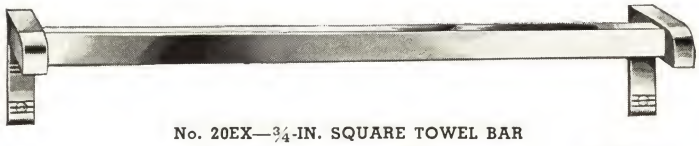


No. 18EX—¼ x 5 IN. CRYSTAL SHELF

	Crystal			Black		
Length	18	24	30	18	24	30
List Price	$2.15	$2.35	$2.65	$3.05	$4.05	$4.75



No. 19EX
SOAP AND GRAB BAR
List Price $2.80

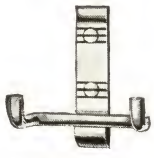


No. 20EX—¾-IN. SQUARE TOWEL BAR

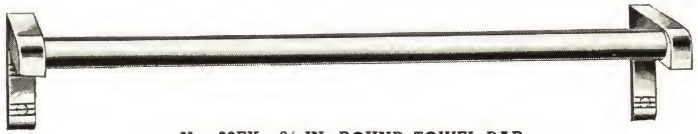
	Crystal			Black			All Metal		
Length	18	24	30	18	24	30	18	24	30
List Price	$2.75	$3.05	$3.45	$3.05	$3.45	$3.95	$2.25	$2.55	$2.95



No. 17EX
PAPER HOLDER
Wood Roll
List Price $1.30



No. 27EX
DOUBLE HOOK
List Price $0.80



No. 22EX—¾-IN. ROUND TOWEL BAR

	Crystal			Black			All Metal		
Length	18	24	30	18	24	30	18	24	30
List Price	$1.90	$2.00	$2.10	$2.20	$2.40	$2.60	$1.90	$2.10	$2.40

LIST OF REPRESENTATIVES

ALBANY N. Y.
H. B. Kimmey
27 Columbia St.

ATLANTA, GA.
F. Graham Williams Co.
1690 Blvd., N.E.

BALTIMORE, MD.
Albert Gunther, Inc.
26 West Biddle St.

BOSTON, MASS.
The Eames Co.
859 Boylston St.

BUFFALO, N. Y.
Frank I. Peterson
1 Niagara Square

CHARLOTTE, N. C.
Walter L. Hoover
418 Arlington Ave.

CHICAGO, ILL.
A. A. Anderson
R. 7204 Merchandise Mart Bldg.
222 W. N. Bank Drive

CINCINNATI, OHIO
H. W. T. Collins Co.
1203 Times Star Tower

CLEVELAND, OHIO
Porter Bldg. Equip. Co.
6501 Euclid Ave.

COLUMBUS, OHIO
K. S. Lopina
Kitchen Equipment Co.
645 West Broad St.

DALLAS, TEXAS
Jack E. Mauney
513 Construction Bldg.

DETROIT, MICH.
Ray T. Lyons
2457 Woodward Ave.

GREENSBORO, N. C.
Julian W. McClamroch
303 South Davis St.

HARRISBURG, PA.
O. L. Preble Jr.
Metal Bldg. Products Co.
1515 North Cameron St.

HOUSTON, TEXAS
Franklin Stetzel
209 Foreman Bldg.

INDIANAPOLIS IND.
D. K. Marburger
1819 No. Meridian St.

JACKSON, MISS.
Fred Thrasher
Box 326

JOHNSON CITY, TENN.
Eustis A. Lancaster, Jr.

KANSAS CITY, MO.
Fred B. Kennedy
1200 Oak St.
Room 507

MIAMI, FLA.
Aufford & Kelley Co.
144 N. E. 21st St.

MILFORD, CONN.
W. T. Pease
15 Thompson St.

MINNEAPOLIS, MINN.
Bartley Sales Co.
134 So. Tenth St.

NEW ORLEANS, LA.
Joseph Tanet
5614 General Diaz St.

NORFOLK, VA.
Carl F. Woost
616 Connecticut Ave.

PALM BEACH, FLA.
Lanfranchi-Harvey, Inc.
338 Royal Palm Way

PHILADELPHIA, PA.
F. H. Hammett
401 No. Broad St.

PITTSBURGH, PA.
L. A. Rust
Ground Floor,
142 Gulf Bldg.

RICHMOND, VA.
J. S. Archer
Atlantic Life Bldg.

ROANOKE, VA.
G. Eric Sachers
P. O. Box 1885

ROCHESTER, N. Y.
S. A. Spencer
135 Spring St.

ST. LOUIS, MO.
A. F. Becker
305 Buder Bldg.

SALT LAKE CITY, UTAH
A. F. McAllister
1031 E. 3rd St. South

SAN FRANCISCO, CALIF.
E. L. Nonnenman
311 Minna St.

SYRACUSE, N. Y.
B. R. Johnson
145 Harding Place

TULSA, OKLA.
Murray R. Womble Co.
820 E. 3rd St.

UTICA, N. Y.
Charles F. Fancett
1662 Elm St.

WASHINGTON, D. C.
R. D. Stephens
Rm. 413, Southern Bldg.

THE CHARLES PARKER COMPANY

Manufacturers of Bathroom Accessories

MERIDEN, CONNECTICUT

101 Park Avenue, NEW YORK, N. Y.

NATIONAL

"Cabinets with Character"



1939

★New Styles and Latest Models

CATALOG NUMBER 103

NATIONAL METAL PRODUCTS COMPANY

MANUFACTURERS OF

MIRRORED BATHROOM CABINETS

Wall Mirrors and Wall Cabinets for Special Uses

WATERLOO ★ IOWA



Style 1100

RECESSED

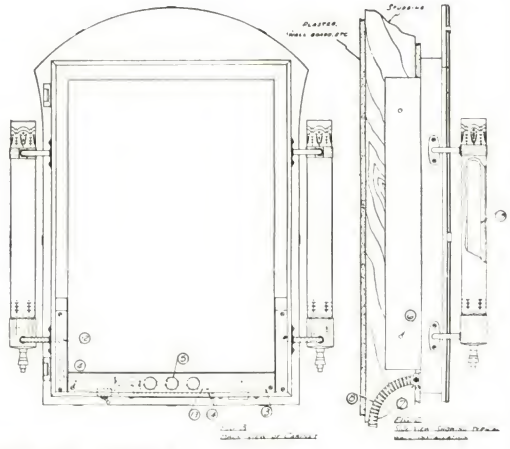
De Luxe Electric Lighted Cabinets

. . . WITH OPAL GLASS SHADES

THE FOUR CABINETS pictured on this page are exquisitely designed and beautifully fabricated in every detail. With their mirrors delicately engraved in graceful curves . . . and their interiors finished in "Snowhite" lifetime baked enamel . . . these "Cabinets with Character" readily take their place in bathrooms expressing elegance and refinement . . .

The copper-backed mirror is "A" quality plate glass engraved in the Venetian style with a ⅜-in. bevel. It is mounted on a one-piece steel door, moisture-proof and padded . . . and held secure by polished monel metal clips.

The lights at the sides are covered by removable tubular shades of decorated or plain opal glass . . . consequently give a clear, warm even light. The arms and cups that hold the lamps and shades are made of brass, chromium plated. The wiring is concealed in the cabinet frame and passes the most severe underwriters' test.



27
101

SPECIAL FEATURES

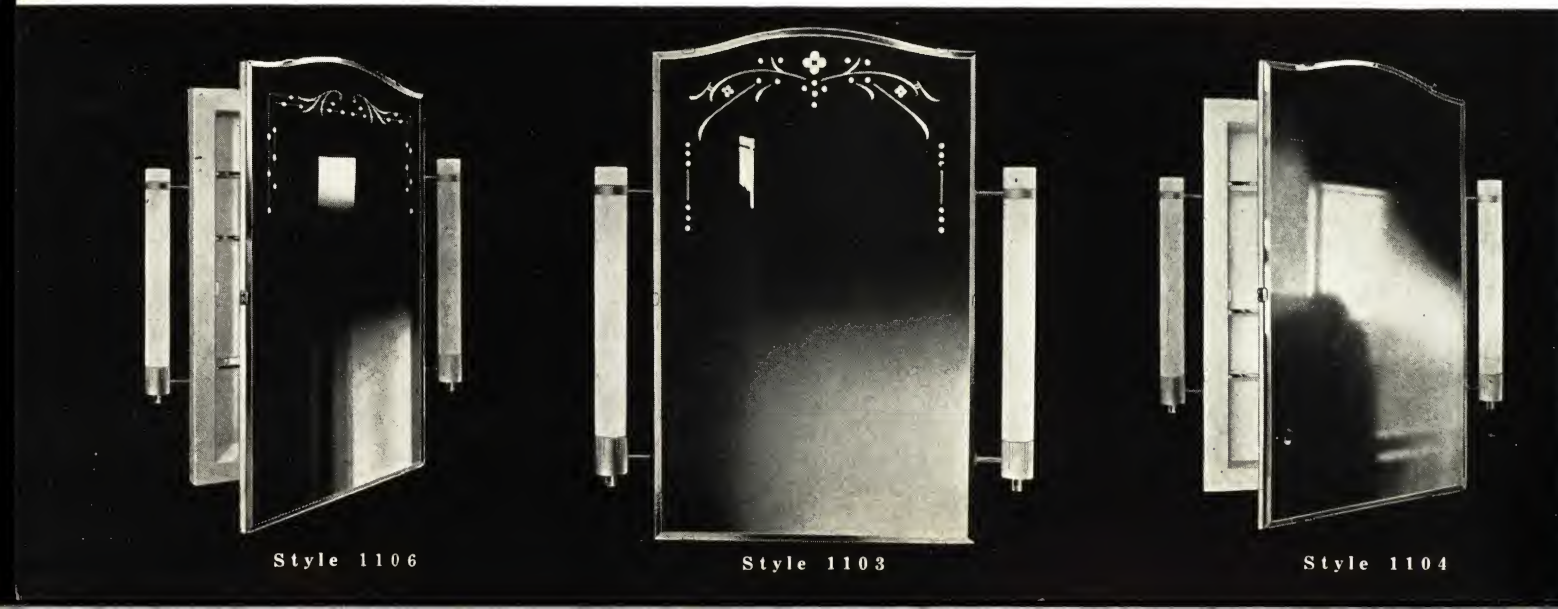
Convenience outlet for attaching electric devices, an important item . . . three plate glass shelves, adjustable . . . concealed door hinges . . . automatic door stop . . . adjustable friction ball catch on door. Electric light bulbs are priced separately.

BLUE PRINTS

Detailed blue prints of these Cabinets will be sent gladly on request.

Style	Cabinet Frame, In.	Wall Opening, In.	Mirror, In.	Shipping Weight, Lbs.	List Price
1100	17 x23⅜x4	14½x20½x2⅞	19½x27½	55	**$44.00**
1103 · 1104 1106	16⅞x25⅞x4	13⅞x23⅛x2⅞	18 x28	48	**30.00**

For monel metal frames around square top mirors for styles 1106-1103-1104, add $4.00 to list price. See page 3 for prices on electric light bulbs.



Style 1106 Style 1103 Style 1104

MASTER CRAFT

Electric Lighted Cabinets and Mirrors

. . . BY NATIONAL

HERE are the newest additions to the National Line. They are designed correctly in the new modern style and priced within the reach of the low priced homes. The mirrors are copper backed of selected quality. The cabinets are finished in sno-white baked enamel and are provided with removable glass shelves, tooth brush rack and a slot for used razor blades.

The fixtures for the side lights on the cabinets are chromium plated brass and are wired to pass the fire underwriters' requirements, and will save money because they are the only lights that are needed. (The fixtures for the portable mirror are baked enameled finish.) All wiring is concealed. There is a convenience outlet for electrical appliances. The light fixtures are spaced correctly so there is a soft even glow without glare and without shadows.

STYLES 1109-1209 • Two low priced electric lighted recessed cabinets. Two candle type brass chromium plated fixtures. Electric light bulbs are priced separately. Wired complete with switch and convenience outlet in accordance with fire underwriters' requirements. Engraved double strength copper backed mirror enclosed in chromium plated frame. 2 glass shelves.

STYLE 1110 • New Electric Lighted recessed cabinet equipped with fixtures for two 12 inch tubular lights, switch and convenience outlet. Bulbs are priced separately. Will pass fire underwriters' requirements. Chromium plated brass fixtures. Beautiful engraved Venetian style mirror plate thickness with beveled edges; clipped on with monel metal clips. 3 glass shelves.

STYLE 1120-1121 • Two new recessed cabinets equipped with electric light fixtures. Bulbs are priced separately. The opal glass shades are 7 inches long and diffuse a soft even light across the beautiful engraved Venetian mirror—plate thickness with beveled edges and copper backed. Chromium plated brass fixtures. The one to the left has a built-in switch and the one to the right has a built-in convenience outlet (receptacle) for electrical appliances. (Style 1120—2 glass shelves—style 1121—3 glass shelves.)

STYLE 1300 • Portable wall mirror wired complete with fixtures for side lights using two 12 inch lumiline light bulbs. Bulbs are priced separately. Easily attached to any wall. Has two convenience outlet receptacles—one for attachment plug from light socket or wall receptacle outlet—the other for curling iron, electric shaver or other electrical appliance. No switch is needed. The copper backed mirror is double strength plain crystal glass of selected quality and is enclosed in metal frame. The finish is white enamel decorated with two black stripes. This mirror is very popular with tenants who rent as it is easily moved and is large enough for all practical purposes.



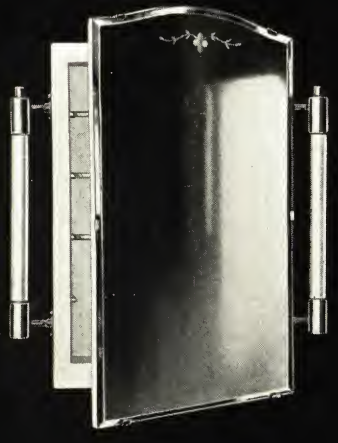
Style 1109-1209

Style	Cabinet Overall	Wall Opening In.	Mirror In.	Shipping Wt., Lbs.	List Price
1109	13¼x18⅝	11⅜x16¼x2¾	14x20	22	**$12.95**
1209	15 x20	13¼x17¾x2¾	16x22¾	28	**14.25**
1110	15 x21¾	13¼x19½x2¾	16x24	35	**23.85**
1120	13¼x20⅝	11⅜x18¼x2¾	14x22	28	**14.95**
1121	15 x21¾	13¼x19½x2¾	16x24	35	**16.50**
1300	20 x19x1	Hangs on wall	14x18	10	**8.50**

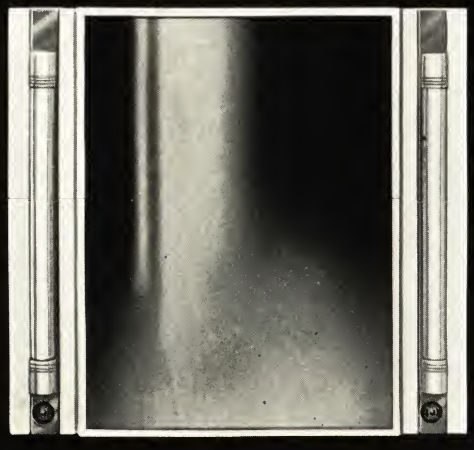
NET PRICES FOR STANDARD ELECTRIC BULBS

Light bulbs for National fixtures may be obtained from your local electrical supply dealer; or you can include them with your cabinet order at the following net prices.

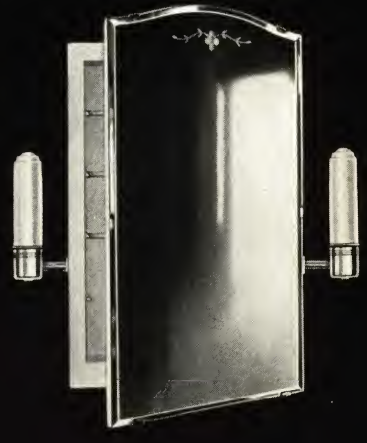
For Cabinet		Watt	Each
1109-1209	Candle style White frosted	25	**$0.25**
1110	Tubular style T8 White frosted	40	**1.20**
1120-1121	Tubular style T10 Clear	25	**.25**
1120-1121	Tubular style T10 Clear	40	**.40**
1100-1103	Tubular style T8 Clear	40	**.90**
1104-1105	Tubular style T8 Clear	40	**.90**
1106	Tubular style T8 Clear	40	**.90**
1101-1300	Lumiline 12 inch Frosted	40	**.90**
1102-1107	Lumiline 18 inch Frosted	60	**1.00**
1108	Lumiline 18 inch Frosted	60	**1.00**



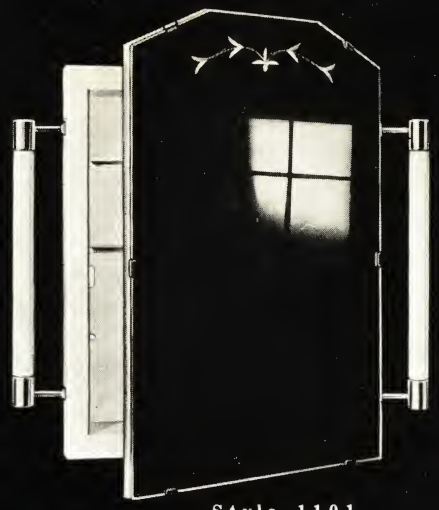
Style 1110



Style 1300



Style 1120-1121



Style 1101



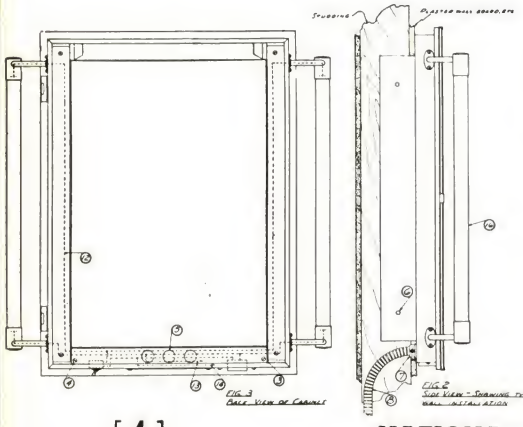
Style 1102

27
101

RECESSED *DeLuxe Electric Lighted Cabinets*

. . . WITH LUMILINE LIGHTS

DECIDEDLY modern in their designing, these four National "Cabinets with Character" are designed for the popular Lumiline Lights. They are particularly well suited to bathrooms decorated in the more severe present-day modern style.



Like the models pictured on the opposite page, these Cabinets are permanently finished in "Sno-white" lifetime baked enamel. They likewise have full-vision copper-backed mirrors, of "A" quality plate glass, mounted on one-piece moisture-proof padded steel doors. (Style 1101 has engraved crystal mirror, finished edge, no bevel. Style 1102 has ⅜-in. bevel. Style 1107 and 1108 have narrow ⅛-in. bevel.) Styles 1101 and 1102 are handsomely engraved in the Venetian manner and give a rich yet unrestrained appearance. The Lumiline Lights . . . unsurpassed for shaving and make-up . . . not only produce long sources of light from both sides of the mirror—but illuminate the bathroom and eliminate shadows. The wiring is concealed in the cabinet frame and passes the most severe Underwriters' test.

SPECIAL FEATURES

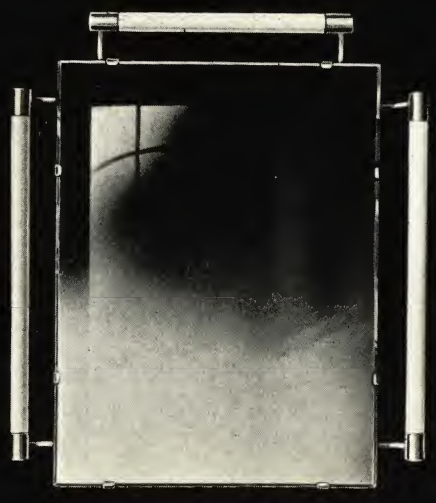
Convenience outlet for attaching electric devices . . . two adjustable plate glass shelves (three on Style 1102 . . . concealed door hinges . . . automatic door stop . . . adjustable friction ball catch on door. Electric bulbs are priced separately.

Style	Cabinet, In.	Wall Opening, In.	Mirror, In.	Lumiline Lights	Shipping Wt., Lbs.	List Price
1101	15⅛x17⅜x4	13⅛x14⅞x2⅞	16x20	two 12-inch	28	**$18.00**
1102	15⅛x21⅝x4	13⅛x19⅝x2⅞	16x24	two 18-inch	36	**23.75**
1107	16¾x23 x4	14 x20⅛x2⅞	18x24	two 18-inch	42	**28.25**
1108	16¾x23 x4	14 x20⅛x2⅞	18x24	two 18-inch one 12-inch	45	**36.00**

For monel metal frame around mirror add $4.00 to list price for style 1107-1108. For style 1102 with square top, add $3.00. See page 3 for prices on electric light bulbs.



Style 1107



Style 1108

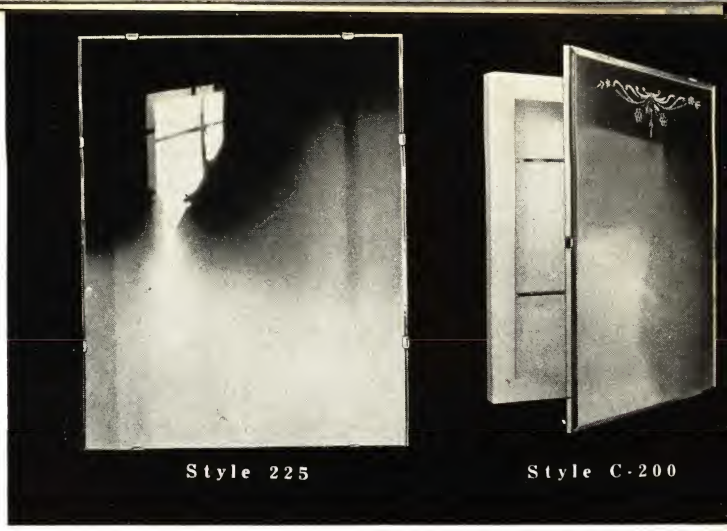
RECESSED *De Luxe Cabinets*

STYLE 225 • Narrow ⅛-in. bevel gives this model full vision and a rich dignified appearance. Same features as the models pictured on pages 6 and 7 . . . copper-backed mirror of "A" quality plate glass mounted on a one-piece door . . . "Sno-white" lifetime baked enamel finish. Two shelves.

STYLE C-200 • An unusually popular "Cabinet with Character." Engraved Venetian copper-back mirror of "A" quality plate glass . . . ⅜-in. bevel mounted on one-piece padded metal door. Same features as other recessed models on pages 6 and 7. Two shelves.

Style	Cabinet, In.	Wall Opening, In.	Mirror, In.	Shipping Wt., Lb.	List Price
225	16¾x23 x4	13⅞x20⅛x2⅞	18x24	32	**$16.05**
C-200	16¾x20⅝x4	13⅞x18 x2⅞	18x22	29	**15.05**

Add $4.00 to list price for monel metal frame.



Style 225 Style C-200

SURFACE *De Luxe Wall Cabinets*

FOUR popular "Cabinets with Character" for surface mounting. Mirror is mounted on one-piece padded steel door . . . and held secure by polished monel metal clips. Special features include friction ball catch and concealed hinges which also act as automatic door stop.

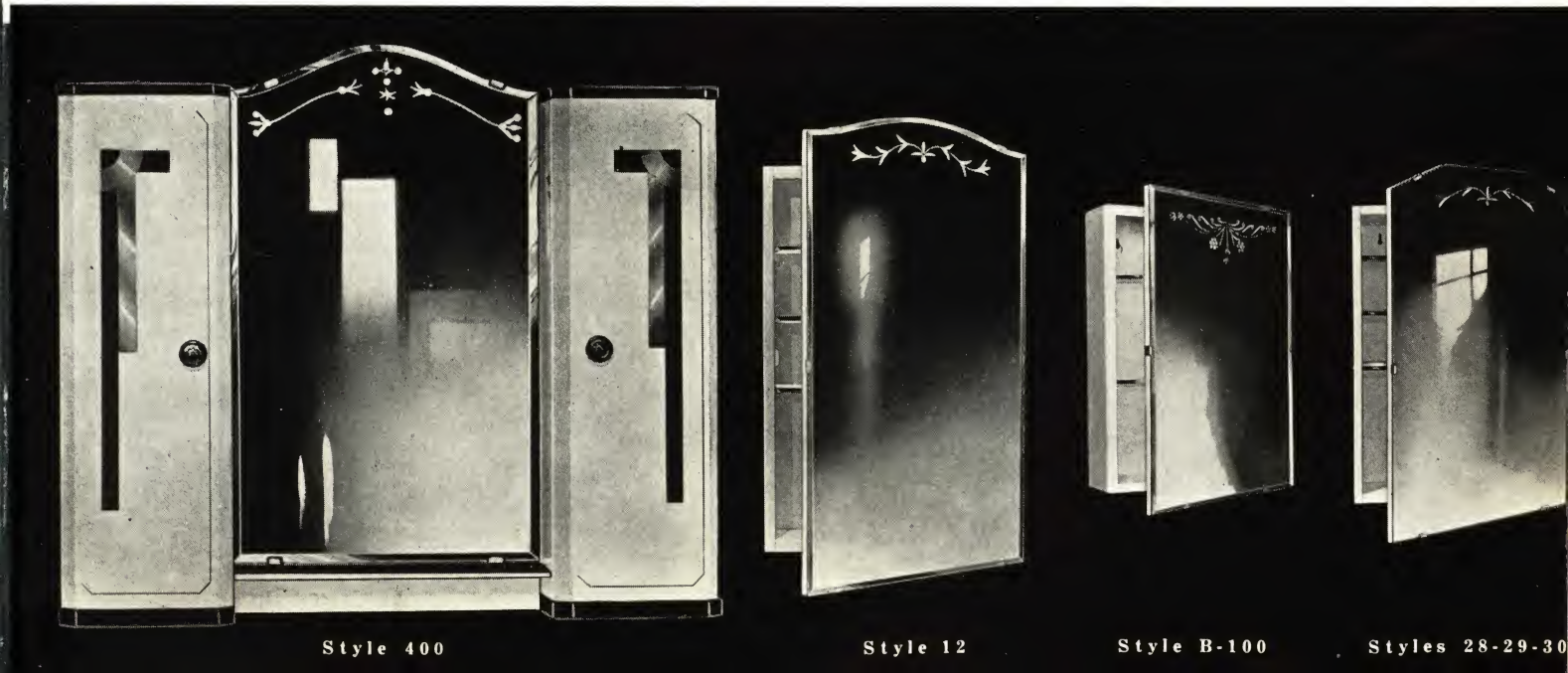
STYLE 400 • An exclusive model with glass shelf and two side cabinets. Mirror is Venetian beveled plate glass, bowed at top and strikingly engraved. Below the mirror is mounted the plate glass shelf, 3x14 in. Cabinets are finished in "Sno-white" lifetime baked enamel and are decorated in black enamel and polished monel metal. Each compartment, 7½x24x4 in. has three adjustable plate glass shelves and black bakelite knob.

STYLE 12 • Another important National "DeLuxe" Cabinet. Mirror of Venetian beveled plate glass is attractively engraved in floral design and has curved top. Moderate in price—but typical National quality.

STYLE B-100 • Specially designed and priced for small, inexpensive bathrooms. Its Venetian beveled mirror is engraved in an unusually attractive design. Flat top.

STYLE 28 (also 29, 30) • New members of the "De-Luxe" line. Very popular and reasonable in price. Engraved crystal mirror. Styles differ only in size.

Style	Cabinet, In.	Mirror, In.	Shelves	Shipping Wgt., Lb.	List Price
400	29⅜x26½x4½	14x24	7 (glass)	38	**$25.90**
12	15⅛x22 x4	16x24	3 (glass)	24	**13.15**
B-100	14⅞x21 x5	16x22	2 (glass)	30	**12.90**
28	10¼x16 x3½	11x18	2 (steel)	9	**3.70**
29	12 x17½x4	13x20	2 (steel)	12	**5.95**
30	15⅛x17¼x4	16x20	2 (glass)	19	**8.15**



Style 400 Style 12 Style B-100 Styles 28-29-30

RECESSED
DeLuxe Wall Cabinets

OUR MOST POPULAR DeLuxe styles for wall mounting . . . truly "Cabinets with Character" . . . on display here and the opposite page. Their large expanse of mirror . . . gleaming, glistening Venetian plate glass . . . makes any one of these National Cabinets a fitting addition to the well-planned bathroom.

The copper-backed mirror . . . bowed at the top and beveled on all sides . . . is mounted on a one-piece steel door, moisture-proof and padded . . . and tightly held in position by polished monel metal clips.

The finish, of course, is "Sno-white" lifetime baked enamel. Special features include friction ball latch . . . three adjustable plate glass shelves . . . concealed hinges also act as door stop combination.

STYLE D-500 • This model . . . with its large beautifully etched mirror and its roomy interior . . . has proved our best seller for many years. Especially suitable for large bathrooms. Its curved top mirror is delicately etched in a fascinating bubble design. Truly an aristocrat among cabinets.

STYLE 775 • Same as Style D-500 . . . except it is furnished without etching.

STYLE 875 • This is the recess cabinet (only) in the center of the three-section shown below at the left. Its curved top Venetian beveled plate mirror is bordered by smart mitered lines.

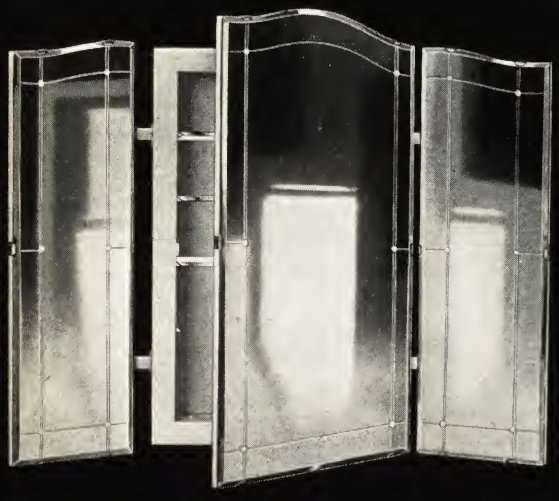
STYLE 1875 • Consists of Recess Cabinet Style 875 with vanity mirror wings on either side . . . as pictured. The wing mirrors are Venetian plate glass, beveled . . . with mitre lines to match the center mirror. Each wing measures 8⅞x26¾ in. . . . is easily adjusted to any angle. Overall width, with wings extended is 38 in.

STYLE 975 • Same style and specifications as D-500. The only difference is the mirror design. This design with its vertical lines is recommended for bathrooms with low ceilings.

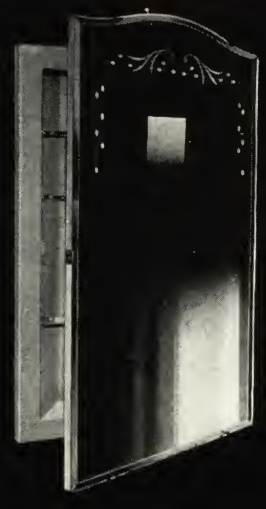
Monel metal frame around mirror will be made to special order by squaring the mirror straight across the top on styles D-500-875-975-775. Add $4.00 to the printed prices. For style 10, page 7, add $3.00.



Style D-500



Styles 875-1875



Style 975



Style 775

STYLE 10 • Our second best seller . . . popularly priced—but built with the typical high quality of all National Cabinets. Mirror is tastefully etched in floral design. This cabinet furnished to special order with square top mirror and monel metal frame for $3.00 additional.

STYLE V-550 • Same mirror design as Style D-500 pictured on opposite page . . . except in smaller, more convenient size.

STYLE 750 • Especially designed for bathrooms that demand an elaborately etched mirror. The exceedingly rich appearance of the model is due to the unusual way it is engraved; alternating fully-polished and satin-finish etching around its entire outside edge.

STYLE S-900 • This is the Recess Cabinet Style C-901 with vanity mirror wings added on both sides . . . as pictured. Wing mirrors are engraved to match the center mirror and have curved tops. Each wing measures 8x18¾ in. and is easily adjusted to any angle. Overall width, with wings extended is 34 in. **Style C-901 is recessed cabinet with center mirror only.**

STYLE 880 • New, exclusive model . . . with round recessed cabinet and round narrow beveled mirror of finest quality plate glass . . . 23 in. in diameter. Especially effective in bathrooms designed in the ultra-modern style and very smart for the powder room.

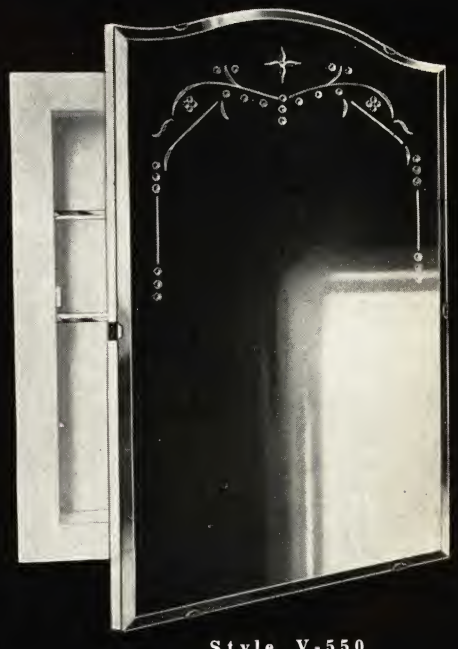
Style	Frame, Inches	Wall Opening, Inches	Mirror, In.	Shelves	Shipping Wt., Lb.	List Price
D-500, 775 } 875, 975 }	16⅞x25⅞x4	13⅞x23⅛x2⅞	18x28	3	35	**$17.50**
1875	16⅞x25⅞x4*	13⅞x23⅛x2⅞	18x28*	3	52	**34.30**
10	15 x22 x4⅛	13⅛x20 x3⅛	16x24	3	24	**13.85**
V-550	16⅞x19⅞x4	13⅞x17⅛x2⅞	18x22	2	28	**15.05**
750, C-901	15 x17¾x4	13¼x16 x2⅞	16x20	2	24	**13.85**
S-900	15 x17¾x4*	13¼x16 x2⅞	16x20*	2	38	**25.20**
880	20¼ diam.	17 x18¼x2⅞	23 diam.	4	28	**19.78**

* Plus wings.

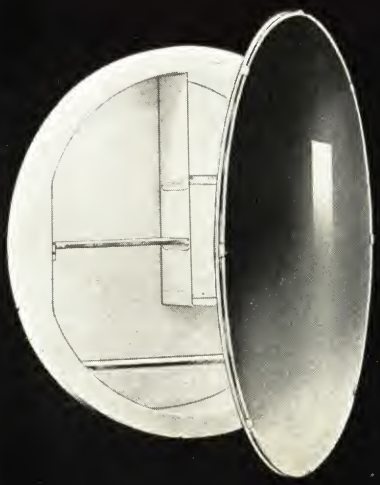
Other recessed models on next page



Style 10



Style V-550



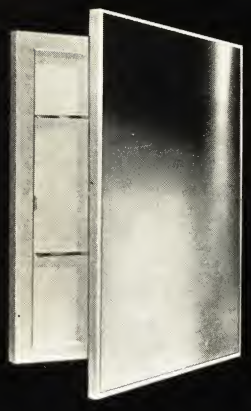
Style 880



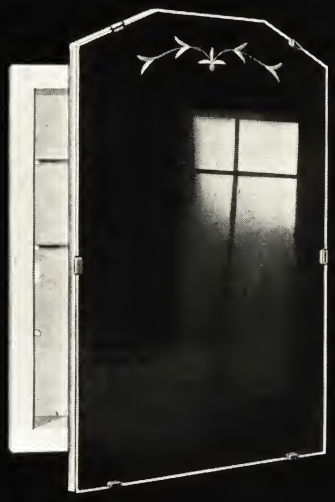
Styles S-900 & C-901



Style 750



Style 50



Styles 53-51-52



Style 360

RECESSED
"Utility" Wall Cabinets

A SPECIAL GROUP of National Cabinets designed for installations where initial cost is a determining factor. "Utility" Cabinets have the same strength and rigidity characteristics of higher-priced National Cabinets. They are electrically welded into one-piece construction . . . no rough edges or exposed nuts, bolts or screws. Finished in National's famous "Sno-white" lifetime baked enamel. Mirror of finest quality plate glass (except as stated in individual description) is mounted on one-piece padded metal door and held secure by polished monel metal clips.

STYLE 50 • Plain crystal mirror . . . enclosed with narrow frame of white enameled steel. A splendid value; priced to meet competition.

STYLE 53 (also 51, 52) • New "Utility" models . . . with engraved crystal mirror with full-finished edge. "Clipped" top corners. Adjustable plate glass shelves. Styles differ only in size.

STYLE 360 • Another "Utility" Cabinet . . . finished with "Sno-white" lifetime baked enamel and beveled frame in a series to give a rounded, modern effect. Mirror has ⅜-in. bevel and is mounted on metal door which opens from and closes against the cabinet frame.

STYLE O-22 (also O-23, O-33, O-43) • Standard cabinets with white frame and open bottom shelf. Built to standard hard use. Prices with beveled mirror. Plain mirrors for **less** money. Glass shelves. Styles differ only in size.

STYLE 22 (also 23, 33, 43) • Shelves totally enclosed. Built unusually strong to withstand hard usage. Prices with beveled mirror. Plain mirrors for **less** money. Glass shelves. Styles differ only in size.

Style	Cabinet, In.	Wall Opening, In.	Mirror, In.	Shelves	Shipping Wt., Lb.	List Price
50	15 x17 x4	13⅛x15¼x3	16x18	2	16	**$ 6.95**
53	12 x17½x4	10⅛x15⅝x3	13x20	2	18	**7.45**
51	15 x17 x4	13⅛x15¼x3	16x20	2	20	**8.35**
52	15 x22 x4	13⅛x20 x3⅛	16x24	3	24	**11.15**
360	14⅜x20½x4	11⅞x17⅞x2¾	12x18	2	19	**12.35**
O-22	16¾x26⅝x4	13⅞x23½x2⅞	10x14	3	25	**11.00**
O-23	18½x28¼x5	15½x25½x3¾	12x16	3	32	**13.10**
O-33	20⅜x30⅜x5	17½x27½x3¾	14x18	3	35	**14.85**
O-43	22 x34½x5	19¼x31½x3¾	16x22	3	45	**18.65**
22	16¾x20⅝x4	13⅞x17¾x2⅞	10x14	3	21	**9.90**
23	18½x22¼x5	15½x19½x3¾	12x16	2	28	**11.65**
33	20⅜x24⅜x5	17½x21½x3¾	14x18	3	32	**13.75**
43	22 x28¼x5	19¼x25½x3¾	16x22	3	41	**17.85**



Styles 22-23-33-43



Styles 022-023-033-043

RECESSED *Cabinets for Special Uses*

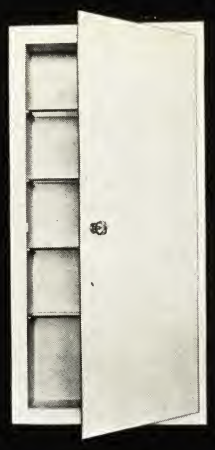
THREE specialty cabinets strongly built in typical National one-piece steel construction . . . "Sno-white" lifetime baked enamel . . . invisible hinges with stop combination . . . friction ball catch . . . crystal glass knobs . . .

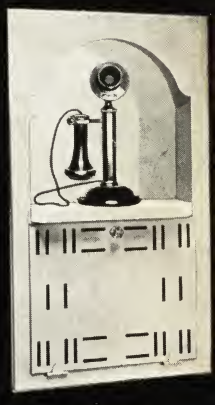
STYLE 89 • Combination Two-Door Cabinet of unusual utility . . . with supply compartment for towels, soap and other articles. This cabinet can be used with **either end up** (the four plate glass shelves are reversible); the supply compartment can be either on the top or the bottom. Mirror, beveled plate glass: 10 x 14 in. Towel compartment: 13¾ x 10 x 5 in. Cabinet proper: 13¾ x 17½ x 5 in.

STYLE 4 • Linen Cabinet . . . for towels, linen and general utility storage. Vermin-proof and easy to keep clean. Four adjustable plate glass shelves.

STYLE 3 • Telephone Cabinet . . . all metal . . . ready to build into the wall. Compartment at bottom provides ample space for wiring, bell box and directories. When open, door (14 x 12 in.) becomes desk. Shelf for telephone: 5½ x 13 in.


Style 89


Style 4


Style 3

27
101

Style	Cabinet, In.	Wall Opening, In.	Shipping Wt., Lb.	List Price
89	16¾x32⅝x5	14⅛x30 x3¾	35	**$11.15**
4	16⅞x37 x5	13⅞x34¼x3¾	33	**9.50**
3	16⅞x29⅞x4	13⅞x27⅞x3	20	**9.60**

SURFACE *Cabinets for Special Uses*

FOUR steel cabinets designed for daily uses in offices, stores, filling stations and factories. Reasonable in price. Easy to keep clean. Finished in "Sno-white" baked enamel.

STYLE 64 (also 65, 66, 67) • Towel Cabinet with mirror, detachable towel roller same width as cabinet, three stationary steel shelves and stainless steel soap dish. Also available in the new Black Crackle finish that does not show finger marks. Styles 64 and 66 have crystal mirrors. Styles 65 and 67 have plain plate mirrors.

STYLE 60 (also 61) • A durable, inexpensive cabinet with 14-in. towel roller and one steel shelf. Plain crystal mirror. Styles differ only in size. Style 61 has 16 inch towel roller.

STYLE A-1 (also A-2, A-3) • Standard low-price wall cabinet with bevel plate mirror and two shelves, concealed hinges and friction catch. Styles differ only in size. Style A1 has steel shelves. Styles A2-A3 has removable glass shelves.

STYLE C-C-4 (also C-C-5) • Corner Cabinets with three adjustable steel shelves and friction ball latch. Style C-C-4 has mirror of finest quality beveled plate glass. Style C-C-5 without mirror.

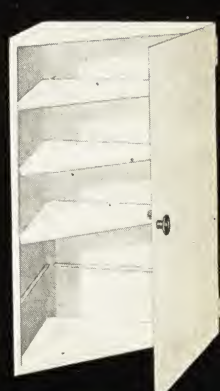
Style	Cabinet, In.	Mirror, In.	Shipping Wt., Lb.	List Price
64	18 x20x5½	14x16	20	**$ 8.35**
65	18 x20x5½	14x16	20	**9.65**
66	16 x20x5½	12x16	17	**7.45**
67	16 x20x5½	12x16	17	**8.75**
60	14¼x16x5	10x12	13	**5.60**
61	16 x18x5	12x14	16	**6.65**
A-1	14¼x20x5	10x12	15	**7.00**
A-2	16¼x20x6	10x12	21	**8.15**
A-3	17½x21x5	12x16	24	**9.65**
C-C-4	16½x20x8	12x16	20	**11.25**
C-C-5	16½x20x8	None	15	**7.25**


Styles 64-65-66-67


Styles 60-61

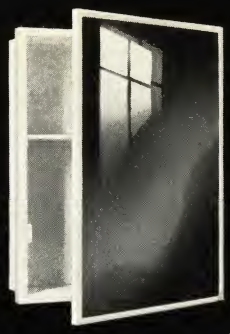

Styles A1-A2-A3


Styles CC4


CC5



Style 1013



Style 1114



Style 1217



Style 09

27
101

MASTER CRAFT *Economy Cabinets*

REGULAR DOOR CONSTRUCTION

Finished in baked sno-white enamel. Mirrors are copper backed.

STYLE 1013 • Wall cabinet for surface hanging. Plain square mirror with white enameled frame. 1 steel shelf.

STYLE 1114 • Combination wall cabinet for surface hanging or for recessed wall opening. Plain square mirror enclosed in white enameled frame. 1 steel shelf.

STYLE 1217 • Combination wall cabinet for surface hanging or for recessed wall opening. Plain, curved top mirror enclosed in a polished chromium plated frame. 1 steel shelf.

STYLE 09 • Recessed cabinet. Angle cut top, Venetian style engraved mirror with finished edges secured with monel metal clips. 5 inch open shelf. Popular for hotel and apartment installation. 3 glass shelves.

DOUBLE DOOR CONSTRUCTION

Styles 70-71-75-76 have double door construction. Door flange is turned toward mirror. We recommend our regular door construction because it has door flanges turned back so mirror rests on a waterproof pad against perfectly flat surface.

All cabinets shown below have tooth brush rack and slot for used razor blades. All are finished in baked sno-white enamel. Mirrors are copper backed.

STYLE 70 (also 71) • Recessed cabinet. Angle cut top, engraved double strength mirror enclosed in white enameled frame. 2 steel shelves. Styles differ in size only.

STYLE 75 (also 74 and 76) • Recessed cabinet. Venetian style engraved mirror plate thickness with beveled edges secured with monel metal clips. 3 glass shelves (2 for style 74). Styles differ in size only.

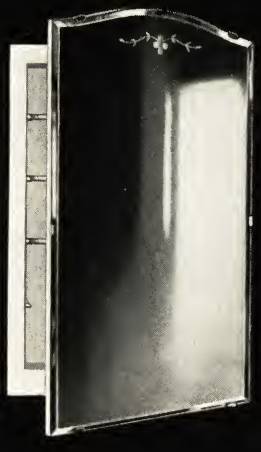
STYLE 80 (also 31) • Recessed cabinet. Angle cut top, engraved double strength mirror enclosed in white enameled frame. 2 steel shelves. Styles differ in size only.

STYLE 85 (also 86) • Recessed cabinet. Curved top, engraved double strength mirror enclosed in polished chromium plated frame. 2 glass shelves. Styles differ in size only.



Style 70-71

Style	Cabinet In.	Wall Opening In.	Mirror In.	Shipping Wt., Lbs.	List Price
1013	9½x12½x3¾		10x13	5	**$ 1.27**
1114	10½x13½x4¼	10 x13 x3	11x14	6	**1.79**
1217	12 x14¾x4¼	10¾x13½x3	12x17	6	**2.99**
09	15 x17 x4	13⅛x15¼x3	16x18¾	22	**9.50**
70	13⅜x18¼x4½	12¼x17¼x3½	14x20	15	**4.00**
71	15 x20¼x4½	13⅜x18⅜x3	16x22¾	20	**5.40**
74	13⅜x20¼x4½	12¼x19¼x3½	14x22	18	**8.50**
75	15 x21 x4½	13¼x19¼x3¼	16x24	23	**9.90**
76	17 x21 x4½	15¼x21¼x3¼	18x26	26	**12.95**
80	13⅜x18¼x4½	12¼x17¼x3½	14x20	15	**5.00**
81	15 x20¼x4½	13⅜x18⅜x3	16x22¾	20	**6.40**
85	13⅜x18¼x4½	12⅜x17⅜x3½	14x20	15	**6.22**
86	15 x20¼x4½	13⅜x18⅜x3	16x22¾	20	**7.62**



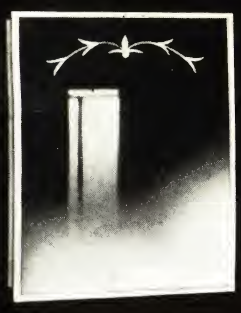
Style 75-76



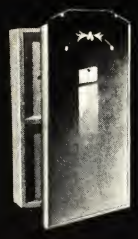
Style 85-86



Style 80-81



Style 26



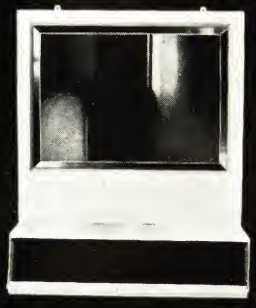
Style 27



Style 25



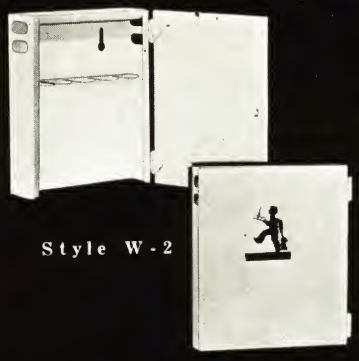
Style D-16



Style M-145



Style W-1



Style W-2

SURFACE

"Economy" Wall Specialties

STYLE 25 ● One of our best sellers. Plain crystal mirror enclosed in beaded steel frame . . . "Sno-white" enamel finish . . . two steel shelves. Cabinet: 13½x17½x5 in. Mirror: 9x12 in. Shipping weight 12 lb. List price **$3.70.**

STYLE D-16 ● Double cabinet for bathroom or kitchen . . . each compartment with separate solid metal door . . . "Sno-white" baked enamel finish. 23x13x6 in. Shipping weight 15 lb. List price **$5.25.**

STYLE M-145 ● Framed beveled plate glass mirror 12x16 in. with glass shelf and 18 in. detachable towel bar. . . . "Sno-white" baked enamel finish. 18x23 in. Shipping weight 21 lb. List price **$7.35.**

STYLE 26 ● Engraved crystal mirror in white enamel steel frame . . . two steel shelves . . . "Sno-white" enamel finish. Exceptional value. Cabinet: 13½x17½x5 in. Mirror: 14x18 in. Shipping weight 12 lb. List price **$4.85.**

STYLE 27 ● Full mirror door . . . one steel shelf . . . jade green enamel finish. Inexpensive. Cabinet: 10¼x16x3½ in. Engraved crystal mirror: 11x18 in. Packed 3 to a carton. Shipping weight (for 3) 19 lb. List price each **$2.20.**

STYLE W-1 ● Hide-A-Way Water Bottle Cabinet. An ingenious cabinet provided with hook for bottle and hose and compartment for other equipment . . . "Sno-white" baked enamel finish. 11x17x3 in. Packed 3 to a carton. Shipping weight (for 3) 12 lb. List price each **$2.05.**

STYLE W-2 ● Sanitary metal cabinet for four tooth brushes. Ventilated top and sides and open bottom . . . top recessed to hold tube of paste . . . assorted transfer decoration. 5¾x5x1 in. Packed 6 to a carton. Shipping weight 5 lb. List price each **$0.70.**

NATIONAL

Wall Mirrors

. . . WITH CHARACTER

THESE MIRRORS of "A" quality plate glass are mounted on a one-piece, padded steel back . . . and are equipped with concealed hangers to hang flush with the wall.

STYLE M-134 ● A medium size mirror suitable for any room . . . beveled plate glass . . . etched in pleasing floral design. Back finished in black lustre or "Sno-white" baked enamel. 16x24 in. Shipping weight 20 lb. List price **$7.35.**

STYLE M-132 ● Finest quality plate glass mirror decorated with both polished and satin finish etching. Back finished in black lustre or "Sno-white" baked enamel. 18x28 in. Shipping weight 24 lb. List price **$10.75.**

STYLE M-133 ● Same size—no engraving. List price **$9.90.**

STYLE 142 (also 143) ● Beveled plate glass mirror with steel frame and back finished in "Sno-white" baked enamel. Overall size: Style 142, 14⅝x18⅝ in. Shipping weight 12 lb. List price **$6.15.** Style 143, 16⅝x20⅝. Shipping weight 15 lb. List price **$7.05.**

STYLE M-770 ● Modern circular mirror of unusual rich appearance . . . narrow ⅛-in. bevel and full finish edge . . . 23-in. diameter. Best plate glass. Shipping weight 15 lb. List price **$12.40.**

STYLE M-1622 ● Beveled plate glass mirror built to give years of hard service. Framed in a rust-proof band of polished monel metal. Ideal for stores, offices and public buildings. 16x22 in. Shipping weight 20 lb. List price **$9.75.**

NATIONAL METAL PRODUCTS COMPANY, WATERLOO, IOWA



Style M-770



Style M-134



Styles M-132 & M-133



Styles M-142 & M-143



Style M-1622

The NATIONAL WAY

OF BUILDING CABINETS TO STANDARD SPECIFICATIONS

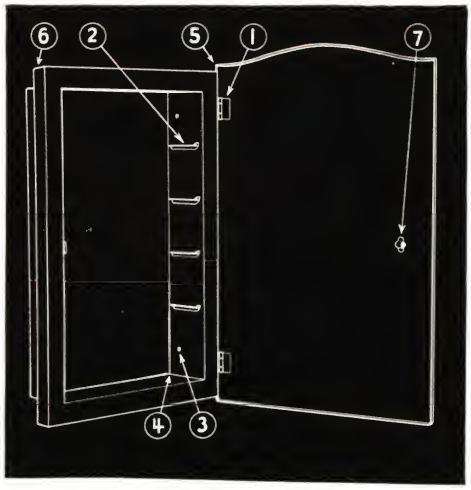
Here at National, we consider strong, time-defying construction as important as smart, modern design. Consequently, National Cabinets hold their shape . . . retain their finish . . . look trim and neat . . . even after years of severe service. **They are built to the highest standard.**

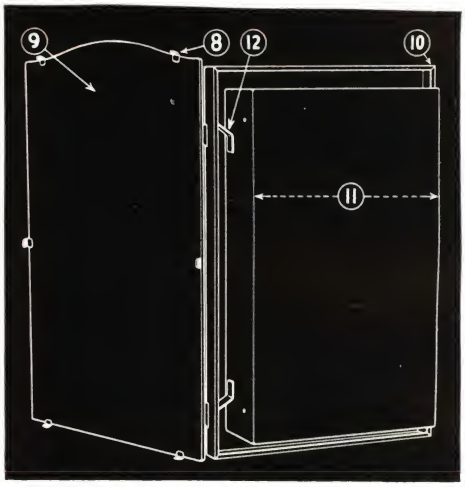
Only NATIONAL CABINETS HAVE THESE 13 EXCLUSIVE FEATURES

GUARANTEE

We guarantee the products of this company to be free from defects in materials and workmanship.

You are invited to visit our new daylight plant (covering about three acres of factory space) . . . and see why we are specialists and leaders in cabinet making . . . why National Cabinets hold their character and never need replacing. Four important departments.





1. Concealed hinges welded to cabinet frame, not seen when door is closed, act as automatic door stop.
2. Shelf brackets have front edge turned up to hold adjustable plate glass shelves in place.
3. Holes punched for wood screws or bolts for anchoring recess cabinets. (Surface cabinets have key slots in metal back.)
4. All inside corners are finished smooth with no cracks to accumulate dirt and germs.
5. Over-shot door projects ½ in. beyond cabinet frame. No opening knob is required. Back flange around entire outer edge of metal door keeps it rigid and prevents mirror breakage.
6. Return flange on cabinet frame approximately 1⅛ in. deep, fits smoothly against tiling or plaster, adds strength, allows easy opening of door.
7. Ball spring latch is adjustable and is held in place by loop bracket welded to metal door.
8. Polished monel metal mirror clips are welded to door and will not rust.
9. One-piece metal door with moisture proof pad. Highest quality plate glass mirror mounted with rubber pads under monel metal clips.
10. Corners mitred to fit, electrically welded and ground to smooth polished finish.
11. Recess dimensions of box are adapted to standard distances between studdings. (Special dimensions are made to order.)
12. Extra steel braces are welded from box to frame behind hinges to absorb shock when door is closed.
13. Highest quality mirrors are protected with copper coating.

METAL FORMING
Where the cabinet is "born." Forms are accurately cut and carefully shaped from prime steel sheets . . . then electrically welded into one-piece solid steel cabinets. No rough edges, no bolts, nuts or screws.

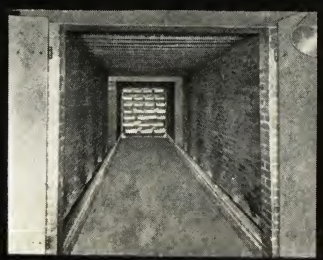
SPRAY BOOTHS
Finest quality baking enamel . . . each coat sprayed on by experts. Heavy, even coverage on the edges, corners and flat surfaces. Baked "Sno-White" lifetime finish. No brush marks, no runs . . . no errors!

BAKING OVENS
Nine large brick baking ovens . . . to bake the fresh sprayed enamel for hours under the correct heat. Our baking process prevents cracking, peeling, scaling, yellowing . . . makes original lustre permanent.

INSPECTION
Double inspection eliminates flaws of workmanship, and defects of every kind. Consequently, every Cabinet shipped is perfect . . . typifies Nationals "Up to a Standard" way of doing business.









UNITED METAL BOX CO., INC.

"United" Steel Bathroom Cabinets and Apartment House Mail Boxes

168-186 Seventh Street, BROOKLYN, N. Y.

For United Venetian Blinds, Waste Receptacles, Sink and Kitchen Cabinets, see File Index

STEEL BATHROOM CABINETS

The "United" line of steel bathroom cabinets is complete. It ranges from the simple, clean-cut white enamel cabinet to the luxurious Venetian type cabinet. It includes open shelf cabinets, clothes hampers, utility cabinets, and the beautiful 3-wing vanity cabinets.

The Venetian type cabinet has been greatly improved. A one-piece channel frame completely encloses and protects the handsomely engraved mirror. This channel frame may be had in chromium or enamel finish. The door is removably mounted on the cabinet by separable hinges and has a link to limit outward swing of the door and an easy working adjustable brass catch.

United Metal Box Co., Inc., are also the manufacturers of Wall Type Clothes Hampers, Concealed Clothes Dryers, Undersink Cabinets and Waste Receptacles. Write for catalog and specifications.



Series 7500-X

Construction Features

Indestructible—Entire cabinet is made of heavy gauge steel and protected against rusting.

Dustproof Interior—Front of cabinet is made from one piece and the door fits snugly to exclude dust and dampness.

Hinges—The cabinets are made with concealed hinges, and are specially mounted so that the door will not tear loose or sag with rough usage.

Doors—All doors are of built-up hollow steel construction specially made for rigidity without excess weight.

Adjustable Shelves—Bulb edge glass shelves are furnished with each cabinet, and are supported by permanent, attached shelf clips.

Substantial Door Knob and Catch—Door knob where used is of ornamental glass, and all doors are secured by means of concealed bullet catches.

Best Quality Plate Glass Mirrors—Mirrors are of high grade plate glass mounted on inside of door and completely encased and protected.

High Grade Enamel Finish—Cabinets are finished in a permanent smooth baked-on finish in white or colors.



Series 1500

Series 7500-X—Recess Type

The 7500-X series Venetian cabinets have handsomely engraved, plate glass mirrors of high quality with curved tops. When closed, door conceals cabinet proper and presents appearance of a mirror hung on wall. Also made with mitre border engraved on mirror instead of wreath. When mitre border is required substitute letter "M" in catalog number instead of letter "X".

Cat. No.	Wall opening, in.	Venetian mirror, in.	Glass shelves
7500XS	14½ x18½	16 x22	2
7501XS	16½ x20½	18 x24	2
7502X	19 x25	21⅜ x29⅞	3
7503X	16½ x22½	19⅛ x27⅝	3
7504	14½ x20½	16 x24	2

Also furnished for surface mounting.

Series 1500—Recess Type

The 1500 series fulfills the demand for a high quality, all steel, recess bathroom cabinet. The hollow steel door is hung on heavy concealed hinges. The front of the cabinet, the top and the bottom are drawn from one piece of furniture steel and the entire cabinet is finished in a durable baked-on enamel in white and colors.

Cat. No.	Wall opening, in.	Over all, in.	Beveled mirror, in.	Glass shelves
1500	14½ x18½ x2¾	17x21	10x14	2
*1500-A	14½ x18½ x2¾	17x21	12x16	2
1501	16½ x20½ x2¾	19x23	12x16	2
1501-A	16½ x20½ x2¾	19x23	14x18	2
1502-A	19 x25 x3	21x27	16x22	3

*Also made with plain crystal mirror.
Also furnished for surface mounting.

Write for Complete Catalog on "United" Bathroom Cabinets

"UNITED" APARTMENT HOUSE MAIL BOXES

Designed to meet all requirements of the Post Office Department Order No. 3979, issued March 9, 1926.

Standard over-all height 16½ in. Made in gangs of 3, 4, 5, 6, 7, 8, 9, 10, 11 and 12 units, each unit accommodating mail for one tenant. Each gang fitted for post office lock, furnished by United States Post Office Department, each unit with tenant lock. Gangs may be joined together to take care of any number of tenants.

"United" Mail Box units are built as one box, not assembled. Front is made of heavy, solid brass and has a drawn return flange for reinforcement. Box proper is of steel, protected against rust, and electrically welded to front. All hinges and screws concealed. Upper master door opens downward, giving access to all tenant's compartments. Lower (tenant's) door opens upward to a stationary position leaving both hands free. Opening doors can not cover tenant's name plate.

"United" Boxes are made with or without speaking tube mouthpiece and push buttons. Boxes with mouthpiece and push buttons have buttons on removable plate to allow easy access to wiring.

Write for specifications.



United 3-Gang Mail Box

MEMORANDA

BOBRICK MANUFACTURING CORPORATION

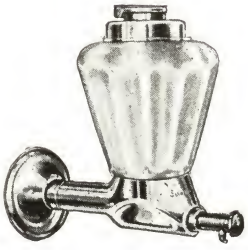
ESTABLISHED 33 YEARS

Manufacturers of Liquid, Lather and Powdered Soap Dispensers

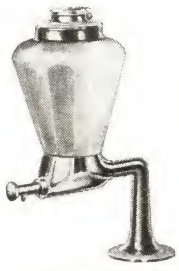
15 East 26th Street
NEW YORK, N. Y.

117 South Garey Street
LOS ANGELES, CALIF.

For Hotels, Clubs, Hospitals, Office Buildings and other High Class Installations



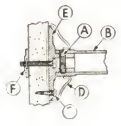
No. 7—$5.50



No. 8—$7.00

Over thirty years' continuous manufacture of this model has developed, we claim, the finest liquid soap dispenser that it is possible to build. The 1939 model has a one-piece solid bronze body and bracket—stream lined modern design — heavily chromium plated. Valve parts are nickel silver and stainless steel. Equipped with practically unbreakable clear glass globes — colored glass or metal globes at slightly higher prices.

Plate E may be fastened to wall with either screws or toggle bolt. Flange D covers screws. Theft-proof, yet dispenser may be removed with proper tools for cleaning or repairing without disturbing the wall plate.





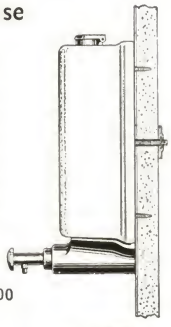
Hinged lock top cannot get lost or stolen. Easy to open with key supplied with each dispenser. Automatically locks when top is snapped closed, prevents dropping of cigarette butts, matches, etc., into dispenser to clog valve.

For Schools, Railroad and Bus Terminals, Factories and all Places where Dispensers Receive Hard Use



The heavy duty dispenser for busy washrooms—pressed steel body, electrically welded seams, coated inside and out with vitreous porcelain enamel. Beautiful white finish same as washbasin, easy to keep clean. Hinged lock top—nickel silver valve housed in bronze casting which backs solidly against the wall. Pressure of operation against the wall, not on soap container. May be installed with screws or toggle bolts which are concealed—theft-proof—can only be removed with special key furnished. The No. 12 has the largest capacity of any soap dispenser on the market.

No. 10—Pint (16 oz.) $5.50—No. 12—2½ Pints (40 oz.) $6.00

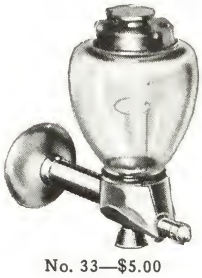


Pullman Type For Basin Installations

Can be installed through the faucet hole of any basin. Valve casting and spout nickel silver—not necessary to remove glass jar to fill as this dispenser can be filled through the top by removing the push button. Can be supplied with shank to fit basin up to 4½ in. thick, also with metal jars.

No. 829—$7.20





No. 33—$5.00

Powdered Soap Dispensers

No. 33 is a modern up-to-date powdered soap dispenser. Bronze body, chromium plated. New self-cleaning plunger dispenses any powdered soap. Lock top, theft-proof bracket with screws concealed, same as Model No. 7.

No. 31, the heavy duty powdered soap dispenser for factories and schools. Dispenses definite quantity at each push of the button. Screws concealed—cannot be stolen—cover locks, enclosing all mechanism.



No. 31—$5.50

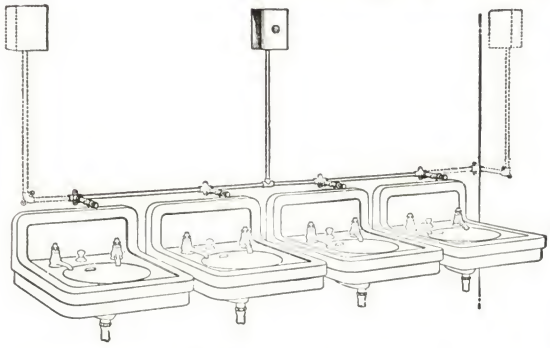
Hospital Models

The No. 813 is foot-operated, all parts made from solid bronze. We also manufacture knee-operated, pedestal and individual type hospital dispensers. Write for literature.



No. 813—$20.00

Gravity Feed Liquid Soap Systems—Valves and Fittings Chromium Plated



Bobrick's gravity feed systems are the original. All valves made from solid bronze with nickel silver and stainless steel parts. Tanks and fittings for every type of installation.



C-861 Lather Valve, $3.50

The New Bobrick Improved Lather Valve. Solid bronze body, stainless steel and Monel metal parts. Dispenses lather. Can be used with any grade of liquid soap. Streamlined modern design — heavily chromium plated.



China Tanks

C-914—1 gal. $15.00
C-915—2 gal. 19.50
C-916—5 gal. 24.50



Iron Tanks
Alkali proof lacquer finish

C-906—1 gal. . .$ 7.50
C-907—2½ gal. 9.50
C-908—5 gal. . . 11.50



C-866 Valve $5.50

Often called the pullman type. For basin type installations.



C-860 Valve, $2.70

The standard for 33 years for wall installations. Dispenses liquids.

C-863 Elbow Valve, $3.68

Used in showers. No projections to cause injury in case a person slips and falls.



Send for Free Catalog A.I.A. File No. 29-1-2 Containing Complete Architectural Specifications

THE IMPERIAL BRASS MANUFACTURING CO.

Watrous Liquid Soap Dispensers

1200 West Harrison Street, CHICAGO, ILLINOIS

For Watrous Flush Valves, Imperial "Floatless" Automatic Electric Sump Pumps and Imperial Automatic Primers for Floor Drains, see Our Separate Catalogs

The Watrous line of liquid soap dispensers is complete—from individual portable units to equipment for the largest group installation. All deliver a measured quantity of soap and are drip and leak proof, resulting in sizeable economies.

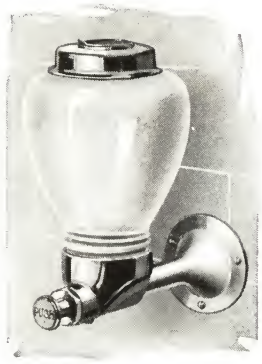
Materials and Finish—All fixtures are made of the best materials, handsomely finished in chromium plate, non-corrosive and positive in action. The modern fixture designs meet the requirements of forward-looking architects.



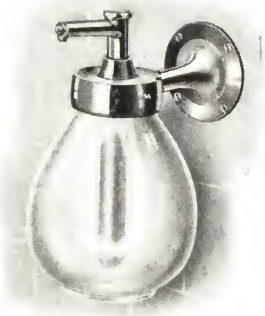
M-801



M-830



M-807



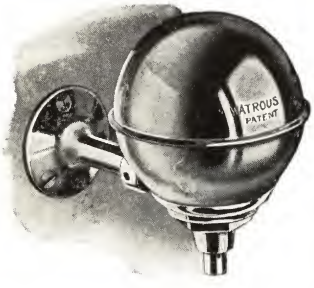
M-826

M-801—Plunger Type—Fits lavatory tops up to 1¼ in. thick. Also available up to 4½ in. To refill, unscrew push-button cap. Metal container available at extra cost.

M-830—Plunger Type—Similar to M-801 except for modern style Art Crodon design. The two types of glass containers shown can be furnished on either dispenser.

M-807—Horizontal Type—For attachment to wall, push-button action. Refilled through cap. Measured quantity of soap delivered. Also available with all-metal container.

M-826—Upright Type—Popular, low-priced model; attached to wall. Unscrew jar to refill. Deliver soap by pressing button on top of container. Non-drip.



M-800

M-800—For attachment to wall or lavatory back. Metal container. Upward pressure delivers measured amount of soap. Invert container to refill. Spring lock keeps unit in operative position.

M-816—For attachment to lavatory top. Glass container. Invert container to refill. Germ and dust proof. No soap can escape except through actual operation of plunger.



M-816

M-815—For attachment to wall or back of lavatory. Glass container. Invert container to refill. Measured quantity of soap delivered with each operation of plunger.



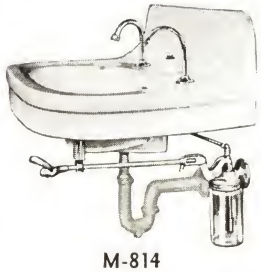
M-815

HOSPITAL TYPES

M-813 — Foot operated, sanitary. Bracket support, integral spout, fastened to wall by screws. With wall lavatories, place support at one side, spout turned to come over lavatory. Adjustable foot pedal rod.



M-813



M-814

M-814 — Knee operated. Wall bracket screws onto wall, in same location for either pedestal or wall lavatories. Spout attached through either faucet hole or through waste knob hole, where chain and plug are used.

PORTABLE DISPENSERS

M-836—Table Type. Glass container, refilled by unscrewing push button. Bronze base, chromium plated.

M-1030—Floor Type, foot operated. Horizontal swiveling spouts, which telescope with a 4-in. range. Maximum spread of spouts: extended, 27¼ in.; retracted, 19¼ in.

At Right:
M-1030
Portable Floor Type





M-836

WATROUS GRAVITY LIQUID SOAP DISPENSING SYSTEMS

A Complete Line

THE IMPERIAL BRASS MANUFACTURING CO. offers a complete line of Watrous gravity liquid soap dispensers and equipment. A selection of valves and fittings allow considerable choice in the appearance of the finished installation. A variety of supply tanks (illustrated) is offered in several types and finishes. The diagram at bottom of this page is a typical installation, included for convenience in specifying piping and fittings.

Features

There is no wastage in a Watrous gravity system. The economies resulting from use of the equipment, which is drip and leak proof, are an important consideration in large-scale installations. The cleanliness and handiness of liquid soap systems are other outstanding advantages.

Adaptability

A complete gravity system can be installed either with exposed piping, as shown in diagram, or with all piping concealed. The systems are especially adapted to washrooms in clubs, schools, hotels, offices, and anywhere that a large group of persons will use the facilities.

Easy to Service

Watrous Gravity Liquid Soap Dispensing Systems require minimum attention. As long as there is soap in the supply tank, the system takes care of itself.

VALVES AND DISPENSERS



C-862



C-863

C-862 — Vertical Liquid Soap Valve. Especially adapted for use in industrial plants over wash sinks, lavatories, etc. Threaded ⅜ in. iron pipe to fit standard fittings.

C-863 — Elbow Liquid Soap Valve. Particularly suited for shower stalls, industrial plants, etc. A push on the plunger delivers a measured quantity of soap. Threaded for ⅜ in. iron pipe.

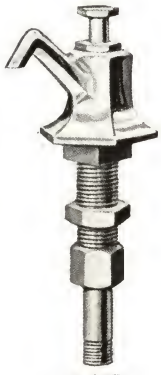
C-866—Dispenser for attachment to top of lavatory. The shank is constructed for 1½ in. thickness of lavatory and to fit 1¼ in. faucet hole. Longer shanks specially furnished. Shank has ¼ in. iron pipe coupling nipple.

M-817 — This modern styled dispenser is similar to C-866 except it is in Art Crodon style.

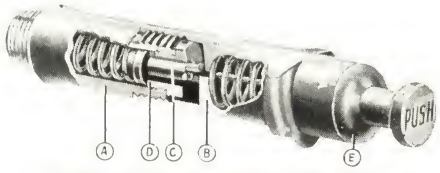
C-860—Horizontal Liquid Soap Valve. Threaded to ⅜ in. iron pipe size to fit our standard wall fittings.



C-866

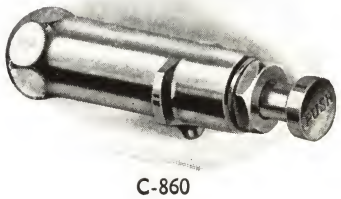


M-817



M-865—Horizontal Valve with Cut-off

M-865—Combination valve and cut-off, stops soap flow when valve is removed. A, cut-off device. B presses on stem C, holding valve D open so soap flows freely into valve. When B is removed from A, the stem advances and cuts off valve's seat at D, automatically sealing the pipe line.



C-860

TANKS FOR GRAVITY SYSTEMS

NOTE: *We do not recommend a 1-gal. tank for more than four valves.*



C-903

C-903—Made of Russianized iron and with a white enameled finish, this tank has 2½ gal. capacity. Welded seams, hinged top, wide opening for easy filling. Calibrated gauge indicates contents in quarts. Tapped for ⅜ in. iron pipe.

M-832—This vitreous China tank prevents corrosion from chemical action of soap. Easy to keep clean. Gauge on front indicates contents in quarts. Tapped for ⅜ in. pipe. Three sizes—5 qts., 2 gals., 5 gals.

C-870—One gallon capacity glass jar. Bracket of galvanized cast iron, tapped ⅜ in. iron pipe thread. Special attachment for clamping to water pipes furnished at small additional cost.

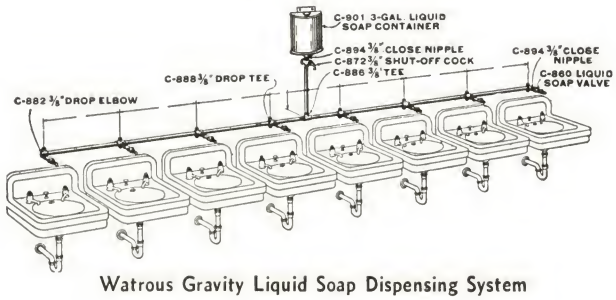
C-901—Three sizes—1, 3, and 5 gals. Gauge on top drops when tank is three-quarters empty. Made of black iron, welded seams, white enamel finish, for factory use. Tapped ⅜ in. iron pipe. Stainless steel tanks available at extra cost.



C-870



M-832



Watrous Gravity Liquid Soap Dispensing System



C-901

PALMER PRODUCTS, INC.

Manufacturers of Soap Systems

WAUKESHA, WIS.

(Adjacent to Milwaukee)

DISTRIBUTORS IN ALL PRINCIPAL CITIES

For Page on Toilet Paper and Towel Fixtures, see File Index

Reputation

Palmer Multi-Service Products are known throughout the world and are to be found in public institutions and industrial plants everywhere. Palmer equipment stands up. Thousands of installations are operating satisfactorily after years of hard usage. More than a quarter century of manufacturing experience enables us to produce the best equipment and materials in our line that it is possible to design and manufacture.

Standards of Quality

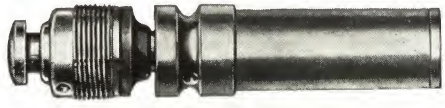
Our merchandise is of a higher standard than is produced for household consumption.

We cater to institutions, industrial plants and public building requirements; therefore, our standard of quality must be higher, because the service demands are greater.

All Palmer equipment is guaranteed against defective material or poor workmanship.

PALMER'S LATHER DISPENSING EQUIPMENT

Palmer's Lather Dispensing Equipment is designed to give the utmost, as mentioned in the description. Gravity tank valves are standard ⅜ in. i.p.s.; all essential parts are made from stainless steel or german silver to prevent corrosion; and the valve requires only one gasket, made from DePreen, which is not affected by oils or alkalies in soap. Dispenses at each operation a predetermined quantity of rich, creamy lather from liquid soap without the troublesome use of grooves, screens or air ball check valves.



Palmer Replaceable Valve Unit

Specifications for Lather Soap Valves

Palmer Lather Valves. Valve, a complete unit, does not require using body of the gravity valve or the individual dispenser as a part of the valve itself.

Mechanically sudses without air check ball valve, springs, wire screens or interrupted, elongated channels. Valve parts made from non-corrosive stainless steel or nickel silver.

Valve unit must be replaceable—complete in itself without taking equipment from position, and all valve unit parts must be threaded together to permit of the replacement of parts without the use of special tools.

Specifications for Liquid Soap Valves

Palmer Liquid Soap Valves. Valve, a complete unit in itself, does not require using the body of the gravity valve or the body of the individual dispenser as a part of the valve. Provides a predetermined, economical quantity of soap with each operation and a non-continuous flow of soap at any position. All operating parts to be constructed of non-corrosive stainless steel or nickel silver. Valve unit to be replaceable as one complete unit without taking equipment from position. All parts of valve unit threaded together, permitting the replacement of parts without the use of special tools.

INDIVIDUAL LATHER SOAP DISPENSERS OR LIQUID SOAP DISPENSERS

The specifications above should be used for a valve construction, and the following body or container construction will apply to either the lather dispenser or the liquid dispenser.

Individual Dispenser—The Pre-Eminent as manufactured by PALMER PRODUCTS, INC. The valve unit to be fitted within a 22-ounce container made from a solid gray iron casting, porcelain vitreous enamel finish (same construction as a bathtub). Color [black], [white], [orchid], [apple green]. Attached to the wall by means of a heavy, steel hanger—the hanger provided with two perpendicular screwholes for easy alignment. Dispenser to hang on hook of hanger and attached to the hanger by a concealed screw placed within the dispenser through the top or filling opening. The filling opening shall be provided with a key-locked top that is fool-proof and tamper-proof, and without the use of springs, bolts or hinges, and no parts detachable.

All exposed parts to be chrome plated.



Tanks or Gravity Systems

Specify tanks and valves only. All fittings are standard; installations that are concealed are usually black iron pipe; exposed installations, brass, either nickel or chrome plated pipe.

China Glass Tank

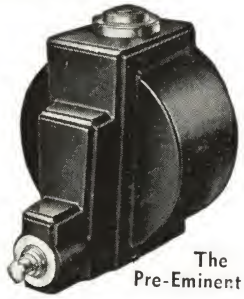
The finest and most permanent receptacle obtainable—brass fittings, chrome or nickel plated—¼ in. thick white china glass. Equipped with a lifetime gauge to indicate when soap is needed. Remains permanently attractive. Capacity 1½ gal.—will serve up to six valves efficiently—two receptacles on a system with a greater number of valves; ⅜-in. fittings.

Metal Tank

Designed flat so as not to protrude unnecessarily from the wall. Constructed of terne plate—finished in white lacquer. Capacity 1, 3, and 5 gals. Equipped with a lifetime gauge. Larger size, special shapes of tanks, monel or stainless steel, made to order.

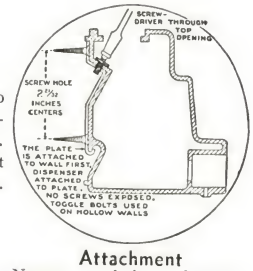
Other Dispensers

Although we seriously recommend the Pre-Eminent construction individual soap dispenser, please keep in mind that we manufacture soap dispensing equipment that fits into all types of installations and into every price range, from the cheapest type of soap dispensers to the Pre-Eminent, which is absolutely the best. If other types of construction—particularly the old-fashioned type of dispenser—is desired, or if the tilting type dispenser is desired, send for literature, as we manufacture, as stated, all types of equipment in all price ranges.



The Pre-Eminent

Attached to wall with concealed method. Fits flat—cannot be rocked loose.



Attachment
Note concealed attachment

Powder Dispensers

We manufacture a complete line of soap powder dispensers. Our many years' experience in manufacturing and serving this type of equipment forces us to recommend either the use of liquid soap dispensers or lather dispensers in preference to powder dispensers. Dispensers or equipment are intended for the serving of individual, sanitary, quick-saponifying soap. The two former saponify quickly and are not wasted and, unlike powder, do not float on the water or cling to the user. Soap powder floating on water naturally continues to float on water when not saponified in the traps and pipe leading from wash basins, and has a tendency, over a period of time, to cause plumbing obstructions. However, if soap powder equipment is desired, we wish the privilege of submitting our literature on same which illustrates and describes the best in this line of equipment.

THE PROCTER & GAMBLE CO.

Ivory Soap Dispensers

CINCINNATI, OHIO

IVORY SOAP DISPENSERS

For Public Washroom Installation Only

The Ivory Soap Dispenser is designed to meet the requirements of public washroom installations in office buildings, hotels, industrial plants, hospitals, clubs, theatres and restaurants. (Not sold for use in residences.)

Construction—

Gracefully designed. Octagonal bowl of heavy frosted glass holds flaked or granulated Ivory Soap. All metal parts chromium plated. Will not rust, tarnish or corrode. Virtually airtight and moistureproof. (Dimensions indicated on sketch below.)

Operation—

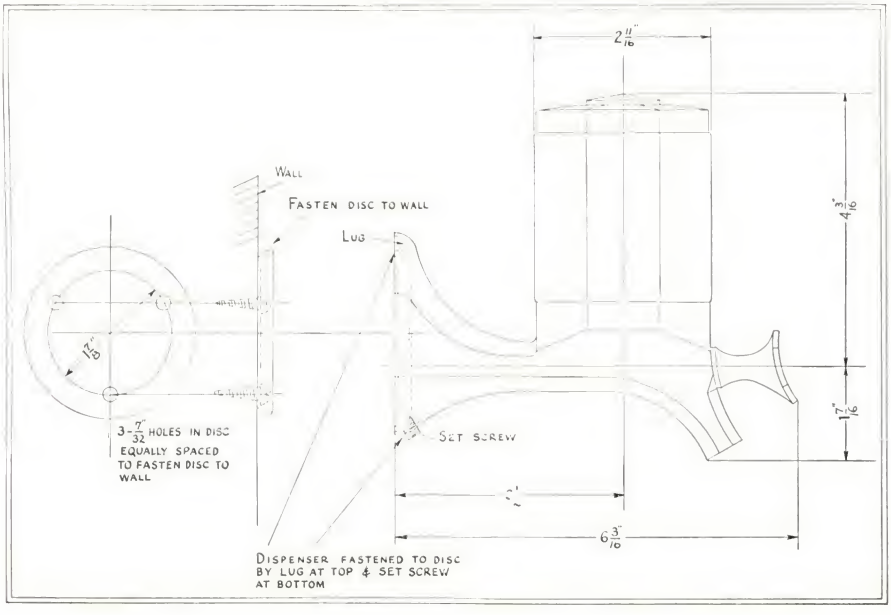
Dispenser self-contained. Foolproof. Delivers measured amount of Ivory Soap with each push of the plunger. Dispenser cannot be emptied by holding in plunger. Unlike ordinary dispensers, the Ivory Dispenser has no complicated piping system to clog, leak or get out of order.

Installation—

Dispenser can be installed on vertical surfaces in a few minutes. A specially designed dispenser is available for installation on lavatories or other horizontal surfaces. (Details on request.) Equally satisfactory for new building installations or for modernizing washrooms in older buildings.



Delivers Genuine Ivory Soap in Fine, Free-flowing Flakes or Granules
Not a liquid soap dispenser



Economy—

Low in first cost and in upkeep. Ivory Dispensers assure a substantial reduction in soap costs. Dispensers are leakproof—no soap is wasted.

Soap—

Pure, gentle, rich lathering Ivory Soap in uniformly fine, free-flowing *flakes* or *granules* is provided for Dispenser. Safe for both face and hands.

Packed in pound boxes with handy metal spout for easy filling of dispenser.

Price—

Special contract prices for large installations furnished upon request.

U. S. SANITARY SPECIALTIES CORPORATION

Originators "Soaperior" Liquid Soap Systems

435 South Western Avenue, CHICAGO, ILL.

BRANCH OFFICES

NEW YORK, N. Y., 59-63 East 12th Street

BIRMINGHAM, ALA., 2305 Morris Avenue

PRODUCTS

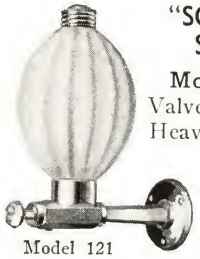
"Soaperior" Dispensers and Valves for Liquid, Lather, and Powdered Soaps; Individual Fixtures or Gravity Systems. Paper Towel and Toilet Paper Fixtures, Waste Receptacles, Sanitary Napkin Vendors.

GUARANTEE

"Soaperior" Valves and Dispensers are guaranteed by the U. S. Sanitary Specialties Corporation for five years against defects in material and workmanship.

Soaperior

"SOAPERIOR" LIQUID SOAP DISPENSERS



Model 121

Model 121—Push-in type. Valve mechanism nickel silver. Heavy white metal bracket chrome plated. 18-oz. capacity fluted globe. Globes opalescent, clear, canary yellow, jade green or black glass; also all-metal chrome plated. Projection 6⅞ in.; height, 7¼ in.



Model 123

Model 122—Identical to Model 121, except has right-angle bracket to attach through cockhole in basin slab. Height 11 in. above slab; 4½-in. shank; projection 6¼ in.

Model 123—Pullman type individual dispenser for installation in basin cockhole. Exposed parts nickel silver. Immovable spout. Globe concealed beneath basin slab. Fills from top without removing globe. Furnished with either straight-sided or pear-shaped globe. With standard shank for lavatories up to 1¼ in. thick and extra-long shanks for lavatories up to 4½ in. thick.



Model 128

Model 128—Tilting type 12-oz. capacity. Glass globes clear or frosted; metal globe chrome plated. Concealed fasteners optional. Height 5 in.; projection 6¼ in.

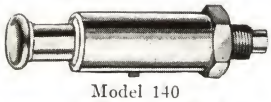
"Soaperior" Powdered Soap Dispenser

Model 127—Tilting type. Glass globes clear or frosted; metal globe chrome plated. Concealed fasteners optional. Clog-proof mechanism. Capacity 8 oz. Height 5⅜ in.; projection 6¼ in.



Model 127

"SOAPERIOR" LATHER VALVES AND DISPENSERS



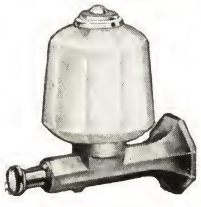
Model 140

Gravity Lather Valve Model 140—Standard ⅜-in. male connection. Exclusive check union provides automatic shutoff on removal of valve (see Model No. 103). Exclusive packing washer and nut prevent stem leakage. No leather cup washers—all metal to metal. Cannot stick. Stainless steel, nickel silver, and bronze construction. Non-corrosive. Produces firm, creamy lather. Projection 3⅞ in., over-all 4¾ in.



Model 142

Model 142—De Luxe streamlined design. Nickel silver and stainless steel throughout. Same features as Model 140.



Model 141

Individual Lather Dispenser Model 141—Same valve mechanism as Model 140. Clear or opal glass globe. Theft-proof cap, concealed fastener. Streamlined octagonal design. Height 6¼ in.; projection 6¼ in.

Models 143 and 144—Like Models 123 and 124, but for lather instead of liquid.

HOSPITAL LIQUID SOAP DISPENSER



Model 121E

Model 121E—Elbow-operated. Continuous flow valve. Extension of flange from wall, 10¾ in. Other specifications same as Model 121.



HOSPITAL LIQUID SOAP DISPENSER

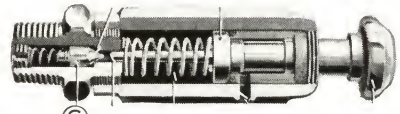
Model 104DA—Portable surgical soap dispenser. White porcelized hexagonal pedestal with two swivel arms. Foot operated. Fluted white opalescent glass globe holds ½ gal. soap. Continuous flow mechanism.

Height 51 in.; diameter of base 14 in.; spout clearance 43 in.; center of dispenser to end of spout 17 in.

Also Model 104-SA Portable, like Model 104-DA, but with one swivel arm; Model 104-FP gravity type, with tank and foot treadle; Model 121-FP, consisting of No. 121 with foot treadle attachment. All models continuous flow.

"SOAPERIOR" GRAVITY LIQUID SOAP VALVES

Model 103 Liquid Soap Valve—Handsome hexagon casing, bronze or nickel silver, chrome plated, porcelain index button. Incorporates exclusive patented check union (G) which holds unusual pressure and acts as shutoff, permitting removal of valve while other valves on same line remain in use. Cannot leak, nor discharge soap in steady stream. Projection 3⅜ in., overall 3⅞ in.



Model 103—103HP

High Pressure Installation—Where high pressure is developed by location of tank more than 24 ft. above lavatory, specify Model 103HP. "Soaperior" High Pressure Valve. (See "Pent House Installation.")



Model 124

Model 124—Pullman Type Basin Cock Gravity Valve—Mounted on basin slab through cockhole. Connects to gravity system. Nickel silver. Immovable spout. For lavatory 2½ in. thick or less. Longer shanks to order.

SOAP TANKS



Model 100-101

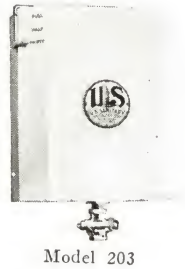
Model 100—Round spun rust-resisting metal, white or gray enameled. Metal strainer and fluid soap gauge. 1, 2, 3 and 5-gal.

Model 101—Monel metal—otherwise identical to Model 100. Buffed, enameled or chromed.

Model 203—Rectangular armco metal tank porcelain enameled inside and out. Exposed metal parts chromed. Float gauge with arrow indicator and strainer. 1, 2½ and 5-gal.

Model 205—White vitreous china rectangular tank; dial fluid gauge. 1, 2, 5 and 10-gal.

Tanks also made to any required specifications.



Model 203

PENT HOUSE TYPE INSTALLATION

"Soaperior" Storage Tank Model 300 (15, 35, 65 or 110-gal. capacity) installed in upper section of structure adjacent to pipe shafts, piping liquid soap to "Soaperior" High Pressure Liquid Soap Valves over lavatories. *Unless our high pressure valve 103HP is specified, recommend pressure regulators every four floors.*



Model 300

WEST DISINFECTING COMPANY

42-16 Barn Street, LONG ISLAND CITY, NEW YORK

BRANCH SALES OFFICES

ALBANY, N. Y.
BALTIMORE, MD.
BIRMINGHAM, ALA.
BOSTON, MASS.
BUFFALO, N. Y.
CHICAGO, ILL.
CINCINNATI, OHIO
CLEVELAND, OHIO
COLUMBUS, OHIO
DALLAS, TEX.
DES MOINES, IOWA
DENVER, COLO.
DETROIT, MICH.
EVANSVILLE, IND.
FORT WORTH, TEX.
HARTFORD, CONN.
HOUSTON, TEX.
INDIANAPOLIS, IND.
JACKSONVILLE, FLA.
JERSEY CITY, N. J.
KANSAS CITY, MO.
LOS ANGELES, CALIF.
LOUISVILLE, KY.
MEMPHIS, TENN.
MILWAUKEE, WIS.
NEWARK, N. J.
NEW ORLEANS, LA.
NEW YORK, N. Y.
OAKLAND, CALIF.
OKLAHOMA CITY, OKLA.
OMAHA, NEB.
PHILADELPHIA, PA.
PITTSBURGH, PA.
PORTLAND, ORE.
PROVIDENCE, R. I.
RICHMOND, VA.
ROCHESTER, N. Y.
SACRAMENTO, CALIF.
ST. LOUIS, MO.
ST. PAUL, MINN.
SALT LAKE CITY, UTAH
SAN ANTONIO, TEX.
SAN FRANCISCO, CALIF.
SEATTLE, WASH.
SPOKANE, WASH.
SYRACUSE, N. Y.
TACOMA, WASH.
TOLEDO, OHIO
TULSA, OKLA.
WASHINGTON, D. C.

AND PRINCIPAL CITIES IN CANADA

MANUFACTURERS AND DISTRIBUTORS OF

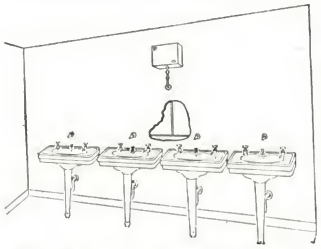
LIQUID SOAP DISPENSING SYSTEMS; PAPER TOWELS AND CABINETS; TOILET TISSUE; DISINFECTANTS AND DEODORANTS; KOTEX VENDING MACHINES; INSECTICIDES; CLEANSERS; FLOOR FINISHES

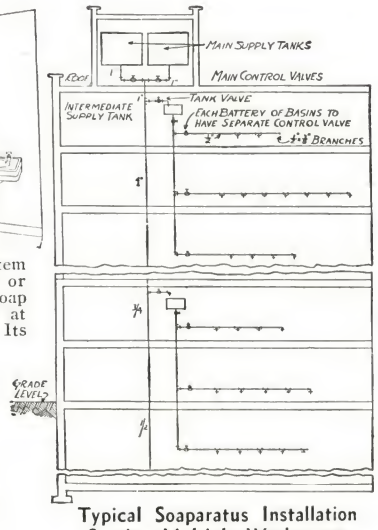
Scope of West Service

WEST DISINFECTING COMPANY has a national reputation for the quality of its products. The experience of this company in installing soap dispensing systems in buildings of every type offers architects, builders and owners a service that will prove of exceptional value.

Being among the country's leading makers of liquid soap, service organizations are maintained in the larger cities, thus insuring every co-operation after dispensing systems have been installed.

The Soaparatus System





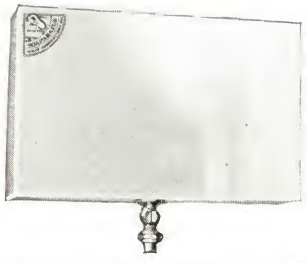
Typical Soaparatus Installation Serving Multiple Washrooms

The West Soaparatus System consists of an elevated tank or reservoir from which liquid soap is piped to dispensing valves at each of several wash basins. Its advantages are:

Tamper-proof installation
Maximum economy in soap used
Convenience in refilling supply
Mechanical reliability
Handsome appearance

Soaparatus Tanks—Standard in approximately 1, 2, 3 and 5-gal. capacities, and in vitreous china, vitreous enamel on welded sheet steel, or in white enamel on rustproof sheet metal. Installation requires at least 1 ft. elevation above dispensing valves, but usual practice is to place the tank at a greater height.

Tank can be manifolded to any number of dispensing valves with a recommended provision of a shut-off cock in each individual line.



On new construction work or where conditions permit, the piping from the tank to the taps may be concealed, creating an ideally neat appearing installation. The tank may be in a visible or out-of-sight location.

Where exposed piping is to be installed, the entire system (including nickel or chrome plated piping, unions, shut-offs and all parts) can be made at our factory and shipped complete.

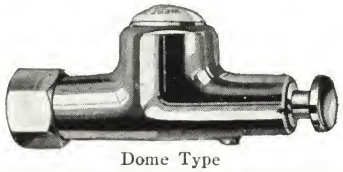
Soaparatus Valves — Designed to harmonize with the finest plumbing fixtures, in nickel or chromium plating as desired. The Soaparatus Valve is plunger operated and ejects only a measured amount of liquid soap at each single motion. This minimizes wastage. The measured amount of soap flows from the valve without splashing or squirting.

Soaparatus Valves are of high mechanical efficiency, are non-corrosive when used with the proper soaps, and embody the design refinements evolved from West's long years of specialized experience. Internal parts are of corrosion-proof stainless steel, machined to close tolerances and are expected to function without loss of efficiency through long, hard service.

Vertical and horizontal types are available in several standard designs.

231J

Typical Soaparatus Valves

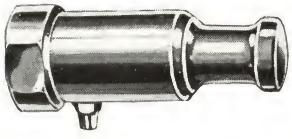




Dome Type

In our special booklet "Liquid Soap Systems" you will find more complete information. The local West sales office will be glad to advise you on the dimensions of Soaparatus Tanks and Equipment.

The West Latherator (Valve) for Soaparatus or Individual Dispensing Systems



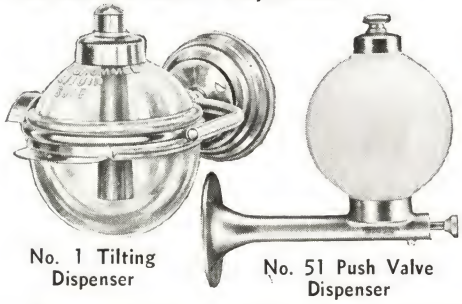
The West Latherator introduces a new principle in liquid soap dispensing—the pre-lathering of the soap within the dispensing valve. Careful tests made by large users show that a gallon of soap dispensed through the Latherator will wash 40% to 50% more hands than when dispensed in liquid form. The economy is evident:

None of the soap runs off the hands
Pre-lathered soap cleanses more readily
Pre-lathered soap is more pleasant to use

The Latherator Valve automatically agitates the soap into a rich creamy lather. Like other West Soap Dispensing Valves it supplies only a measured amount for each pressure of the plunger. The Latherator Valve is mechanically efficient, and made of the same non-corrosive metals, and to the same precision standards as other West valves.

Latherator Valves interchange with other West valves on Soaparatus or individual fixture dispensing systems. Chrome or nickel plated finish, as desired.

Individual Fixture Dispensers



No. 1 Tilting Dispenser

No. 51 Push Valve Dispenser



Pullman Type Dispenser

West manufactures a complete line of individual liquid soap dispensers for small washrooms.

Engineering Service

We maintain an Engineering Department Service for consultation with architects and engineers or owners of buildings.

PALMER PRODUCTS, INC.

Manufacturers of Sanitary Equipment

WAUKESHA, WIS.
(Adjacent to Milwaukee)

DISTRIBUTORS IN PRINCIPAL CITIES

For Page on Soap Systems, see File Index

Products

TOILET PAPER and PAPER TOWEL FIXTURES. Also manufacturers of Floor Treatments and Maintenance Materials; Mops and Brushes; Soaps of all descriptions and Sanitary Chemicals.

Standards of Quality

Palmer Multi-Service Products are known throughout the world and are to be found in public institutions and industrial plants everywhere. Our merchandise is of a higher standard than is produced for household consumption. We cater to institutions, industrial plants and public building service requirements, therefore, our standard of quality must be higher because the service demands are greater.

All Palmer Paper Fixtures are guaranteed against defective material or poor workmanship.

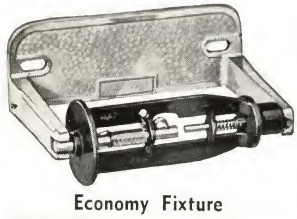
Established for a Quarter Century

Long experience in manufacturing our special lines enables us to produce the best equipment and materials that it is possible to design and manufacture. Letters of endorsement from nationally known consistent users of our equipment and products will be furnished upon request.

More Than a Million Palmer Paper Toilet Fixtures Now in Daily Use

More than a million of the Economy fixtures alone are cutting down the annual cost of toilet paper and paper towels in schools, Y. M. C. A.'s, office buildings, hotels, hospitals, department stores, City and State institutions, and especially industrial organizations such as the Studebaker plant, General Motors units, etc., where a higher order of maintenance, efficiency and economy is adhered to.

Economy Toilet Fixture



Economy Fixture
Projection from wall, 4½ ins.

Our most popular fixture. It is substantially built of heavy pressed metal, beautifully nickel or chrome plated—assembled as one complete unit (no loose spindle) and equipped with spring tension—operates much like a roller window shade. Roll of paper revolves when paper is being removed—comes to a stop, continuous pull causes paper to part at perforation, roll returns to original position for further service—delivers one or two sheets at a time.

Self-locking and foolproof—roll cannot be removed, or fixture opened, until roll is used up. Neat and attractive in appearance—it harmonizes with other lavatory equipment.

Economy Fixtures for Towels

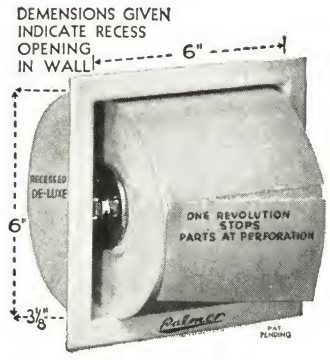
Design and general construction and operation is identical with toilet paper fixture, except that it is made from gray iron casting either nickel or chrome plated. It serves towels as economically as the toilet paper fixture serves paper.

No-Waste Toilet and Towel Fixture

Serves economically as do other fixtures. Constructed much like the De Luxe except gray iron and spindle is not attached.

Recessed De Luxe Toilet Fixture

Recessed with same economical features as all other Palmer fixtures. Spindle of same construction as De Luxe. All exposed metal parts of brass, chrome plated. Locks automatically when paper is placed—cannot open until roll is consumed. Box of cast iron with white porcelain vitreous enamel finish. ½-in. flange covers seams in wall.



Recessed De Luxe Toilet Fixture

De Luxe Toilet Fixture

Supplies the same economical, regulated, waste-eliminating service as Economy Fixture. Operates by means of a counterweight in place of a tension spring—spindle being off balance and returning roll of paper to original position after delivering one or two sheets.

Extremely substantial, yet a graceful design, plain and in good taste, designed for better hotels, apartment houses, theaters, clubs and such places where a higher grade fixture is preferred. Made of brass—durably plated in nickel or crodon (chromium) finish.

A complete assembly (no loose spindle) is self-locking, theftproof and foolproof; and functions no matter which way paper roll is attached.



No-Waste Fixture
Projection from wall, 4½ ins.

A Few Prominent Users of Palmer Toilet Paper and Towel Fixtures

General Motors Units
Studebaker Plant
Pennsylvania Lines
Union Pacific R. R. Co.
Frigidaire Company
Delco Light Plant
International Harvester Co.

A few among thousands of institutions, factories, hotels and schools in United States, Canada and foreign countries where paper is being served economically with Palmer Fixtures.



De Luxe Fixture
Projection from wall, 4½ ins.

PULLCLEAN TOWEL CABINET CO., INC.

Manufacturers of Sanitary Towel Cabinets

TELEPHONE
Circle 7-2951-2952

430-436 West 54th Street
NEW YORK, N. Y.

PULLCLEAN SANITARY TOWEL CABINET

A Continuous Cloth Towel System

The Pullclean Sanitary Towel Cabinet dispenses towel service with economy and efficiency, substituting for the unsanitary roller towel a clean towel for each user. It has the approval of physicians, health officials and sanitary experts and meets the requirements of offices, factories, stores, hotels, hospitals, restaurants, schools, theaters, churches, railroad coaches, steamships and, in fact, wherever numbers of persons require sanitary yet economical towel service.

Description

Cabinet—A metal case of attractive design, highly finished in white enamel with lettering and ornamentation in red and gold.

Working Mechanism—A simple arrangement of rollers operating in unison as the towel is pulled through. Strongly built of the best materials for long service. An upper compartment contains the roll of clean towel and a lower compartment, *entirely separate*, receives the soiled towel as used.

Towel—A 25-yd. length of fabric specially designed for the Pullclean Cabinet and wound in a roll for dispensing. It provides from 75 to 135 wipes according to the type of cabinet and length of loop which hangs out of the cabinet for use. The length of this loop is determined at the time the towel is loaded into the cabinet. No part of the clean ever comes in contact with the soiled, and each user pulls out an absolutely unhandled portion. Once carried into the lower or soiled towel compartment *it cannot be withdrawn for reuse.*

Advantages

(1) Always clean and sanitary. Always in place and ready for use. It protects the user by taking in the used towel as fast as the clean is pulled out. (2) Cannot be used as a dustrag or shoe-polisher. (3) Receives normal usage. Does not get badly soiled. Wears longer—fully 50% longer than most towels. (4) Towel loss eliminated—the roll is locked in the case. (5) No counting and handling of dozens of small towels. (6) Economical. One towel gives 100 wipes, with stop 135. Cheaper towel service even than paper, yet there are none of the disadvantages incident to the use of paper—no litter, no stoppage of waste pipes, no fire hazard, no complaints of employes because of half-drying and chapped skin. Cheap to launder—usual charge is 15 cents. (7) Satisfies every user as no substitute for cloth can. More satisfactory than the individual towel and more economical. (8) Replacing towel simple—only a moment's operation.

Made in Two Types

Pullclean Cabinets are made in two types:

Type No. 1—A free-working model for office and general use. It permits a full length pull of the towel loop and provides approximately 75 wipes.

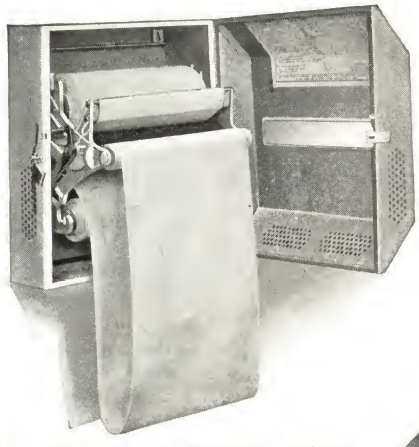
Type No. 2—This type is equipped with push-button stop-release device and is designed to meet the needs of concerns wishing to place limitation on towel usage.

At each release of the mechanism, 6½ inches of clean towel may be pulled out. It is a great saver of the towel and discourages waste. Affords approximately 135 wipes.

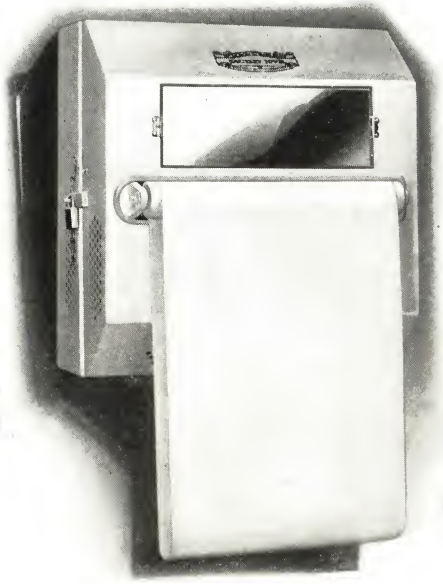
Prices and Towel Service Rates

All Pullclean Cabinets for shipment are carefully packed in special cartons. Small shipments are made by express unless otherwise requested. Towel weighs about 3½ lbs. and can be sent via parcel post. Prices quoted f.o.b. New York.

TRADE MARK PULLCLEAN REG. U. S. PAT. OFF.



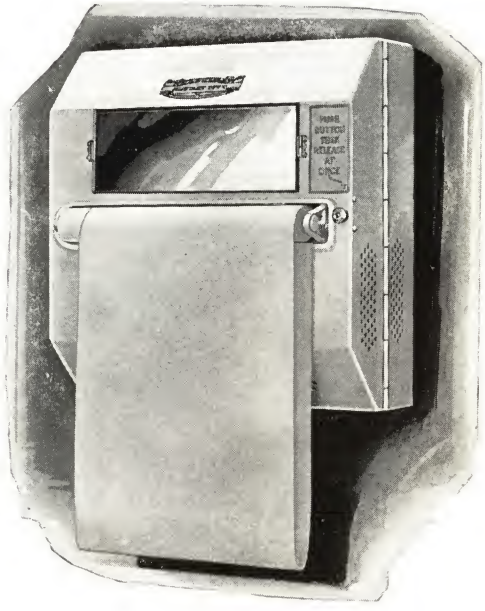
Inside View of Pullclean Cabinet
Showing the towel in place



Type No. 1
Provides approximately 75 wipes

A Few Installations

D. Appleton-Century Co., Inc.
Arbuckle Brothers
L. Bamberger & Co.
Bank of the Manhattan Co.
Best & Co.
Breyer's Ice Cream Co., Inc.
Chase National Bank
Cities Service Co.
Crowell Publishing Co.
Equitable Life Assurance Society
Fifth Avenue Bank
Forbes & Wallace
General Outdoor Advertising Co.
Harris, Upham & Co.
Hudson River Day Line
Cyrus J. Lawrence & Sons
Benj. Moore & Co.
New York Times
New York World-Telegram
Presbyterian Building
Presbyterian Hospital
Rosoff's Restaurant
Saks & Company
Stern Bros.
Temple Emanu-El
Worthington Pump & Machinery Co.



Type No. 2
Provides 135 to 150 wipes

SCOTT PAPER COMPANY

Toilet Tissue Fixtures, Towel Cabinets, Tissue Towels and Toilet Tissue

CHESTER, PA.

SALES OFFICES

ATLANTA, GA., 1011 Rhodes-Haverty Building
BALTIMORE, MD., 308 Hearst Tower Building
BOSTON, MASS., 89 State Street
BUFFALO, N. Y., 114 Erie Co. Bank Building
CHICAGO, ILL., 1609 Tribune Tower
CLEVELAND, OHIO, 855 Leader Building
DALLAS, TEX., 808 Santa Fe Building
DETROIT, MICH., 2814 Union Guardian Building
LOS ANGELES, CALIF., 923 E. Third Street
NEW YORK, N. Y., 30 Church Street
PHILADELPHIA, PA., 912 Otis Building
PITTSBURGH, PA., 709 Grant Building
ST. LOUIS, MO., 1104 Chemical Building
SAN FRANCISCO, CALIF., 630 Tennessee Street
SEATTLE, WASH., 505 Terminal Sales Building

NATIONAL DISTRIBUTION

SCOTT PAPER COMPANY is the world's largest manufacturer of toilet tissues and paper towels. Offices and distributors in leading American cities afford a coast-to-coast service which can supply the needs of architects and builders for towel and tissue fixtures quickly and efficiently. Address all inquiries and orders to the nearest Scott sales office listed above, or direct to SCOTT PAPER COMPANY, Chester, Pa.

ARCHITECTS FIND SCOTT TOWEL AND TOILET FIXTURES FIT EVERY NEED

As the world's largest supplier of quality tissue towel and toilet-tissue service, SCOTT PAPER COMPANY has developed attractive, efficient fixtures adaptable to any type of building installation.

Tried, tested, and proved by finest scientific methods, Scott Fixtures will not "bounce back." When you suggest Scott Tissues, Towels, or Fixtures you will be sure of providing your client's building with the best available washroom service for office, plant and home.

Two out of every five homes in America are now equipped with either Scott Tissues or ScotTowels. In specifying Scott Fixtures for the world-famous Scott Products you know that your client will appreciate finding his building equipped with these quality products which mean so much in comfort, satisfaction and good will.

SCOTT FIXTURES, NEAT, ADAPTABLE, DEPENDABLE, ECONOMICAL

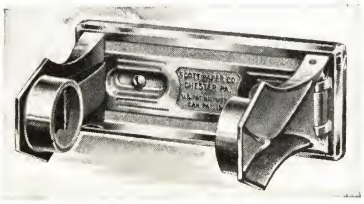


No. 980 Bakelite Cabinet—Newest, most up-to-the-minute towel fixture for industrial, institutional or commercial washroom. Moulded in Bakelite, this modern, streamlined cabinet will add distinction, color, utility to all washrooms. Less than one-third the usual weight, holds 250 towels, equipped with simplified locking device for easy servicing, towel content gauge on front. Scientifically designed to insure adequate strength. Special Bakelite moulding materials and reinforced interior ribbing provides shock-resistance and close dimensional tolerances. Over-all dimensions: 11⅝ in. wide, 16⅛ in. high, 3⅞ in. deep.

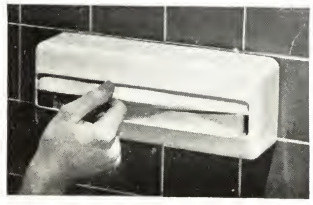


No. 05 Cabinet—ScotTissue and Waldorf Towels are kept fresh and safe from dirt in this dustproof, steel wall cabinet. It holds a liberal supply of 250 individual towels always clean and ready for use. The construction is strong and simple, with no mechanism to get out of order. For servicing, the cabinet unlocks at the top and opens out. Made of pressed steel and beautifully finished in white, black, dark green enamel or chromium, it can be applied to wall with our special adhesive cement which will not mar wall—eliminates drilling wall for bolts or screws. (See following page.) Size, 11⅞ in. wide, 14 in. high, 3⅞ in. deep.

No. 066 Fixture—The patented ScotTissue Toilet Tissue Holder with waste-preventing lock and tension control. Hinged on one side for easy renewals. Finished in nickel or chrome plate. The most efficient fixture of this type available. Applied to wall with our special adhesive cement or in conventional manner with bolts or screws. Size: 6¼ in. wide, 2⅜ in. high, 3¼ in. deep.



No. 057 Towel Holder—A compact, streamlined dispenser as used on Pullman sleepers. Holds 50 towels in minimum space. Designed for professional and executive offices, hotel guest rooms—wherever a large quantity of towels is not required. Finished in white, green, or bronze enamel that will not chip or scar. Aluminum or chrome cabinets also available. Size: 11⅝ in. wide, 4⅜ in. high, 3 in. deep.



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SCOTT SPECIAL ADHESIVE

One of the most practical and useful contributions of Scott Engineers to washroom planning is the Scott Special Adhesive. This ingenious material permits the installation of Scott Fixtures on walls, without marring or disfiguring them. Quick drying, easily applied, permanent, this liquid adhesive will hold Scott Fixtures rigidly in any position. Architects and builders will find Scott Adhesive of real value when installing Scott Fixtures in either new or remodeled buildings. Important is the fact that this adhesive is an *exclusive* Scott product. There is no other adhesive like it in the world. Scott Adhesive is easily applied at room temperature without heat or other devices. Sets instantly.

A Scott representative will be glad to demonstrate the effectiveness of this useful material.

WORLD FAMOUS SCOTT TISSUES AND TOWELS



Tissue Towels—ScotTissue and Waldorf Towels are used in thousands of leading industrial plants, office buildings, schools, banks, department stores and hotels throughout America. Pliant, cloth-like, absorbent—ScotTissue Towels are pleasant to use. No harsh fibre to scratch. Will not fall apart in the hand. Tests prove that one ScotTissue Towel dries drier than several ordinary towels. That's why they go farther—cost less per year. If your plans call for paper towels (and they will), suggest *economical, sanitary,* ScotTissue Towels.



ScotTissue Service Roll—This fine toilet tissue is the popular, luxury-textured ScotTissue Toilet Tissue specially packed for business and industrial use. Customers, tenants, and employees, a large majority of whom use ScotTissue in their own homes, will appreciate finding this same healthful service in industrial plants and office buildings, schools, hospitals, hotels, clubs—everywhere that comfort and health protection are important considerations. When specifications call for toilet tissue fixtures, recommend Scott and be sure of the best.

SCOTT SOLVES TWO TYPICAL WASHROOM PROBLEMS

Before: Congestion and irritation result here due to a lack of basins, towel fixtures and receptacles. Towel fixtures are too close to basins and too near the floor. This causes confusion and increases waste—often results in ill tempers, dissatisfaction.





After: Same washroom correctly serviced. More basins added to handle normal traffic at rush hours. Fixtures placed at proper stations to provide maximum efficiency and convenience. Such scientific arrangement reduces costs and helps build good will among users.

Before: The toilet tissue fixture at the right is in wrong position. It is difficult to reach and liable to cause waste because of height from the floor.





After: Here fixture is placed correctly. The measurements are the result of long experimentation by Scott Washroom Engineers. Such detail means real economy and is but one of the many considerations that should be given to scientific washroom arrangement.

SCOTT WASHROOM ADVISORY SERVICE

Progressive management now realizes the vital importance of adequate, scientifically arranged washrooms in protecting employee and tenant health and good will.

Recognizing the importance of this subject to management, architects, and builders, SCOTT PAPER COMPANY has set up a Washroom Advisory Service. Without obligation Scott will send a trained Washroom Engineer to consult with any responsible person or firm on the scientific arrangement of washrooms.

This Washroom Engineer has been specially trained in the technique of washroom planning. He will suggest how you can arrange Scott Fixtures to give your clients maximum washroom efficiency. This will mean a real saving for your clients by reducing waste and overhead expense—relieving congestion—and adding extra comfort and convenience.

Above are shown solutions of two common washroom problems. However, we realize designers and builders are faced with a wide variety of *specialized* washroom problems. Where this is the case our Washroom Engineers will gladly assist in working out the best possible arrangement. Write to nearest Scott Sales Office, or SCOTT PAPER COMPANY, Chester, Pa.

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DEPENDABLE SINCE 1897

THE CHICAGO HARDWARE FOUNDRY COMPANY

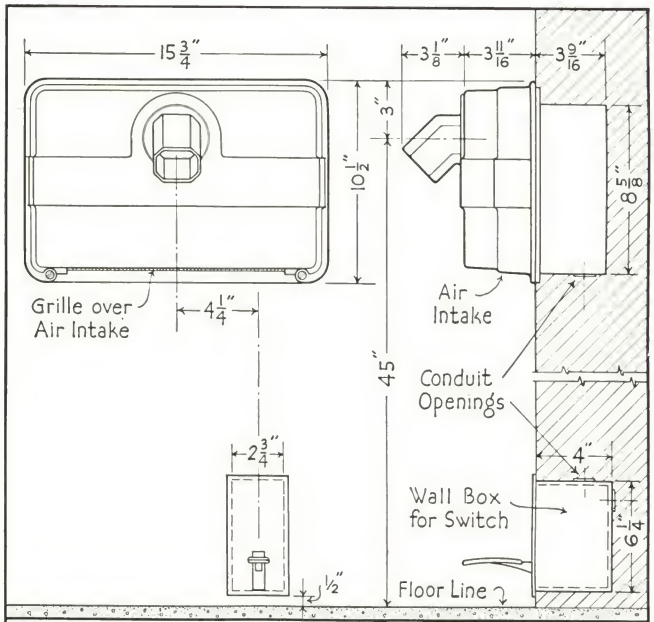
NORTH CHICAGO, ILLINOIS

SALES REPRESENTATIVES IN PRINCIPAL CITIES OF THE UNITED STATES, CANADA AND MEXICO

PRODUCT— Sani-Dri

A high grade electric hand and hair drier. Hand Driers for use in all types of group washrooms. Advantages: (a) Eliminates metal cabinets, waste containers, soiled towel litter. (b) Obviates necessity of marring marble and tile walls for mounting of towel cabinets. (c) Removes floor obstructions, thereby conserving floor space. (d) Insures attractively clean washrooms. (e) Provides an automatic, sanitary and dependable drying service at savings of 85 to 90% over towels.

Hair Driers for quick drying after the swim or shower. Saves time, prevent colds. Widely used in schools, clubs, recreation centers, Y.M. and Y.W.C.A.'s.



DETAILS OF SANI DRI MODEL SR-W

ADAPTABILITY

This new "SR-W" (Semi-Recess Wall) model Sani-Dri is designed for installation in any type of wall construction finishing 4 in. in thickness or over.

CONSTRUCTION

Wall Box: Solid, one piece, cast iron with wide facing flange for easy, accurate mounting *during course of wall construction;* Japan lacquered to prevent rusting.

Face Plate: Heavy grey iron casting, in modernistic design, finished in highest grade dry process porcelain enamel of any single standard color or duo-tone. Special colors to match any tile, glass or marble at slight extra cost.

Trimmings: All trimmings are of heavy brass, chromium plated.

Fan: High grade aluminum fan especially designed and constructed for delivery of large air volume at moderate speed.

Motor: Equipped with especially designed quiet operating Westinghouse or General Electric motor.

Electrical Specifications: Standard—13.5 amps. on 110 volts —Universal Motor, 1.5 amps; heater, 12 amps. (16 amp. heater supplied on request, in hand driers only. Also in 220 volts.)

Switch: A 30 amp. Hart & Hegeman foot pedal control switch, operating in heavy cast-iron box mounted in wall, with pedal elevated slightly above floor line, thus eliminating possible floor obstruction.

GUARANTEE

All parts are unconditionally guaranteed against defective material and workmanship for a period of one year.



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Lyon Metal Products, Inc. 21/6
Maforco 28/41
Manly Jail Works 21/44
Market Forge Co. 28/41
Tyler, W. S., Co. 14/20
Van, John, Range Co. 28/29
Watson Mfg. Co., Inc. 16/60
White House 28/10
See also 21/47

Mortuary—Autopsy

Crane Co. 27/56
Maforco 28/41
Market Forge Co. 28/41

Serving—Diet Kitchen, Hospital, Hotel, Kitchen Work, Cooks'—Metal or Wood Top

See Steam Tables

TANKED

Gas

See Gas—Tanked or Bottled

TOPS

Cabinet

See Cabinet—Tops

Sink—Linoleum Composition, Porcelain, Phenolic Fiber, Stainless Steel, Monel Metal, Wood, etc.

Acme Metal Products Corp. 28/2
Armstrong Cork Products Co. .. 11/63
Art Metal Construction Co. 28/1
Artolin 28/1
Boro Wood Products Co. 28/3
Custombilt 28/17
Dieterich Steel Cabinet Corp. .. 28/5
Ebco Mfg. Co. 28/22
Elgin Stove & Oven Co. 28/6
Elkay Mfg. Co. 28/23
Fairfacts Co., Inc. 27/92
Formica Insulation Co. 11/30
Ing-Rich 28/24
Ingram-Richardson Mfg. Co. of Indiana, Inc. 28/24
Just Mfg. Co. 28/25
Justline DeLuxe 28/25
Justline Kitcheneer 28/25
Kitchen Maid Corp. 28/11
Linosteel 28/18
Modern Steel Equipment Co. 28/12
Monel 28/27
Mutschler Bros. Co. 28/14
Perma Sheen 28/26
Porceliron 28/24
Porta-Bilt 28/14
Prestex 28/11
St. Charles Mfg. Co. 28/17
Shirley Corp. 28/18
Silvi Sheen 28/26
Straightline 28/27
Sturdibilt 28/23
Temperprest 28/11
Tracy Mfg. Co. 28/26
Van, John, Range Co. 28/29
White Cabinet Corp. 28/20
Whitehead Metal Products Co., of New York, Inc. 28/27
Specifications 28/18; 28/24; 28/25; 28/26

TOPS—Cont.

Table, Counter, Bar, etc.—Fiber Board; Monel Metal; Porcelain Enameled; Stainless Steel, etc.

Allegheny Ludlum Steel Corp. .. 11/29
Boro Wood Products Co. 28/3
Elgin Stove & Oven Co. 28/6
Ludlite 11/29
Porceliron 28/24

TOWEL

Dryers

See Dryers—Towel

TRAYS

Wire

Kason Hardware Corp. 28/40

TRUCKS

Garment

Maforco 28/41
Market Forge Co. 28/41
See also 21/3

Mortuary

Maforco 28/41
Market Forge Co. 28/41

TUMBLER

Clothes

See Dryers—Clothes—Tumbler

URNS

Coffee, Tea or Milk

(See also Cooking—Utensils; Kitchen—Equipment)
Aluminum Cooking Utensil Co. . 28/28
Van, John, Range Co. 28/29
Wear-Ever 28/28

VACUUM CLEANERS

Portable

Spencer Turbine Co. 28/50
Sturtevant, B. F., Co. 28/51

Stationary

Spencer Turbine Co. 28/50
Sturtevant, B. F., Co. 28/51
United States Hoffman Machinery Corp. 28/44

Truck Type

Spencer Turbine Co. 28/50

VALVES

Ammonia, Freon-12, CO_2, etc.

See Valves—Refrigerating; Refrigerating Machinery and Equipment

Refrigerating

(See also Refrigerating—Machinery and Equipment; Ice Making Machinery and Plants)
Delco-Frigidaire Conditioning Division, General Motors Corp. . 26/9
Fedders Mfg. Co. 26/24
Frick Co. 26/31
Frigidaire 26/9
General Controls Co. 26/38
Johnson Service Co. 26/39
York Ice Machinery Corp. 28/39
Specifications 26/38

VEGETABLE

Bins

See Cabinet—Accessories

Display Stands

See Stands—Vegetable Display

Peelers

See Kitchen—Vegetable Peelers

WARMERS

Plate—Electric

See Plate—Warmers—Electric

WASHERS

Clothes

Atlas 28/45
Chicago Dryer Co. 28/43
Domestic Hill Laundry Equipment Co., Inc. 28/43
Dublend 28/45
Minute Man 28/45
Spartan 28/45
Star 28/45
Trojan 28/45
Troy Laundry Machinery Div., American Machine and Metals, Inc. 28/45
United States Hoffman Machinery Corp. 28/44
Westinghouse Electric & Mfg. Co. 23/16
Specifications 23/16

WASHERS—Cont.

Dish

See Dish—Washers

Garbage Can

Dean 28/65
Washburn & Granger, Inc. 28/65

Gas

Dean 28/65
Washburn & Granger, Inc. 28/65

WASTE

Burners

See Burners—Garbage

Chutes

See Chutes—Garbage or Waste

Incinerators

See Burners—Garbage

Receptacle

United Metal Box Co., Inc. 16/88
See also 27/102; 27/107

WATER

Cooling Systems

See Refrigerating — Machinery and Equipment; Ice Making—Machinery and Plants

Drinking Coolers

See Refrigerating — Machinery and Equipment; Ice Making—Machinery and Plants; Coolers

WINDOWS

Cold Storage or Refrigerator

York Ice Machinery Corp. 28/35
See also 28/33

WINE

Racks

Honeycomb 28/31
Soellner, Herman, Inc. 28/31

WRINGERS

Clothes

See Laundry—Equipment and Machinery

ART METAL CONSTRUCTION COMPANY

Household Cabinet Division

JAMESTOWN, N. Y.

BRANCH OFFICES

BALTIMORE, MD., 201 Union Trust Building
BOSTON, MASS., 12 High Street
CHICAGO, ILL., 208 W. Adams Street
CINCINNATI, OHIO, 1107 Union Central Building
CLEVELAND, OHIO, 220 Hanna Building
DETROIT, MICH., 333 State Street
HARTFORD, CONN., 75 Pearl Street
NEW YORK, N. Y., 369 Broadway
PHILADELPHIA, PA., 1107 Architect's Building
PITTSBURGH, PA., 1215 Plaza Building
WASHINGTON, D. C., 301 Southern Building
LONDON, ENGLAND, 199-203 Buckingham Palace Road

For Metal Doors and Trim, Steel Partitions, Bank, Office and Hospital Equipment, Museum Cases, see File Index

THE ART METAL KITCHEN

Art Metal has designed utility and beauty in its Work Center Kitchens. In Art Metal Kitchens the work moves progressively forward with no lost motion, no unnecessary steps, no superfluous bending or reaching. There is a smooth, effortless flow of motion from planning to serving.

Art Metal
Jamestown, New York
U.S.A.

TRADE-MARK

Art Metal is a familiar name to thousands of business men. For fifty years it has been associated with office modernization, efficiency, economy and beauty. It is logical that these engineers who systematized office equipment, saving time, labor and expense for the business office should turn their attention to the workshop of the home. They have enlisted the aid of home economists and architects to make the Art Metal Work Center Kitchens the last word in modern convenience.

The secret of the convenient arrangement of Art Metal Kitchens lies in the completeness of each work center and in the relationship of one center to the other. Exhaustive study has determined the proper sequence of the centers to make each independent of the other yet combining to form a kitchen functioning as an integral unit.

(1) Planning Center—An invitation to sit down and plan meals, to order groceries, keep accounts, systematize your time.

(2) Food Storage Center—Includes the refrigerator and storage space for packaged and canned goods.

(3) Food Preparation Center—This is the combining and mixing center and includes space for all the utensils and appliances used in preparing food.

(4) Cooking Center—The range and cabinets for storing condiments and utensils used on the stove.

(5) Serving Center—Dishes are assembled and the "final touch" given here.

(6) Cleaning Center—The sink, dishwasher, garbage disposal means, towel rack, cleaning materials. Also vegetable pans and other utensils first used at the sink.

Any kitchen can be planned or rearranged in this manner. Through this systemization the user gains freedom from fatigue, new hours of leisure, new enjoyment while working. The Art Metal Household Institute will be glad to co-operate with architects and will prepare floor plans and elevations on request. The Institute makes no charge for its services and you may confidently rely on its recommendations.

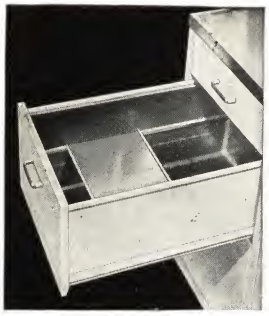
Each Art Metal Kitchen reflects the personalities and preferences of the owner.



Art Metal Work Center Kitchen

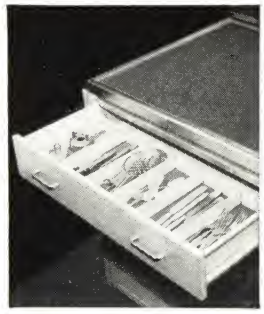
There are plenty of work surfaces all on one continuous level, strategically placed for each work center and at the proper restful height. Food is stored at the point of its first use. Pots, pans and mixing bowls literally coast into sight in easy gliding, non-warping noiseless steel drawers. The full storage space in base cabinets is made available by use of drawers.

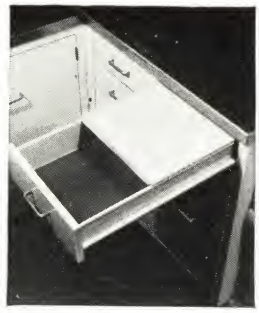
Monel, stainless steel or Artolin composition work tops are supplied to fit either a single base cabinet or a multiple arrangement of base cabinets from 15 to 115 in. in fractional inch increments. Specify when end splashers, right or left or both sides are required. End splashers are used adjacent to sidewalls but are not used when the cabinets are free standing.


Bread Bin


Bulk Storage Bin


Lid Rack


Cutlery Tray


Slicing Board

Roller Glider Drawer Suspension

All the drawers in base cabinets are now equipped with the new Roller-Glider, ball-bearing drawer suspension as standard equipment without extra charge. Smooth, effortless, easy operating, they open at a touch of the fingers.

Optional Drawer Combinations

The standard drawer arrangement is Drawer A, top; Drawer B, center; Drawer C, bottom. This arrangement may be varied in combinations B, A, C, and A, A, A, C. No other combinations are possible. It is not necessary to use drawer letters in ordering standard units. Use the drawer letters A, B, and C in the desired sequence in ordering special combinations.

Linen Cabinets

The linen cabinets are equipped with three sliding, removable trays and two full depth adjustable shelves. The double door cabinet is as illustrated, 24 in. wide. The cabinet may also be had in 15 and 18-in. widths, having a single door.

Implement Cabinets

The cleaning implement cabinet has the same exterior appearance as the linen cabinet but is especially equipped with broom hooks and half-width shelves. Such an arrangement allows space for vacuum cleaner and other large implements.

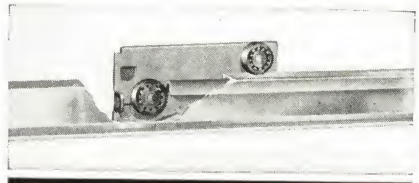
Sink Cabinets and Dish Washer Enclosures

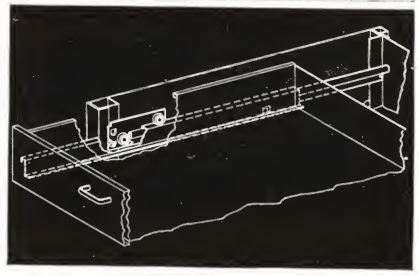
Sink cabinets provide space for all necessary cleaning materials and implements, refuse container, storage bins, etc. Art Metal Dishwasher enclosures fit the electric unit perfectly. All parts are protected and enclosed by the steel cabinet. Door and drawer fronts and the sink itself are thoroughly insulated to absorb noise.

Sink bowl may be either Monel, stainless steel or porcelain. Sink top may be either Monel, stainless steel, Artolin or porcelain.

Accessories

Enclosed bread, cake bins, and bulk storage bins, removable cutlery trays (two types), slicing boards, towel rods and racks for various uses attached to the drawers or fitted into the drawers.





Top:
Roller-Glider Suspension and Drawer Member

Bottom:
Relation of Drawer and Case Members to Roller-Glider Suspension

Wall Cabinets

Shelves are adjustable at 1-in. intervals on supports that may be changed without tools. Cabinets are fully finished on all sides and any cabinet may be used at any point in an installation.

Base Cabinets

All base cabinets are 30½ in. high, 24¾ in. deep. They are to be mounted on a base set back 3½ in. to allow a 4-in. high toe space at the front. Over-all height, including base and counter top, 36 in.

All drawers in all cabinets have an inside clear depth of 21½ in. Other clear dimensions are as follows:

Base cabinet Drawer A, clear height, 4½ in.; Drawer B, clear height, 9¼ in.; Drawer C, clear height, 13$\frac{7}{16}$ in.

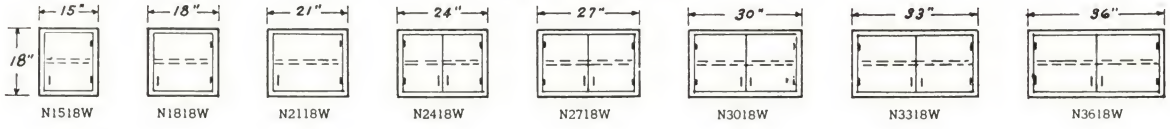

Single Door Wall Cabinet


Narrow Base Cabinet


Linen Cabinet


Implement Cabinet

WALL CABINETS

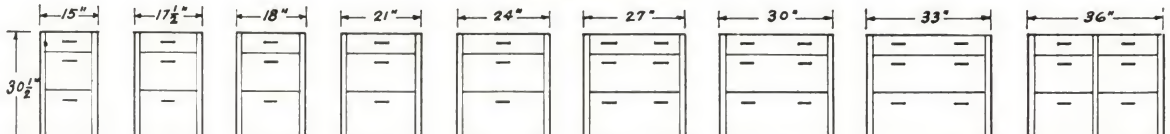


18"	N1518W	N1818W	N2118W	N2418W	N2718W	N3018W	N3318W	N3618W
30"	N1530W	N1830W	N2130W	N2430W	N2730W	N3030W	N3330W	N3630W
36"	N1536W	N1836W	N2136W	N2436W	N2736W	N3036W	N3336W	N3636W

Glass doors are obtainable for all wall cabinets.
Add suffix G to catalog number for glass doors.

Wall Cabinets 13" deep

BASE CABINETS



30½"	N15B	N17½B	N18B	N21B	N24B	N27B	N30B	N33B	N36B
30½"	N15BC	N17½BC	N18BC	N21BC	N24BC	N27BC	N30BC	N33BC	N36BC

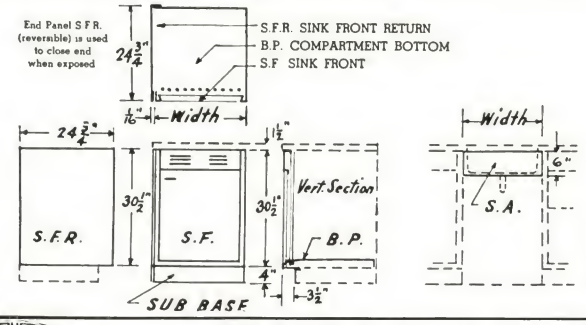
Base Cabinets 24¼" deep

SINK FRONTS



30½"	N18SF	N21SF	N24SF	N27SF	N30SF	N33SF	N36SF	N42SF

Sink Fronts are not cabinets but FRONTS ONLY furnished to conceal plumbing.
Sink Fronts are obtainable with Grilled doors.



SINK APRONS
N-18-SA
N-21-SA
N-24-SA
N-27-SA
N-30-SA
N-33-SA
N-36-SA
N-42-SA

Sink Aprons are substituted for sink fronts when local plumbing code prohibits closing plumbing space

NOTE: All single door cupboards and sink fronts are shown with right hand swing of door which is regularly furnished. Please specify when left hand swing is desired.
All shelves are adjustable 1" o. c. in height.

BASE CABINETS

NEW, Easy Operating Roller-Glider, Ball Bearing Drawer Suspension. Now Standard Equipment on all Art Metal Kitchen Cabinet Drawers See details Plate K-7

Art Metal
Jamestown, New York
U.S.A.

STANDARD CABINET SIZES

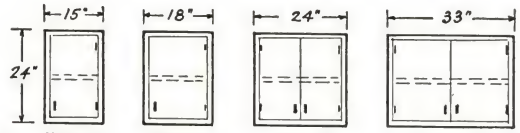
ART METAL HOUSEHOLD INSTITUTE, JAMESTOWN, N. Y.

KITCHEN EQUIPMENT

PLATE K1

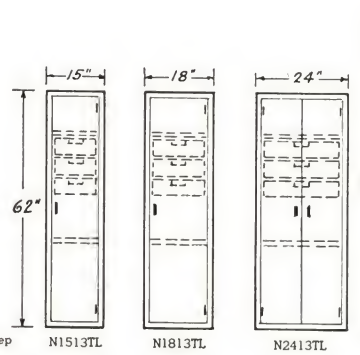
ART METAL CONSTRUCTION COMPANY

WALL CABINETS



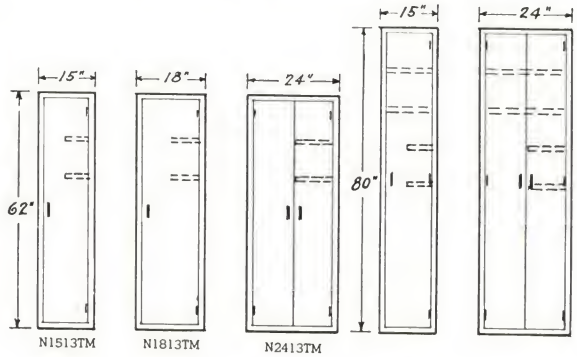
13" deep N1524W N1824W N2424W N3324W
24¾" deep N1524¾W N1824¾W N2424¾W

LINEN CABINETS



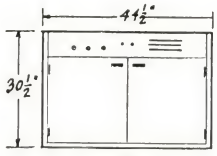
13" deep N1513TL N1813TL N2413TL N 1580 TL N 2480 TL
24¾" deep N1524TL N1824TL N2424TL

CLEANING IMPLEMENT CABINETS

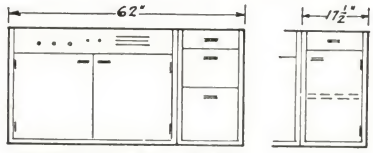


N1513TM N1813TM N2413TM N 1580 TM N 2480 TM
N1524TM N1824TM N2424TM

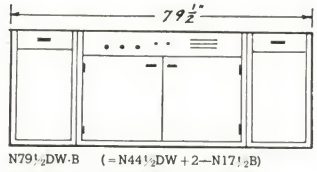
DISH WASHER ENCLOSURES (For G-E Units)



N44½DW

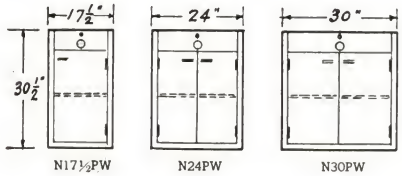


N62DW-B (=N44½DW+N17½B)
N62DW-BC(=N44½DW+N17½BC)

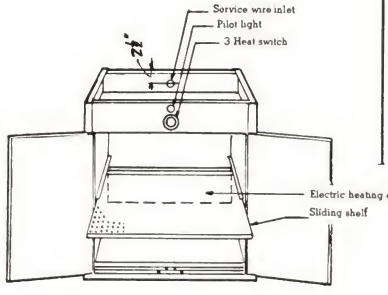


N79½DW-B (=N44½DW+2—N17½B)
N79½DW-BC (=N44½DW+2—N17½BC)
N79½DW-B-BC(=N44½DW+1—N17½B & 1—N17½BC)
Specify Right or Left. Right has N17½BC at right end.

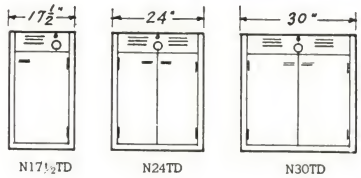
PLATE WARMER CABINET



N17½PW N24PW N30PW



TOWEL DRYER CABINET



N17½TD N24TD N30TD

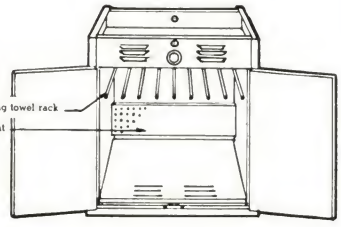
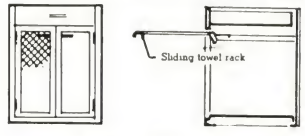


Plate Warmer and Towel Dryer Cabinets are of double wall insulated construction. Interior lining is cadmium plated. Towel Rods are nickel plated. Heating elements consist of two heating units, each of 300 Watt, 115 Volt capacity, operated by a 3 heat switch

SUSPENSION TOWEL HOLDER

Cabinet Not Included

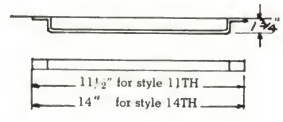
Ordinarily installed in regular BC base cabinets with grilled doors



15STH has 4 Towel Rods—Used in N15BC
18STH has 5 Towel Rods—Used in N18BC
21STH has 6 Towel Rods—Used in N21BC
24STH has 8 Towel Rods—Used in N24BC
30STH has 10 Towel Rods—Used in N30BC

TOWEL HOLDER

Ordinarily mounted on back of sink front doors



11TH used on N27SF & N30SF
14TH used on N18SF, N21SF, N24SF, N33SF, N36SF & N42SF

Art Metal
Jamestown, New York
U.S.A.

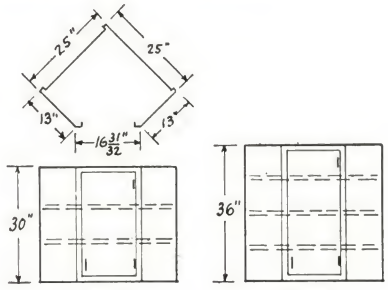
STANDARD CABINET SIZES

ART METAL HOUSEHOLD INSTITUTE, JAMESTOWN, N. Y.

KITCHEN EQUIPMENT

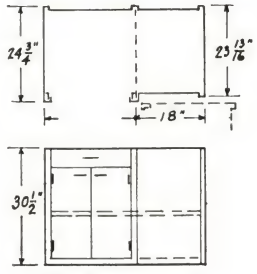
PLATE K2

CORNER WALL CABINETS



N30CW N36CW

BASE CORNER EXTENSION

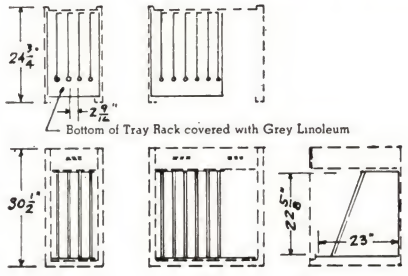


BCE—Right or Left Hand
(Right Hand shown)

Used with any BC Base cabinet when it is desirable to utilize space in corner. Use N18 Sub for extension when sub bases are required.

TRAY RACKS

(BC Base Cabinets not included)

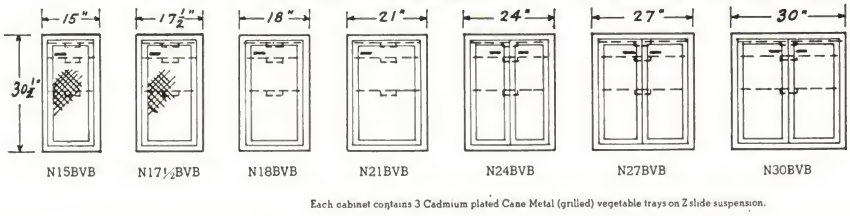


15TR 21TR Vertical Section

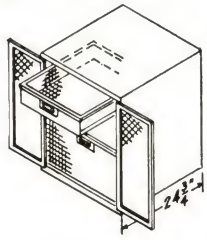
15TR used in N15BC & N18BC Base Cabinets
21TR used in N21BC, N24BC, N27BC, N30BC, N33BC & N36BC

Tray Racks are placed in center of N15, 18, 21 & 24BC cabinets. In wider cabinets the rack is placed at left side

VEGETABLE CABINETS—Cupboard Type-Grilled Doors

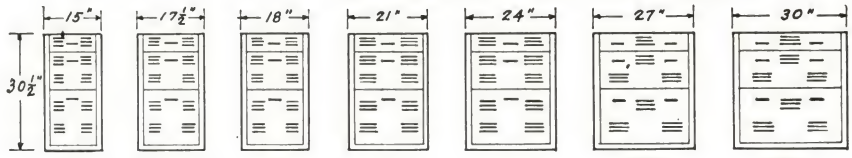


N15BVB N17½BVB N18BVB N21BVB N24BVB N27BVB N30BVB



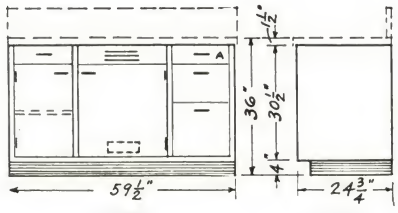
Each cabinet contains 3 Cadmium plated Cane Metal (grilled) vegetable trays on Zslide suspension.

VEGETABLE CABINETS—Drawer Type

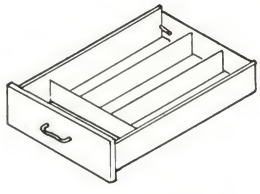


N15BVA N17½BVA N18BVA N21BVA N24BVA N27BVA N30BVA

UNDERSINK CABINET FOR 60 x 25 SINK—(Sink not included)



59½SC End View

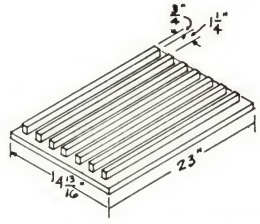


Sketch of drawer "A"

Tool & Soap Rack on inside of sink compartment door

TABLE LEAF STORAGE

(An Insert for Cabinet)

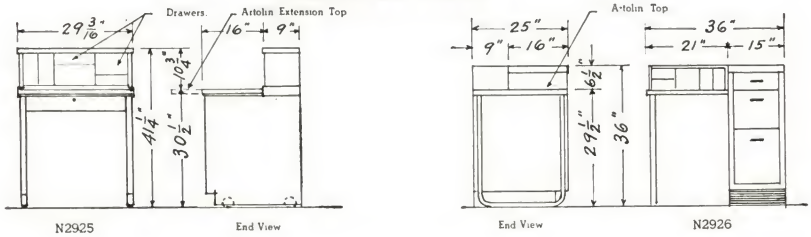




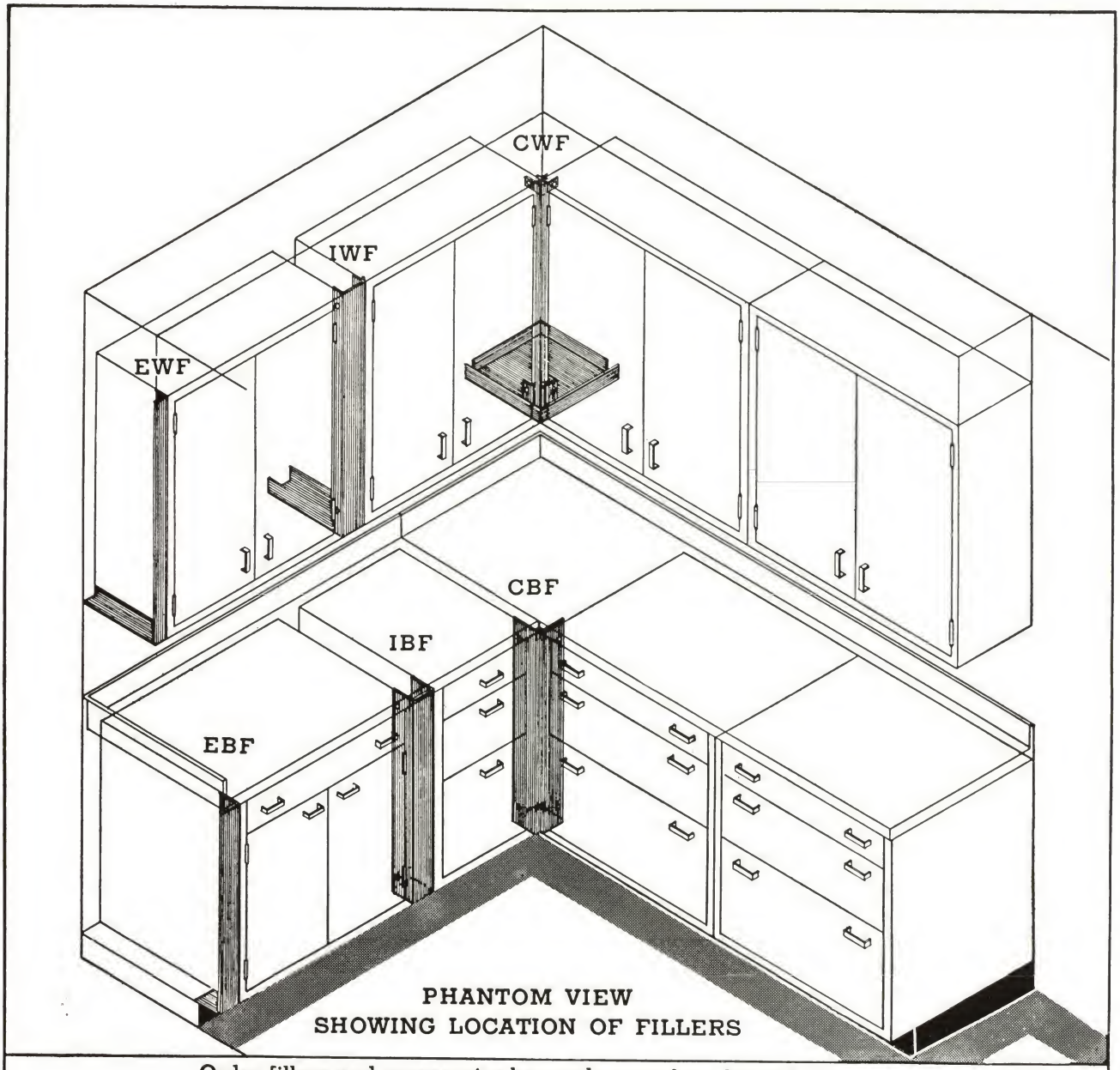
2 Wood Shelves with divisions. Upper shelf adjustable in height 1" C-C Used in N1524TL and N1524TM by substituting wood shelves for regular equipment.

N1524TLS

PLANNING DESKS



N2925 End View End View N2926



PHANTOM VIEW
SHOWING LOCATION OF FILLERS

Order fillers and accessories by catalog numbers listed below

FILLERS

Name of Part	For Wall Cabinets	For Base Cabinets
End Filler*	EWF	EBF
Intermediate Filler*	IWF	IFB
Corner Filler	CWF	CBF

*Furnished in widths up to 6 inches. Specify exact width desired and whether left or right hand.

Scribing wall fillers to wall and base moulding to be done in field.

Special fillers, scribe strips, etc. to meet special conditions are furnished to order.

Ceiling filler panels or furred down plaster ceiling and base platform not in this contract.

However, if desired, we will furnish ceiling filler panels and base platform of steel.

WALL-CABINET ACCESSORIES

Name of Part	Cabinet width in inches								
	15	18	21	24	27	30	33	36	42
Cup Rack	15CR	18CR	21CR	24CR	27CR	30CR	33CR	36CR	.....
Step Shelf	15S	18S	21S	24S	27S	30S	33S	36S	.....
Condiment Rack	15R	18R	21R	24R	15R	15R	18R	18R	.....

BASE-CABINET ACCESSORIES

Bread Bin	15BB	18BB	21BB	24BB	27BB	30BB	.....	36BB	.....
Bulk Storage Bin	15BBC	18BBC	21BBC	24BBC	27BBC	30BBC	.....	36BBC	.....
Lid Rack	15LR	18LR	21LR	24LR	27LR	30LR	.....	36LR	.....
Cutlery Tray	15D	18D	21D	24D	27D	30D	.....	36D	.....
Slicing Board	15SB	18SB	21SB	24SB	27SB	30SB	.....	36SB	.....

SINK-FRONT ACCESSORIES

Towel Holder	.....	14TH	14TH	11TH	11TH	11TH	14TH	14TH	14TH
Tool and Soap Rack	.....	14TS	14TS	10TS	10TS	10TS	10TS	10TS	14TS
Refuse Container	.....	9RC	9RC	9RC	9RC	9RC	9RC	9RC	9RC
Compart. Bottom	.....	18BP	21BP	24BP	27BP	30BP	33BP	36BP	42BP

When ordering accessories we suggest that they be listed immediately following the listing of cabinet to which they relate: For example, Kindly enter our order for the following:

1	N1530W	Wall cabinet—left hand
1	15R	Condiment rack
2	N3636W	Wall cabinet
2	36CR	Cup rack

Art Metal
Jamestown, New York, U.S.A.

STANDARD CABINET SIZES

ART METAL HOUSEHOLD INSTITUTE, JAMESTOWN, N. Y.

KITCHEN EQUIPMENT

PLATE K5

SPECIFICATIONS

Material

All kitchen cabinets are manufactured of best grade metal furniture steel, free from buckles, scale, or rust, and of gauges best suited for the purpose.

Construction

Cabinets are of flush type, doors and drawer heads recessed into case, making a flush smooth front. All plates are flanged and spot-welded together, making a rigid construction. Front corners are reinforced and joints welded. Inside of cabinet is made smooth without any pockets or crevices where dirt might collect.

Backs are recessed $\frac{13}{16}$ in. to provide space for wood grounds on walls. Shelves are supported on four corners, removable and adjustable 1 in. o.c., made of one piece of steel without any hollow edges or flanges to collect dust.



Planning Desk, Style N2926
Provides convenient space for planning materials

Doors and drawer heads are $\frac{11}{16}$ in. thick, of double wall construction, flush outside and inside. Glass doors can be furnished instead of the steel door. Door stiles are $1\frac{1}{4}$ in. wide with glass stops fastened without screws or clips. Glass is $\frac{1}{8}$ in. laid in rubber.

Roller-Glider Drawer Suspension

All the drawers in base cabinets are now equipped with the new Roller-Glider, ball-bearing drawer suspension as standard equipment without extra charge. Smooth, effortless, easy operating, opening at a touch of the fingers. Suspensions are so designed that they may be removed or changed without using tools. The two upper drawers can be reversed or replaced by three shallow drawers. Drawer body is made of 24-gauge steel. If called for, bottom of drawer is covered with $\frac{1}{8}$-in. thick gray linoleum, cemented on.

Drawers in base cabinets, in general, are so constructed that bread boxes, flour and meal bins, lid racks, cutlery trays, and slicing boards, may be placed in any selected drawer.

The exteriors of towel dryer and plate warmer cabinets are constructed same as base cabinets. Interior is lined with cadmium plated steel throughout. Space between lining and outside walls is filled with fireproof insulation. Both towel dryer and plate warmer cabinets have pilot light and a three-heat switch, heating capacity 600 watts.

Plate warmer is equipped with a perforated sliding shelf. Towel dryer has louvered doors and a sliding chromium-plated towel rack.

Sound Insulation

Doors and drawer heads are filled with sound-absorbing material to prevent noise and rattle. All doors and drawers are equipped with rubber bumpers to insure quiet operation. All work surfaces of metal have a composition board, $\frac{1}{4}$-in. thick, glued to underside of top to provide a strong, resilient and sound-deadened surface.

Work Surfaces

Work surfaces are furnished in monel, stainless steel, or Artolin. Back or end splashers 3-in. high are furnished when called for. Back and end splashers when furnished are integral with top.

Artolin work surfaces constructed with a sub-top of .0625 steel on which $\frac{1}{8}$-in. thick Artolin is cemented on. Exposed edges, back and end splashers are furnished in either monel or stainless steel, bolted on to top.

Hardware

Hinges are of bullet type semi-concealed in door and cabinet. Pulls for wall and base cabinets are of modernistic design, matching hinges, and attached to cabinets with concealed fastening. Both hinges and pulls are made of a strong white metal alloy, highly polished, especially suited for hardware in kitchen. Locks for doors and drawers can be furnished when required.

Color

Metal in a choice of Light Green, Dark Green, Buff, Ivory, Light Gray and White. Artolin tops in any one of 25 colors and patterns.

Finish

The cabinets are thoroughly washed chemically clean, sanded smooth, and all dust removed by compressed air before a specially prepared enamel prime coat is applied and baked on for four hours at 250° F. This ground coat is inspected, and rubbed with fine sandpaper in water. The finishing coats consist of a high-grade synthetic enamel, grease and acid-resisting, and baked for four hours at 250°, producing a glossy and extremely durable wearing surface.

ACME METAL PRODUCTS CORP.

1845 West 74th Street, CHICAGO, ILL.

STEEL KITCHEN-UNITS

Acme steel Kitchen-units, described in the following, are made in a broad range of dimensions and variety of styles, presenting to you unlimited possibilities for arranging planned steel kitchens that are the highest expression of modern work, step and time-saving in the kitchen of the new home or in the remodeling of the old one.

To conform to the specifications regulating the great variety of sink tops available, Acme sink and base cabinets are built to accomplish perfect installation with cast iron enamel sinks 72x25; 60x25; or 42x25 in. This permits the use of these or any of the others with equal facility.

Acme steel Kitchen-units are precision-built to make installation easy and installed appearance perfect. Every possible element of design has been incorporated in these units to further this objective and it may be said without exaggeration that no finer cabinets are possible to buy at any price.

Acme Drawer Runners are special Acme design and support drawers rigidly and positively at all points, preventing sagging and side play. Adjustable to prevent sticking, each drawer in an Acme cabinet is fitted to that particular receptacle and it fits there perfectly.

Acme steel Kitchen-units are finished with highest grade high-heat-baked enamel possible to secure, having a high gloss, exceedingly hard but flexible and cannot crack, check nor craze.

Colors—White, Ivory and Green

Color Combinations—
Bodies Green with White doors and drawers
Bodies Green with Ivory doors and drawers
Bodies Ivory with White doors and drawers
Bodies Dark Ivory with Light Ivory doors and drawers



No. AC-53 Combination

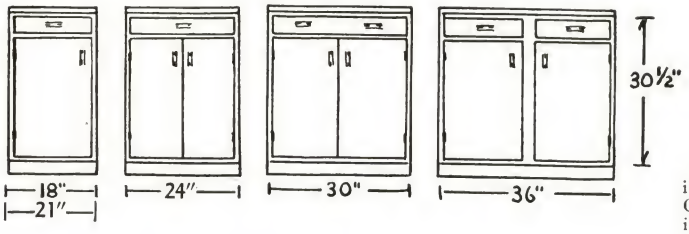
Description—Made up of Acme steel Kitchen-units of standard sizes, assembled around a 60x25 in. cabinet type, cast iron porcelain enamel sink roughed-in 36 in. from floor. 12 ft. long by 7 ft. high. Black linoleum work tops on base cabinets.

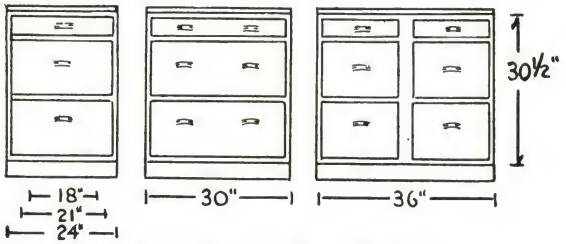
Acme doors and drawers are sound and dust proof. Heavy chrome nickel door and drawer pulls and bullet type hinges contribute much to fine appearance. Spring type catches, rubber bumpers and double, insulated door and drawer fronts assure silence.

SPECIFICATIONS

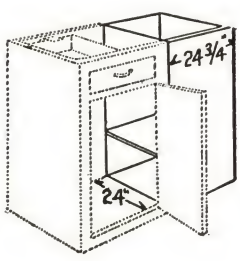
Base Cabinets—Two styles, cupboard and drawer (CD) and all-drawer (D).

Dimensions—Without bases or tops 24¾ in. deep, front to back; 30½ in. high. 18, 21, 24, 30 and 36 in. wide.

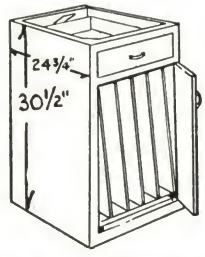




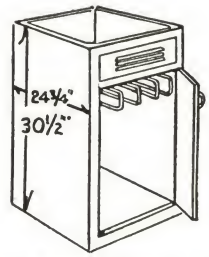
Acme Corner Base Cabinet



Corner Base Cabinet—For utilizing what would otherwise be dead space in the corner or corners of an "L" or "U" shape set-up, this cabinet was specially designed. In effect it is similar to a CD (Cupboard and drawer) 24 base cabinet placed in the corner with the front facing the side of another base cabinet. This side being removed allows access through this cabinet to the welded-in shelf of the corner cabinet.



Tray Storage Cabinet—Similar in outward appearance to a CD (Cupboard and drawer) cabinet. Cupboard compartment has four sections in which to store trays. Dimensions, without top or base, 24¾ in. deep, front to back; 30½ in. high; 18 and 21 in. wide.



Towel Dryer Cabinet—Similar in appearance to a CD (Cupboard and drawer) cabinet except louvre panel takes place of 4 in. deep drawer. Four sliding towel bars in cupboard compartment. Dimensions, without top or base; 24¾ in. deep, front to back; 30½ in. high; 18 and 21 in. wide.

Sink Cabinets—For use with cast iron, porcelain enamel sinks 60 x 25 in. or 42 x 25 in. Dimensions: 24¾ in. deep, front to back; 30½ in. high without bases or sink tops, 60 in. wide; or 42 in. wide if for 42 x 25 in. sink. Designated as SC cabinets.

Broom and Linen Cabinets—18 and 24 in. wide; 13 and 24¾ in. deep, front to back; 80 and 86 in. high without bases. Broom cabinet has two welded-in shelves in upper compartment. Lower compartment is fitted with hooks. Linen cabinet has two welded-in shelves in upper compartment and three in the lower.

Sink Fronts—Front panels only for purpose of concealing sink bowl where linoleum, monel metal or stainless steel sink tops are employed or in other combinations where double bowl sinks are to be used. Dimensions: 18, 21, 24, 30 and 36 in. wide; 30½ in. high. Similar in outward appearance to CD cabinet, except louvre panel takes place of drawer.

Bases—Steel, continuous, four sided; 4 in. high, 20¾ in. deep, recessed 4 in. from front of cabinets to provide toe space.

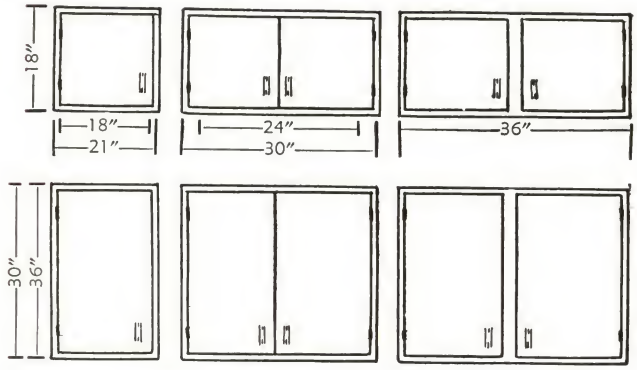
Cabinet Tops—Black linoleum applied to steel core with stainless steel nosing; stainless steel or monel metal. Dimensions: 25 in. deep, front to back; 1½ in. thick. Available in any length, continuous straight, "L" or "U" shape.

ACME STEEL KITCHEN-UNITS

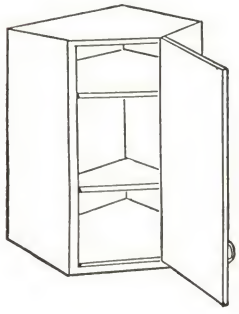
SPECIFICATIONS

Sink Top—When other than the customary cast iron porcelain enamel sink is incorporated in the Acme Planned Steel Kitchen a variety of sink tops are available, such as, linoleum with porcelain enamel single or double bowls and stainless steel or monel metal with single or double sink bowls of the same materials. All must be specified 25 in. deep, front to back and 1½ in. thick to conform to sink and base cabinet dimensions.

Acme Wall Cabinets

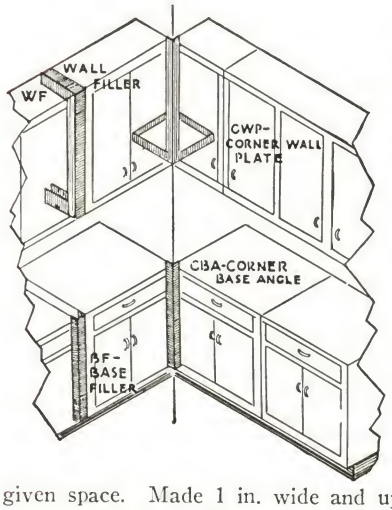


Wall Cabinets—13 in. deep, front to back; 18, 30 and 36 in. high; 18, 21, 24, 30 and 36 in. wide. 30 and 36 in. height have two shelves adjustable.



Acme Corner Wall Cabinet

In arranging wall cabinets in an "L" or "U" shape there is normally a dead space 13x13 in. in the corner or corners. For utilizing this space the Acme Corner Wall Cabinet has been designed. Dimensions: 13 in. deep, front to back and 25 in. on the two dimensions of the right angle. 30 and 36 in. high only.



Corner Wall Angles and Corner Wall Plates—To be specified when wall cabinets occupy "L" or "U" shape spaces. Finished same color as cabinets.

Corner Base Angles—To be specified when base cabinets occupy "L" or "U" shaped spaces. Finished same color as cabinets.

Filler Panels — Use indicated when Base or Wall Cabinets do not fill given space. Made 1 in. wide and up with returns for securing to adjoining cabinets.

Moulding Strips—Cast aluminum with ⅛ in. web for closing space between cast iron porcelain sink and adjoining linoleum, stainless steel or monel metal base cabinet tops.

Acme Hanging Bracket—Formed steel member drilled for reception of wood screws at regular stud intervals for quickly and easily hanging wall cabinets securely and evenly. Must be specified with installations that include wall cabinets.

Accessories

To make an Acme Planned Steel Kitchen complete in every detail of work, time and labor saving the following accessories are available and should be thoughtfully considered in every kitchen plan.

Bread and Cake Box—Specify for use in one of deep drawers of SC or D cabinet. Removable for cleaning. Heavily tinned. Two compartments partially divided by a shelf. Ventilated, sliding cover.

Corner Shelves—Particularly designed where Wall Cabinet space is interrupted by a window. This unit provides decoration and practical means for utilizing space between sides of window and Wall Cabinets. Dimensions: 12x12 in.; 30 and 36 in. high.

Cutlery Drawers—4 in. deep, linoleum-lined with three compartments.

Condiment Rack—A step-shelf unit for the handy, concentrated storage of seasonings, etc. Specify for installation in wall cabinets.

Cane Metal—Where added ventilation is required by way of cabinet doors, drawers or bases, metal stamped in a cane pattern is available when specified.

Garbage Receptacle—Enameled steel receptacle containing heavily galvanized garbage pail. Receptacle is mounted on door of CD or Sink Base Cabinet. Cover raises automatically when door is opened.

Glass Doors—Available for Wall Cabinets when specified.

Flour or Sugar Bins—When specified two are placed in Base Cabinet deep drawer. Heavily tinned. Hinged cover. Dimensions: 6 in. wide; 18 in. deep, front to back and 8½ in. high.

Flour Sifter or Sugar Dispenser—Mounted on guides in wall cabinet, sliding in and out smoothly and easily. Flour Container has sifter spout, Sugar Container equipped with sliding panel dispenser.

Soffit Lights—For providing directed illumination to Cabinet tops and sinks. Specify to be installed under wall cabinets. Complete with Reflector and Bulb.

Slicing Boards—Available in two types, loose and installed. Installed boards are placed in stile over 4 in. deep drawer in Base Cabinets. Loose boards placed on top of drawer in D or CD Cabinets.

Utility Shelf and Back Splash—Where added "head room" is desired in Wall Cabinet arrangement, specify Wall Cabinets 18 in. high with this unit. Dimensions: 18, 21, 24, 30, 36 and 42 in. wide; 6 in. deep, front to back.

Vegetable Drawer—Customarily specified for one or more of deep drawers in sink or D Cabinets. Deep drawer in any size D Cabinet may be specified. Louvres in front provide ventilation necessary for this purpose.

ACME METAL PRODUCTS CORP.

"THRIFTEE" STEEL KITCHEN-UNITS

For the purpose of providing the means for arranging Planned Steel Kitchens in a lower price bracket than the Acme line but possessing all its inherent qualities, the "Thriftee" line of steel kitchen-units was designed. This line will be found more economical even than wood.

In appearance, "Thriftee" steel kitchen-units differ from the Acme line in that they are made with concealed stile and flush doors and drawers, whereas Acme construction has visible stiles and rabbeted doors and drawers.

SPECIFICATIONS

The same styles and sizes found on the preceding pages are available in this line as follows:

Base Cabinets—24½ in. deep, front to back; 30½ in. high without bases or tops; 18, 21, 24 and 30 in. wide only.

Corner Base Cabinets—Same dimensions as Acme. "Thriftee" construction.

Sink Cabinets—24½ in. deep, front to back; 30½ in. high without bases or sink tops; 60 in. and 42 in. wide.

Sink Fronts—18, 21, 24 and 30 in. wide only.

Broom and Linen Cabinets—18 in. wide only; 13 and 24½ in. deep, front to back; 80 in. high only without bases.

Bases—4 in. high; 20½ in. deep, front to back.

Wall Cabinets—13 in. deep, front to back; 18 and 30 in. high only. 30 in. high wall cabinet fitted with two permanent welded-in shelves.

Corner Wall Cabinets—30 in. high only. "Thriftee" construction.

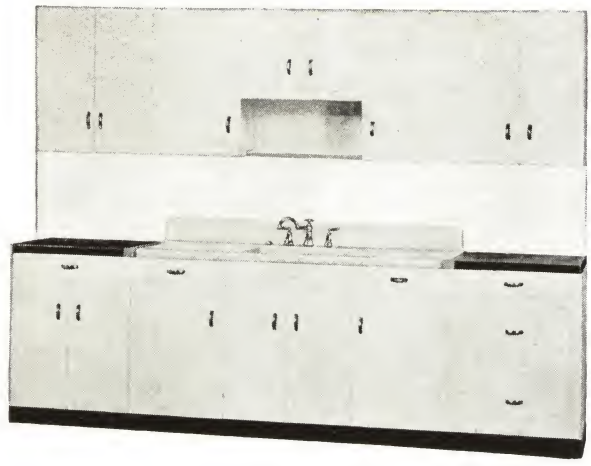
Cabinet Tops—Black linoleum applied to steel core with black enameled steel nosing. Dimensions: 25 in. deep, front to back; 1½ in. thick.

Sink Tops—Any sink specified for use with Acme steel Kitchen-units may be used.

Corner Wall Angles, Corner Base Angles and Filler Panels—Must be specified under the same conditions as when employed with Acme steel Kitchen-unit arrangements of "L" and "U" forms.

Moulding Strips—To be specified under same conditions as when utilized with Acme steel Kitchen-unit arrangements.

Acme Hanging Bracket—To be specified with all wall cabinet arrangements.



The kitchen here illustrated is arranged with "Thriftee" steel kitchen-units, using 18 in. high wall cabinets over the sink to provide extra "head room" over the sink bowl. Base cabinet work tops are "Thriftee" black linoleum with black enameled steel nosing.

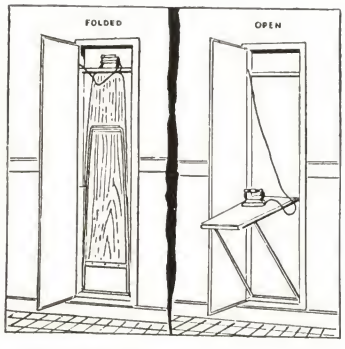
Accessories

The following accessories described for use with Acme steel Kitchen-unit arrangements may be incorporated into "Thriftee" Combinations.

Bread and Cake Box
Cutlery Drawers
Corner Shelves
Condiment Racks
Cane Metal
Garbage Receptacle
Flour and Sugar Bins
Flour Sifter and Sugar Dispenser
Soffit Lights
Slicing Boards
Utility Shelf and Back Splash
Utility Drawer
Vegetable Drawer

Colors

Solid colors as specified for Acme line only. Two color effects impractical with concealed stile, flush door and drawer front construction.

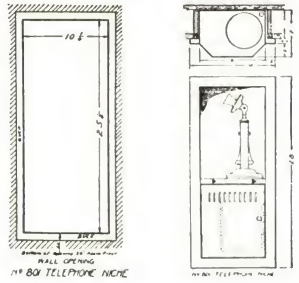


Steel Ironing Board Cabinet

Description—Made of Cabinet cold rolled steel, sprayed and high-heat baked to a smooth, hard finish. High quality wood ironing board lowers to 36 in. from floor. Extends 50 in. from cabinet and will support weight of 150 lbs.

Specifications—

Outside over-all dimensions 68" x 17" x 5". Inside 65" x 14" x 5". Wall recess required 65½" x 14¼" x 4¼". Located 9½" from the floor.



Steel Telephone Niche

Description—For hallway, nook or passageway. Phone compartment will accommodate standard pedestal or cradle type of instrument. Ample space for bell-box with door in front. No trimming or fitting. Just place in wall space, insert screws and draw up snug.

Specifications—

Over-all dimensions 28" high, 13" wide, 4½" deep. Wall opening required: 25¾"x10"x4½".

Can be furnished in any Acme standard color or with rustproof bond coat for finishing to match rest of trim.

"THRIFTEE" STEEL KITCHENETTES

Conforming to the best practice and most frequently specified requirements for Apartment House and Apartment Hotel installation, these Acme steel Kitchenettes have been arranged.

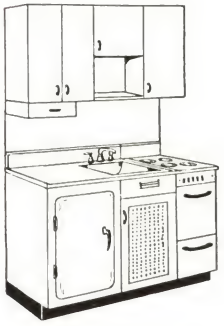
Wall and Base Cabinets are "Thriftee" construction equipped with modern streamline black bakelite handles to harmonize with handles of stove and refrigerator.

GENERAL SPECIFICATIONS

Refrigerators—Fully Balsam wool insulated 24 in. wide; 25 in. deep, front to back; 30½ in. high without base or top. Inside dimensions 18¼ in. wide; 18¼ in. deep, front to back; 24¾ in. high. Capacity 4.64 cu. ft. net. Shelf capacity 6.75 sq. ft. Equipped with Tecumseh Chieftain Model S-16-I-L Condensing unit. Peerless Model VV Evaporator fitted with 2 trays of 28 cube capacity each. Cold control. Has 2 heavily tinned provision shelves and Pyrex glass drip tray.

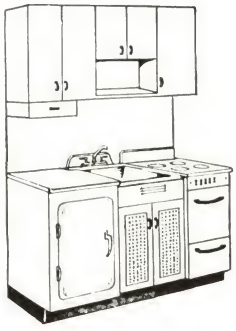
Gas Range—Fully insulated, 4 burner; automatic light. Combination oven and broiler burner. Overall dimensions: 25 in. deep, front to back; 18 in. wide; 36 in. high. Overall cooking top dimensions: 24½ in. deep, front to back; 18 in. wide. Porcelain enamel lined baking oven. Dimensions: 19 in. deep, front to back; 16 in. wide; 14 in. high. Porcelain enamel lined broiling oven. Dimensions: 19 in. deep, front to back; 16 in. wide; 7 in. high. Chrome extension oven racks. Smokeless broiler has chrome grill with porcelain drip pan. White porcelain enamel outside. Blue marbleized porcelain linings. Rigid skyscraper frame construction.

Electric Range—3 burner top—burners sheet tube, similar to Calrod or T & K. 2 6 in., 1300 watts each; 5 heat switch: 1 8 in., 2200 watts; 5 heat switch. Oven burner 3000 watts. Temperature control. Combination oven and broiler dimensions: 16 in. wide; 17 in. high; 18 in. deep, front to back. This range has one door with panel underneath. Service wires connect to 3 wire porcelain terminal centered in back of stove. All other dimensions same as gas range.



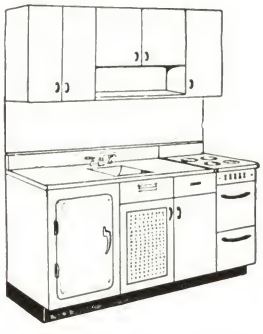
No. 600 Kitchenette

Complete with gas or electric range and refrigerator. Sink fittings not included. Dimensions: 5 ft. 0 in. wide; 25 in. deep, front to back; 7 ft. 0 in. high; 36 in. floor to sink rim. Black linoleum sink top; 4 in. back; 12x18 in. porcelain enamel sink bowl.



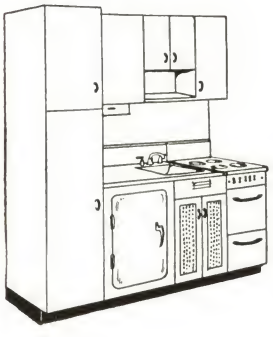
No. 660 Kitchenette

Complete with gas or electric range and refrigerator. Sink and fittings included. Dimensions: 5 ft. 6 in. wide; 25 in. deep, front to back; 7 ft. 0 in. high; 36 in. floor to sink rim. Black linoleum refrigerator top; cast iron porcelain enamel sink 24 in. wide with 4 in. back.



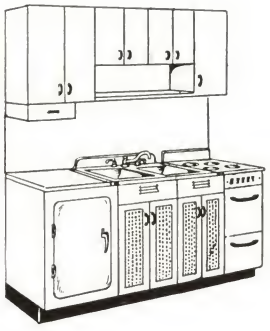
No. 780 Kitchenette

Complete with gas or electric range and refrigerator. Sink fittings not included. Black linoleum sink top has 4 in. back and 12x18 in. porcelain enamel sink bowl. Dimensions: 6 ft. 6 in. wide; 25 in. deep, front to back; 7 ft. 0 in. high; 36 in. floor to sink rim.



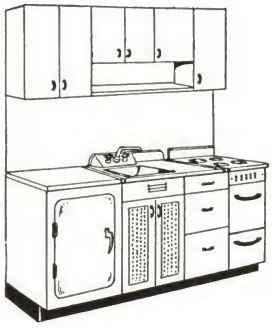
No. 840 Kitchenette

Complete with gas or electric range and refrigerator. Sink fittings not included. Black linoleum sink top has 4 in. back and 12x18 in. porcelain enamel sink bowl. Upper compartment of Broom Cabinet equipped with two shelves. Dimensions: 7 ft. 0 in. wide; 25 in. deep, front to back; 7 ft. 0 in. high; 36 in. floor to sink rim.



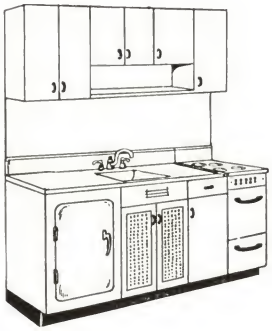
No. 841 Kitchenette

Complete with gas or electric range and refrigerator. Porcelain enamel 42x25 in. double bowl sink with 4 in. back. Sink and fittings not included. Black linoleum refrigerator top. Dimensions: 7 ft. 0 in. wide; 25 in. deep, front to back; 7 ft. 0 in. high; 36 in. floor to sink rim.



No. 842 Kitchenette

Complete with gas or electric range and refrigerator. Sink fittings not included. Cast iron, porcelain enamel, 42x25 in. double bowl sink, with 4 in. back not included. Black linoleum base cabinet top. Dimensions: 7 ft. 0 in. wide; 25 in. deep, front to back; 7 ft. 0 in. high. 36 in. floor to sink rim.



No. 843 Kitchenette

Complete with gas or electric range and refrigerator. Sink and fittings not included. Black linoleum sink top has 4 in. back and 16x22 in. porcelain enamel sink bowl. Dimensions: 7 ft. 0 in. wide; 25 in. deep, front to back; 7 ft. 0 in. high; 36 in. floor to sink rim.

The "Thriftee" steel Kitchenettes illustrated and described above represent a most superior type of construction, recognized in the industry as such. In their price division which is unusually low, their quality is uncommonly high, comparing favorably with those in price ranges considerably higher.

Consequently you are quite secure in your recommendation for their installation . . . you are assured of complete satisfaction on the part of your client in both cost and performance.

BORO WOOD PRODUCTS CO.

Manufacturers of Wood Kitchen Cabinets

MASPETH, LONG ISLAND, N. Y.

BORO MODERN KITCHEN CABINETS

Kitchen Cabinets produced by Boro Wood Products Company are manufactured with the dual purpose of increasing the comfort and convenience, while enhancing the beauty of the modern kitchen.

Boro Kitchen Equipment meets any conceivable requirement for cabinets that have beauty, comfort and durability. They are offered at a price to meet and fit any budget.

Designing Department

We specialize in building scientifically designed kitchen cabinets in both special and stock sizes and to the direct specifications of the architect.

Designed by specialists and produced by men who know their jobs, our layouts represent the ultimate in efficiency and beauty.

Co-operation with the Architect

The Company maintains a designing staff for the purpose of co-operating with architects in kitchen planning and layout. As a result of years of research and experience in the production of fine cabinet work, we are in a position to efficiently produce these items in any variety of unique designs, or to harmonize with any conceivable color combination or decorative scheme.

We invite Architects and Builders to request the use of our service in suggesting layouts. No obligation is involved.

Modernizing Existing Kitchens

The possibilities inherent in redesigning and modernizing old-fashioned unsightly kitchens is demonstrated by the illustration at the right. Such transformations comprise a large part of our business—no job is too small and no problem too large or too difficult for our staff to solve. Any existing room, regardless of shape, size or condition can be made practically over night into one of efficiency and beauty.

The SCIENTIFIC Kitchen Cabinet



After



Before

These illustrations show the transformation of the poorly designed, inconvenient room shown at left into the modern, time and space saving kitchen pictured above.



GENERAL SPECIFICATIONS

Lumber—Only thoroughly seasoned and selected hard-wood of high grade quality, kiln dried to 5% moisture content is used.

Construction—All parts are mortised and tenoned. All shelves are dadoed into sides of cabinets.

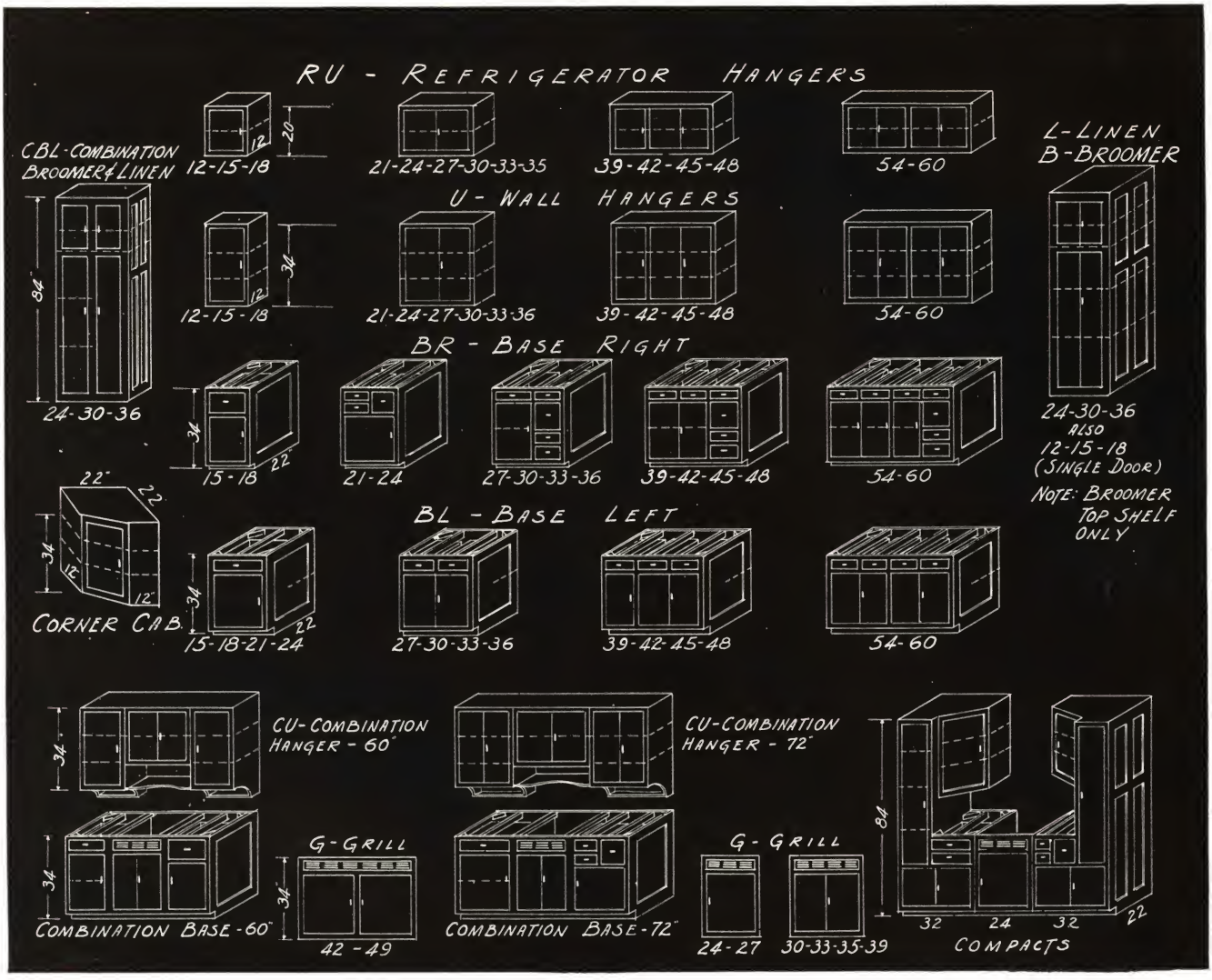
Doors—Flush doors constructed of 13/16 in. hardwood laminated plywood, a feature to minimize warping.

Panel doors constructed of laminated plywood with 1⅛ in. styles and rails with mortised and tenoned joint.

Hardware—Semi-concealed hinges of modern design in dull or polished chromium are used exclusively. All pulls are designed exclusively for Boro Wood Products Company.

Finishes—Du Pont Products used exclusively in our finishes, which consist of eight specially developed skilful operations; all coordinated to produce a beautiful and durable product.

General—From time to time changes occur in our equipment, styles, and designs; we therefore reserve the right to furnish the style of equipment that is standard at the time of order. Leaded glass and panel doors are furnished only when specified, otherwise, flush doors are standard equipment. Our cabinets are rigidly inspected before leaving the factory.



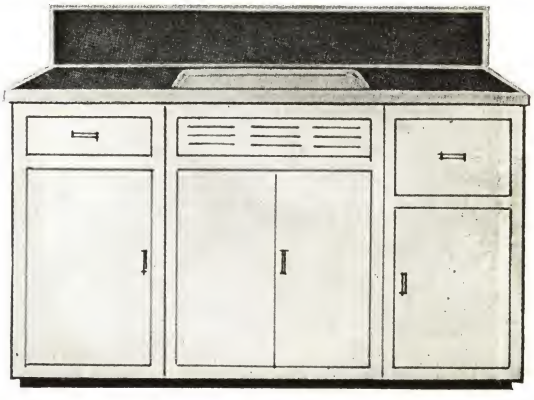
BORO SINKS AND COUNTER TOPS







Boro Sinks and Counter Tops, for use in the modern kitchen, are specially built for economy, durability and beauty. Each and every unit is manufactured and assembled by expert workmen exclusively in our factory. They are available in a variety of designs and materials, making the purchase of a Boro Sink possible by any home owner. Boro sinks and counter tops can be obtained with the following work top materials: 3/16 in. Battleship Linoleum, tempered pressed wood (Masonite), Monel Metal — Stainless Steel, Micarta, Formica. Bowls can be had in porcelain acid resisting enamel, either white or ivory — Monel Metal or Stainless Steel.



Boro Custom Built Kitchen Cabinets Equipped with Boro Sinks and Counter Top are the Most Outstanding Features of the Modern Kitchen.

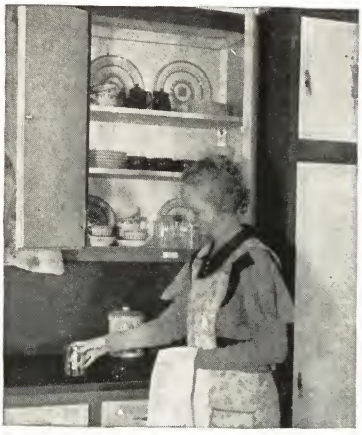
CURTIS COMPANIES SERVICE BUREAU

CLINTON, IOWA

For Plants and Sales Offices, see the first page of our catalog on Windows
For Curtis Silentite Windows, Trim, Doors and Cabinet Work, see File Index

CURTIS STANDARDIZED WOOD KITCHEN UNITS

1866 CURTIS WOODWORK



THE CURTIS KITCHEN PLANNING SERVICE

Over 50,000 kitchens have been planned the Curtis way for American housewives. No other kitchen cabinet manufacturer has had so much success in equipping kitchens in all sizes of residences and other buildings with sturdy, durable and *economical* sectional kitchen cabinets.

As you will see on the following page, Curtis units are available in a wide range of sizes. There are 17 basic units, all made in several widths, so you may design any style, any size kitchen you wish—following your own and your client's ideas.

The width of all units are multiples of 4 inches. In many instances 2-inch variations are provided. In combination any desired width may be obtained—any wall space may be filled.

Architects have found the Curtis Kitchen Planning Service and Curtis Sectional Kitchen Cabinet Units ideal for their work in developing modern kitchens. For all Curtis Cabinets are available in standard dimensions so that they fit into any given area in harmony with sinks, refrigerators, ranges and other mechanical units in accurate alignment of counter tops and faces. Base units are supplied without tops to allow the architect and his client to select tops to blend harmoniously with other kitchen decorations. Curtis kitchen units carry the "Good Housekeeping" seal of approval.

Select Your Own Color Schemes

Another outstanding feature of the Curtis Kitchen Planning Service is the selection of the color scheme by the architect and his client. All matter of individual decoration ideas are easy with the Curtis plan. The cabinets are delivered in the white, so the housewife may give her decorative talents full range in her kitchen and may easily match the equipment which she selects.

You may use Curtis Sectional Cabinet units in remodeling work as easily as in new construction. For Curtis Units come to the job packed in dustproof cartons, ready for quick assembly. Each unit is fitted into place by the carpenter and screwed to the wall. Adjoining units are bolted together. And the arrangement is always so flexible that changes may be made as required, with a minimum of inconvenience. After assembly, the Curtis kitchen is ready for decoration and with the installation of counter tops and equipment, you have developed a charming, distinctive kitchen which has no equal for efficiency and economy.

The popular Curtis Kitchen Planning Service which hundreds of architects have used so successfully is available to you through your Curtis dealer. Complete information on the Kitchen Planning Service, including photographic reproductions of installations, are available upon request from any Curtis office, from any Curtis dealer, or from Curtis Companies Service Bureau, Clinton, Iowa.

Curtis woodwork is sold by leading lumber dealers everywhere.

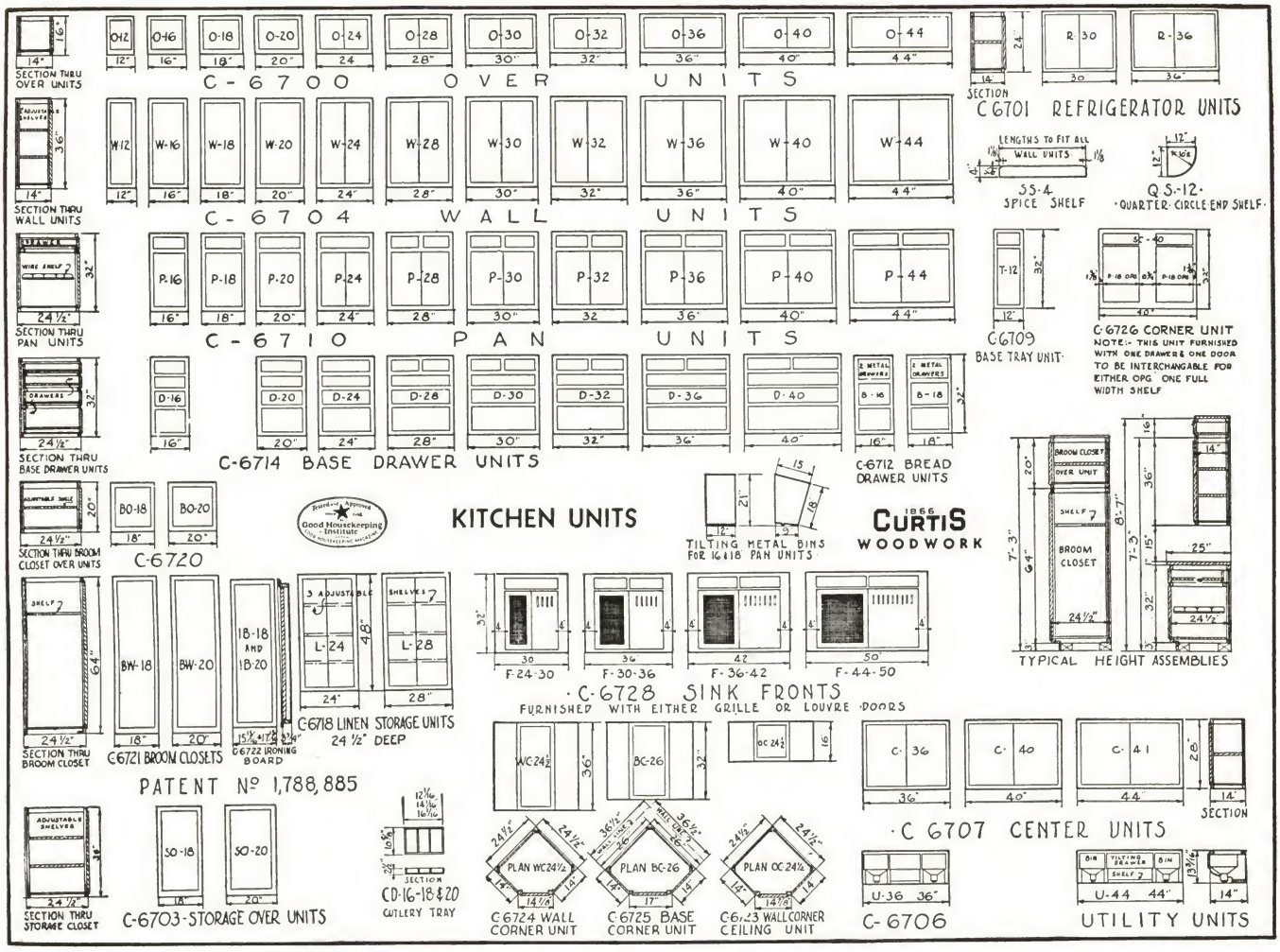
See next page for details on Curtis Kitchens



Staff of Better Homes and Gardens, premier homeowners' magazine, designed this kitchen—used Curtis Kitchen Cabinets.



Typical Curtis-planned Kitchen. Here is an economical kitchen made efficient by the experience of 50,000 Curtis kitchen plans.



This drawing illustrates the 68 units in the Curtis Sectional Kitchen Cabinet line. Size information is included on each unit. The flexibility of this line of sectional kitchen cabinets is obvious, and Curtis builds them like fine furniture is made.

LIGHT WEIGHT AND UNUSUAL STRENGTH ARE COMBINED IN PATENTED CURTIS CONSTRUCTION

As an example of the extraordinary features of Curtis kitchen cabinet construction, Curtis Kitchen Units have been dropped from the top of a three-story building without getting out of plumb!

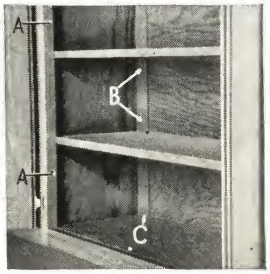
Curtis units are true in dimension and are easily and economically installed. A unique type of construction is used. Unusual strength is developed in the unit itself. The accurate machining produces assemblies that are solid, square and of unusually long life. Front edges of corner posts have a $\frac{5}{32}$" radius to form neat finished joints when bolted together. Square corners inside are eliminated to facilitate cleaning.

Dependable Curtis construction assures satisfaction because Curtis Cabinets cannot warp or get out of shape. They offer you all the advantages of high quality woodwork, plus a degree of economy not available with other factory-made units.

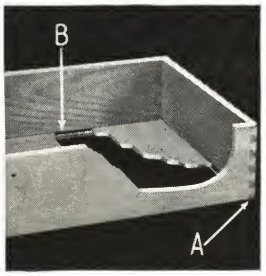
Ask your Curtis dealer, your nearest Curtis office, or write direct to CURTIS COMPANIES SERVICE BUREAU at Clinton, Iowa, for full information on Curtis Sectional Kitchen Cabinet Units. Architect's details and catalog available through your Curtis dealer. Write us for his name.

Wood for Lifetime Satisfaction

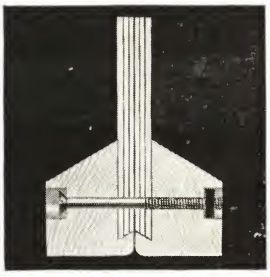
All Curtis Kitchen Units are made of *wood* because no other material compares with wood in the manufacture of cabinet work. For wood cabinets are more economical. Doors and drawers operate silently. In kitchen cabinets, as in most other items of residential construction, properly built equipment of wood outlasts and outsatisfies equipment built of other materials. The color scheme may always be changed—a feature not possible when cabinets are made of other materials.



Maximum Storage Space



Dustproof Drawers



Rapid Assembly on Job

DIETERICH STEEL CABINET CORPORATION

109 North Dearborn Street, CHICAGO, ILLINOIS



THE NEW "CUSTOM-LINE"

This line, nationally renowned as the "finest kitchen equipment in the world," offers to the building industry the finest of master metal craftsmanship. It places at the architects' and builders' disposal the very best in kitchens.

Each cabinet is custom tailored from start to finish and the very latest of improvements found through research embodied into its structure.

The number of sizes, types, and styles are unlimited, and there is a complete line of accessories and special service cabinets. *Any special size cabinet can be had at no extra charge.*

Remember, only Dieterich manufactures this exclusive line under the name "Dieterich *CUSTOM-LINE.*" Write for literature and specifications.

SINKS AND COUNTER TOPS

These units are thoroughly custom built, and constructed of the most durable materials. They can be made any size or shape, with single or twin bowls.

The under-structure and core is of 14-gauge steel. The upper surfaces can be fabricated with either battleship linoleum, 18-gauge stainless steel, or Monel Metal. Select laminated maple tops can also be furnished.

KITCHEN PLANNING SERVICE

Dieterich kitchen engineers hold a vast source of knowledge on kitchen designing, and are abreast with the latest developments in this field. This staff renders expert advice and plans each kitchen individually to meet the most exacting requirements. No problem is too small or too large for them to cope with. This indispensable service will save you time and money. Take advantage of it—there is no charge.

THE NEW "STREAMLINE"

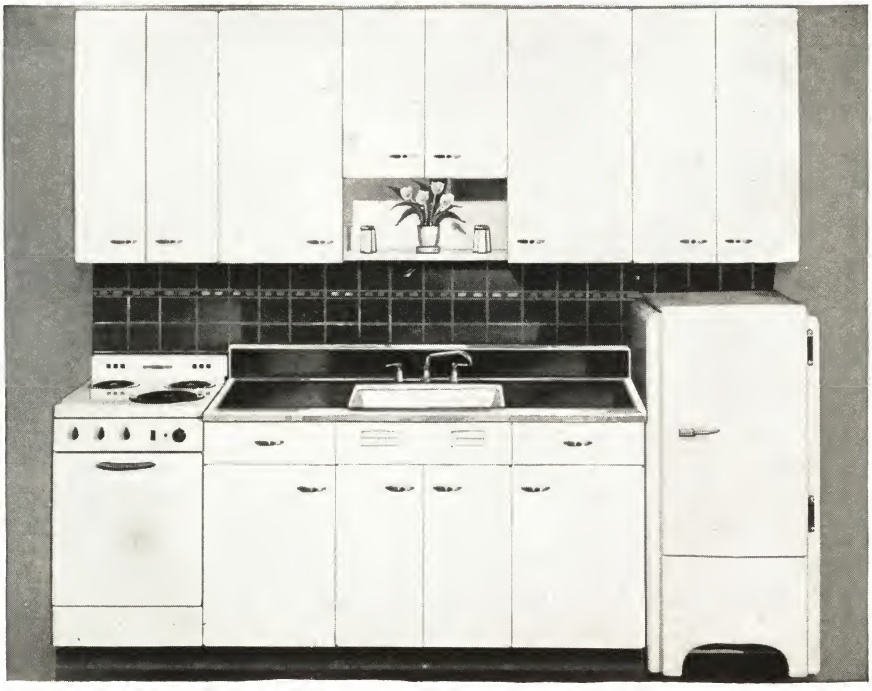
Dieterich proudly presents this newly developed line for the adaptation of a much wider usage of steel kitchen cabinets.

Its streamline appearance is of the very latest type and can be construed as thoroughly modern, even down to the most minute detail.

Through mass production and simplified design, manufacturing costs have been reduced without sacrificing quality, material, or construction. *No longer is price an object.*

Standard stock size cabinets and accessories, which will fit into practically any given space, are carried on hand for prompt deliveries.

Get your copy of the new *"STREAMLINE"* catalog, it gives many photographs of beautiful kitchens.



ELGIN STOVE & OVEN COMPANY

Manufacturers of Steel Kitchen Cabinets

669 North State Street, ELGIN, ILL.

REPRESENTATIVES IN PRINCIPAL CITIES

ELGIN PRODUCTS include wall, base, broom, linen, or shelf cabinets, completely finished and ready to set up in conjunction with counter tops, sinks, ranges, and refrigerators. Cabinets are standardized to go with various modern kitchen appliances. All are simple to install, permanent, quiet, and sanitary.

STANDARD SIZES of Elgin Steel Cabinets can be grouped together in convenient units as desired. Standard accessories fitting into the cabinet are available to contribute to the efficiency of the modern kitchen. Baked enamel finish available in white, ivory or gray or special colors that may be required.

Apartments, residences, schools, hospitals, churches, clubs, stores, industrial, and other institutions will find Elgin Cabinets efficient. An Elgin Cabinet unit can be arranged for any service or size. Rigid, durable, electric spot welded construction assure hard working use for long period of time.





THE CENTURY LINE—Refinement of detail, beauty of line and finish are the plus values of this de luxe line of steel kitchen cabinets which have smooth, flush surfaces and rabbeted fronts. Doors are insulated and close quietly on rubber bumpers. Wall cabinets have adjustable shelves which also are rubber cushioned for quietness.

BEAUTY OF ELGIN STEEL KITCHEN CABINETS is the result of streamlined satin-finish chromium hardware and baked enamel finish which combined give Elgin Steel Cabinets a beautiful, smooth appearance that harmonizes with any decorative scheme.

PERMANENCE—Being made of steel, they are as permanent as the building in which they are used. Strength, rigidity, and light weight are requisite qualities.

QUIET—Rubber bumpers and sound absorbing insulation have taken the clash and rattle out of kitchen cabinets.

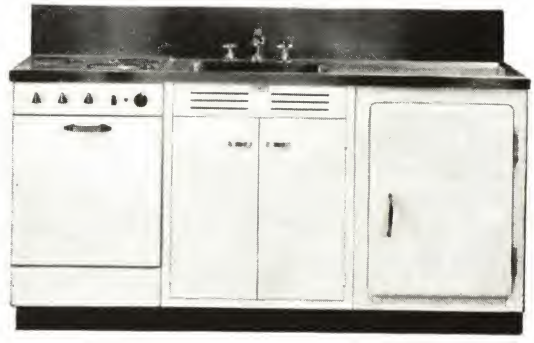
SANITARY—The flush, smooth surfaces of Elgin Cabinets are easy to keep neat and clean.

CONVENIENCE—The architect can plan a kitchen of any size, for large institution or small residence, using standardized units which may be supplemented with the various convenience features and accessories illustrated on the following page.

SIMPLICITY OF INSTALLATION—A screw-driver, a level, and a hammer are all that are necessary for installing Elgin Cabinets. Wall cabinets are mounted on wood grounds and base cabinets on four inch high sub-bases.

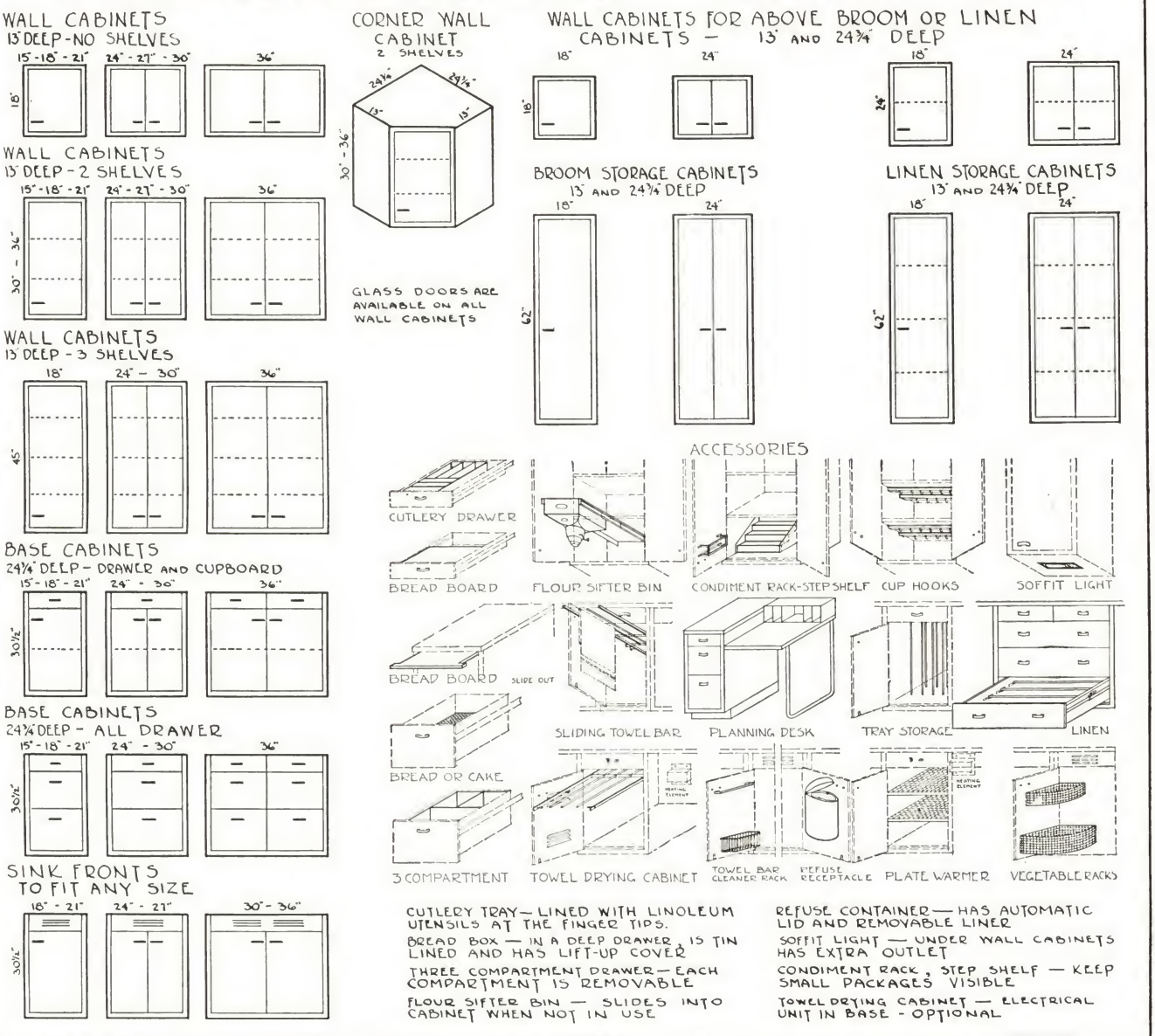
SINKS AND COUNTER TOPS are available in sizes to meet requirements in stainless steel, monel metal, porcelain enamel and linoleum.





Apartment combinations of Elgin Steel Kitchen Cabinets, range, refrigerator and sink (shown above) can be designed in efficient arrangements to suit practically any requirement.

DIMENSIONAL DETAILS — CENTURY LINE



A Wide Variety of Sizes and Styles Simplifies Kitchen Planning

Study of kitchen planning has shown that kitchens are properly divided into five work centers—Storage (including refrigerator), Preparation (including sink), Cooking (including range), Cleaning, Serving and Planning (including desk).

A kitchen planned with regard to these work centers will save miles of steps every day and greatly reduce kitchen hours. Practically any arrangement, in any size kitchen and even in old locations is possible with the wide selection of sizes and styles of Elgin Cabinets. Adding even more to the efficiency of the kitchen are the Elgin conveniences that can be furnished (some of these are illustrated above).

Construction features such as telescopic channel slides, truss shelves, recessed backs, and drilling for assembly appeal to the architects and contractors. Elgin Steel Kitchen Cabinets are beautiful, durable and practical, quality merchandise.

Elgin's experience as pioneer in its field and in planning thousands of kitchens is available through the Elgin Kitchen Planning Department. This department will gladly co-operate in making the best use of the space available for a modern kitchen plan. Communicate with them at Elgin, Illinois, or through your local representative, giving full information and a present floor plan for suggestions.

The Standard Line

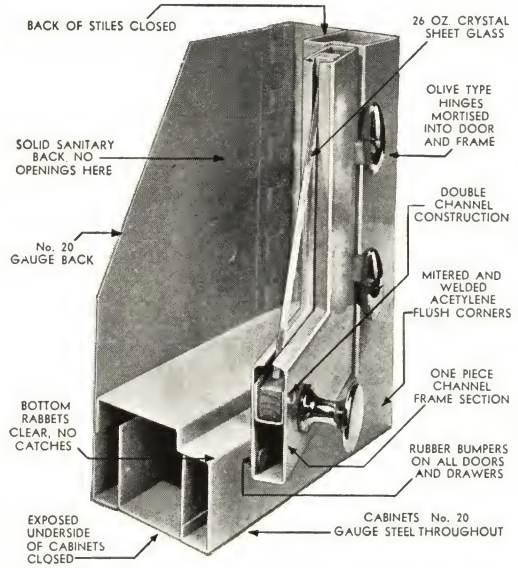
Elgin Standard Cabinets are popular priced without a sacrifice of beauty, strength, or convenience. The construction in the Standard Line has been simplified, resulting in a streamlined appearance. Drawers and doors fully overlap the front face of the cabinet and hinges are semi-concealed. Shelves are welded into position. Doors and drawer fronts are insulated and cushioned for quietness. The drawers have the same telescopic channel slides as the Century Line. Complete information on Standard Line Cabinets will be sent on request.

EXCEL METAL CABINET CO., INC.

Manufacturers of "Metalcraft" Custom Built Kitchen Cabinets

101 Park Avenue, NEW YORK, N. Y.

FACTORY AND EXECUTIVE OFFICE, JAMESTOWN, N. Y.



Note: Base cabinets have solid closed tops—a complete closed case. Base cabinets have top, bottom and side stiles forming complete rigid front frame. All hardware solid bronze—chromium plated.

All drawers equipped with ball bearing rollers



"METALCRAFT" A QUALITY PRODUCT

For over twelve years Metalcraft Cabinets have been installed in some of the finest homes throughout the country.

Today, through specialization, the cost of our cabinets permits their use in the modest as well as in the pretentious residences without any sacrifice in weight of materials or in workmanship.

Metal kitchen cabinets must be rigid and substantially constructed to withstand constant service and abuse. The very purpose of metal—everlasting life—is defeated by light-weight material and poor construction.

The architect is entitled to and should insist on knowing the gauges of metal and details of construction of kitchen cabinets before specifying and we invite close scrutiny and a careful comparison of our specifications given on this page with others.

Metalcraft Cabinets, because of their greater value to your client, deserve to be included in your specification.

Finish

Metalcraft Cabinets are beautifully finished in special baked-on enamel in a variety of colors.

Service

We will gladly furnish chart showing all types and sizes of units upon request or our Kitchen Planning Department will submit suggested layout from a floor plan without any obligation.

Specifications

Cabinets to be constructed throughout of 20-gauge metal furniture steel.

All cases to have mitered and acetylene-welded corners forming a rigid front frame, without seams and joints, having top, bottom and two sides. Face to be ground flush and smooth. All frame openings to have full continuous rabbets around top, bottom and sides, connected at corners by welding.

Frame members, and top, bottom and sides of cases to be formed from one sheet of metal. No holes in exposed ends of cases, and no screw heads to show on face or exposed sides.

Between drawers horizontally, and dividing drawers or doors as required, to be box channel members acetylene-welded to frame members forming rabbets, the face of these members flush with face of cabinets.

Underside of upper units to be closed so that bottoms are flush.

Door and drawer heads hollow metal construction 5/8 in. thick, sound deadened inside, to be recessed into rabbeted frames making a flush front. Drawers to be equipped with ball bearing rollers.

Soft white rubber bumpers to be provided behind doors and drawers.

All shelves to be adjustable and removable.

Glazed doors to be constructed of one-piece frame section acetylene-welded at the four corners. Glass removable and secured by flush metal moulding screwed in place on back of door.

Hinges to be cast bronze, semi-concealed olive type chromium plated, and to be carefully mortised into doors and frames. Knobs to be cast bronze—chromium plated.

Counter tops to be constructed of Stainless Steel [Monel Metal] or Linoleum as required.

Metal tops to be constructed of .031 thick Stainless Steel [Monel Metal] stretched over 16-gauge steel body reinforced with heavy channel stiffeners 18 in. on centers.

Linoleum tops to be constructed of 16-gauge steel body upon which is cemented Armstrong's Battleship Linoleum, edges bound with 18-gauge Stainless Steel [Monel Metal] —edge mould rabbeted into linoleum to make a smooth flush surface.

All counters to be turned up at back and sides where against walls.

Finish: all concealed surfaces to have priming coat baked on before fabrication, and all exposed surfaces to be finished with best quality synthetic enamel in accordance with manufacturer's standards.

Among Our Installations Are the Following

All kitchens and pantries in The "White House", Washington, D. C. Lorenzo S. Winslow, Architect.

Residences

Owner	Architect
Major Edward Bowes	Douglas D. Hall
Samuel L. Fuller	Peabody, Wilson & Brown
John W. Kiser	Hiss & Weeks
Jacob L. Reiss	Ernest A. Arend
Norma T. Johnson	Goodwillie & Moran
George W. Wedener	Horace Trumbauer
S. A. Kirkman	Ernest Flagg
L. K. Jennings	W. B. Chambers
Edw. H. Wells	Lyon & Taylor
Frederick Rockwell	Taylor & Levi
Gifford Cochran	Albert E. Ives

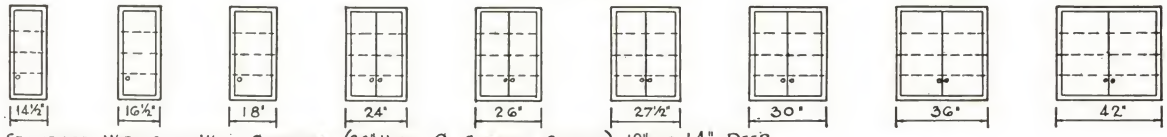
Residences

Owner	Architect
Frank Jay Gould	A. Kimbel & Son, Inc.
Verner Z. Reed	James MacKenzie
John Sloan	James MacKenzie
Louisa C. Eldredge	Kiehnel & Elliott

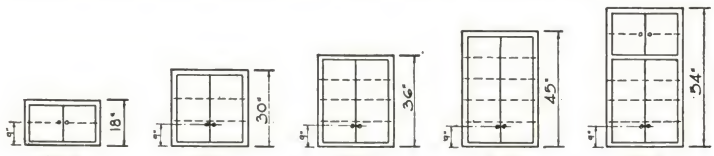
Apartments in New York City

720, 740, 780 Park Avenue	Rosario Candela
895 Park Avenue	Sloan & Robertson
76th Street and Madison Avenue	Bien & Prince
15 West 81st Street	Emery Roth
El Dorado Towers	Margon & Holder

WALL CABINETS

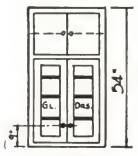


STANDARD WIDTHS OF WALL CABINETS (36" HIGH C CABINET SHOWN) 12" OR 14"- DEEP



30A 30B 30C 30D 30E

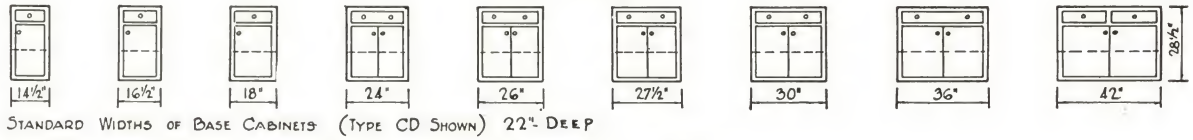
STANDARD TYPES OF WALL CABINETS MADE IN ALL WIDTHS SHOWN ABOVE (30" WIDTH SHOWN)



30 EG

GLASS DOORS CAN BE FURNISHED IN ALL WALL CABINETS. SPECIFY BY ADDING LETTER G

BASE CABINETS

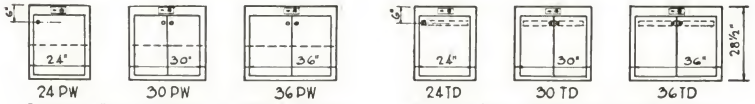


STANDARD WIDTHS OF BASE CABINETS (TYPE CD SHOWN) 22"- DEEP



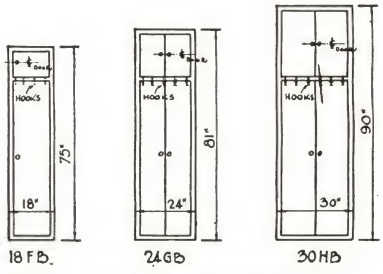
30AC ALL CUPBOARD
30CD CUPBOARD AND DRAWER
30AD ALL DRAWER
30TC TRAY CABINET
30VC VEGETABLE CABINET

STANDARD TYPES OF BASE CABINETS MADE IN ALL WIDTHS SHOWN ABOVE (30" WIDTH SHOWN)



24 PW 30 PW 36 PW
ELECTRIC PLATE WARMERS IN WIDTHS SHOWN.

24 TD 30 TD 36 TD
ELECTRIC TOWEL DRYERS IN WIDTHS SHOWN.

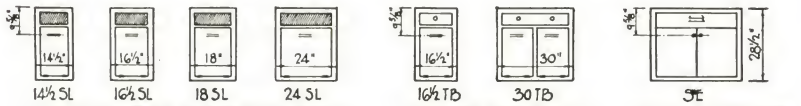


18 FB 24 GB 30 HB

BROOM, STORAGE AND POT CLOSETS ARE MADE IN 18"-24"-30" & 36" WIDTHS, AND IN HEIGHTS SHOWN ABOVE. FIRST LETTER INDICATES HEIGHT – SECOND LETTER, TYPE

BROOM CLOSETS (SHOWN ABOVE)		FB	GB	HB
STORAGE "	(WITH 4 STEEL SHELVES)	FS	GS	HS
POT "	(" 4-WIRE ")	FP	GP	HP

12" - 18" OR 22"- DEEP.



14½ SL 16½ SL 18 SL 24 SL
SOILED LINEN BASES MADE IN WIDTHS SHOWN.

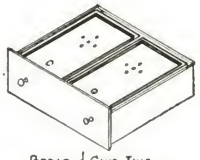
16½ TB 30 TB
TILTING BIN BASES FOR FLOUR & SUGAR MADE IN WIDTHS SHOWN.

SE
SINK ENCLOSURE BASE MADE IN WIDTHS REQUIRED.

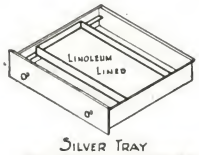
NOTE:-

COUNTER TOPS FOR BASE CABINETS – MONEL METAL, STAINLESS STEEL, OR LINOLEUM COVERED, FURNISHED TO ORDER IN LENGTHS REQUIRED. 24"- DEEP.

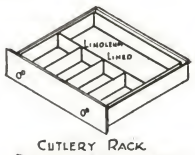
ACCESSORIES



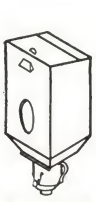
BREAD & CAKE TINS FURNISHED IN DEEP DRAWERS



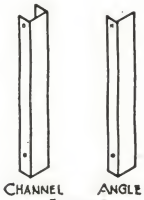
SILVER TRAY FURNISHED IN ANY DRAWER



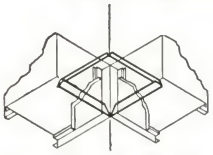
CUTLERY RACK FURNISHED IN ANY DRAWER



COMBINATION FLOUR BIN AND SIFTER FOR WALL CABINETS B-CD & E



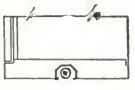
CHANNEL ANGLE FILLERS.



CORNER FILLER FOR WALL CABINETS.



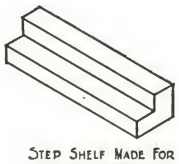
STANDARD 6"-HIGH LEG



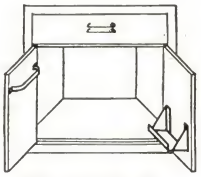
RECESSED REFLECTOR LIGHTS UNDER WALL CABINETS - FLUSH TYPE.



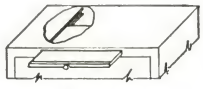
RECESSED REFLECTOR LIGHTS WITH GLASS PANEL UNDER WALL CABINETS.



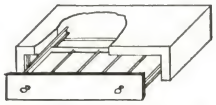
STEP SHELF MADE FOR ALL WALL CABINETS.



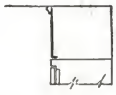
RACK AND ROD ON SE BASE CABINET.



SLIDING BREAD BOARD FURNISHED IN ANY BASE CABINET



TOWEL DRYER DRAWER MADE IN STANDARD WIDTHS.



CEILING FILLER & MOULDING MADE IN HEIGHTS AS REQ'D.



CUP HOOKS 1 DOZ. PER SHELF FOR WALL CABINETS 24" WIDE AND OVER

FARLEY & LOETSCHER MFG. CO.

Manufacturers of Sash, Doors, Blinds, Frames, Screens, Mouldings, Storm Sash, Cabinet Work, Stair Work, Porch Work, Interior Trim, Veneered Doors, Combination Doors, Garage Doors, Stock and Special Millwork

DUBUQUE, IOWA, U. S. A.

For "Unipak" Wood Casements, Double Hung Windows and Doors, see File Index

F & L "DeLuxe" KITCHEN UNITS

Qualitybilt WOODWORK REGISTERED

A complete line of highest grade Wood Kitchen Cabinets designed for new kitchen efficiency, maximum arrangement flexibility and to harmonize with the modern type ranges, refrigerators, and other kitchen equipment.

Available in the following methods of shipment:
(1) Semi-assembled, not painted, carton packed.
(2) Set up, not painted, crated.
(3) Set up, primed, crated.
(4) Set up, completely enamelled, crated.

Units are shipped complete including ends, tops, bottoms, shelves, hardware, and backs—except backs are not included with semi-assembled units unless ordered.

General Specifications

F & L "De Luxe" Kitchen Units embody the finest methods of cabinet construction. They are designed to be fastened together with screws into rigid, permanent assemblies, equal to custom-built installations costing a great deal more. Accurate machining insures uniformity of all parts which permits quick and economical installation.

MATERIAL—Thoroughly kiln dried and seasoned W.P. Pine (except hardwood drawer slides, doors, backs, and counter tops). Other woods furnished when desired.

Ends and shelves are made from ¾-in. material, pieces glued together to resist warping. Shelves are adjustable.

Fronts are made with mortise and tenon joints, glued.

Backs are 3-ply with hardwood face veneer suitable for enamel finish.

DOORS—Flush type, 1⅜ in. thick, with standard lipped construction. 5-ply cross banded with close-grained hardwood face veneers suitable for enamel finish. One-panel doors (with hardwood panel) or sash doors, furnished when ordered.

DRAWERS—Dovetailed construction, lipped fronts, 3-ply bottoms set in grooves in front, sides, and back. 2-piece hardwood center guides insure smooth, easy operation. Tilting strips included prevent drawers from tilting.

HARDWARE—Included with all "De Luxe" units. Consists of specially designed, semi-concealed chrome-plated hinges, chrome-plated door catches, chrome-plated drawer pulls, and cadmium-plated elbow catches. Shelf pins included for adjustable shelves.

COUNTER TOPS—Flat tops furnished in W.P. Pine, Unselected Birch, Linoleums, Porcelain Enamel, Stainless Steel, or Monel Metal.

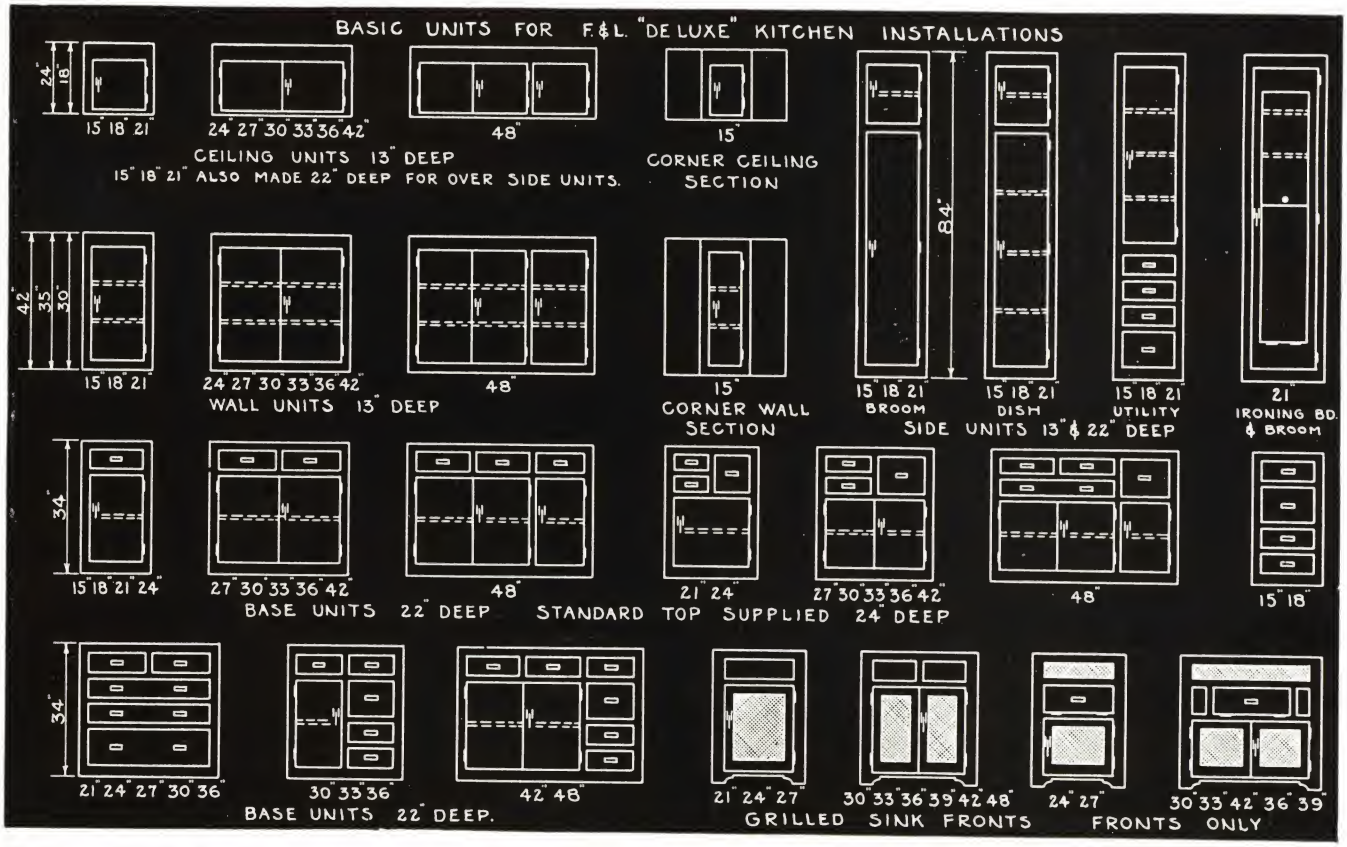
SINK TOPS—Tracy Permasheen Linoleum, Tracy Silvi-Sheen stainless steel and Veribrite acid-resisting porcelain enamel sink tops furnished in all sizes and shapes.

METAL FOOD CONTAINERS—A large variety of containers and accessories are available when desired. The metal used will not contaminate food and will not crack or peel.

FINISHES—Finished F & L "De Luxe" Kitchen Units are completely enamelled in beautiful color combinations at the factory. This enamel finish is the finest obtainable and consists of a special semi-gloss, clear toned, synthetic enamel, having strong moisture and alkali resisting properties and producing a fine surface resistance. Color chart of standard enamel finishes sent on request. Other type finishes furnished when desired.

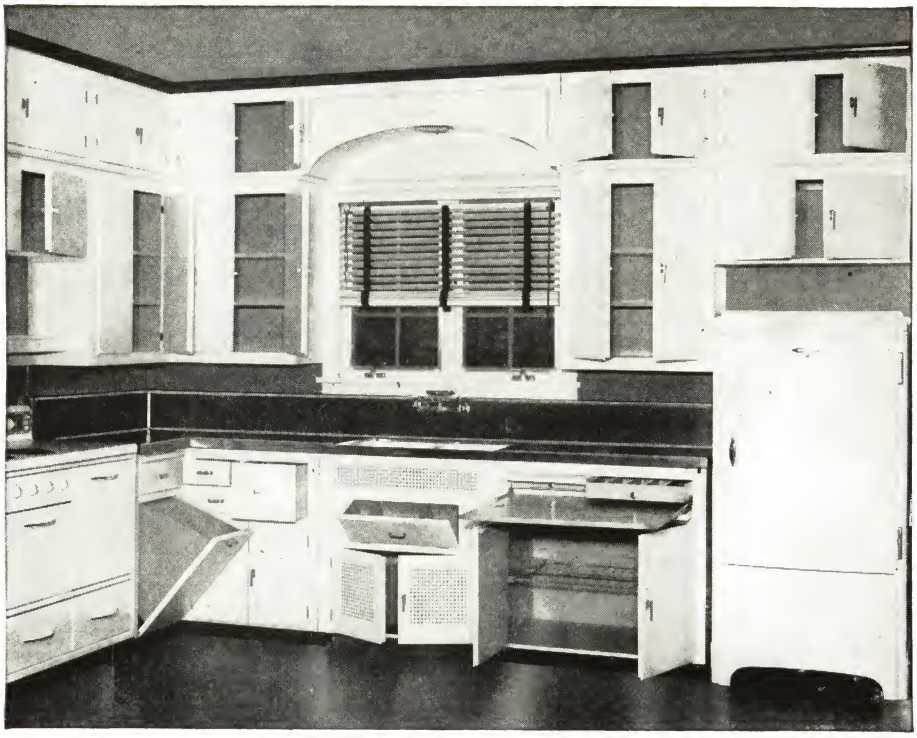
"IN-THE-WHITE"—All unpainted units are smoothly sanded, ready for painter's finish.

VERSATILITY—The basic units shown below can be assembled into any given kitchen area, large or small, high or low ceiling, regardless of arrangement desired.



Packing: All "De Luxe" units are especially well crated for shipment so they will reach their destination in first class condition.

F & L "DE LUXE" KITCHEN INSTALLATIONS



A Typical Installation of F & L "De Luxe" Units

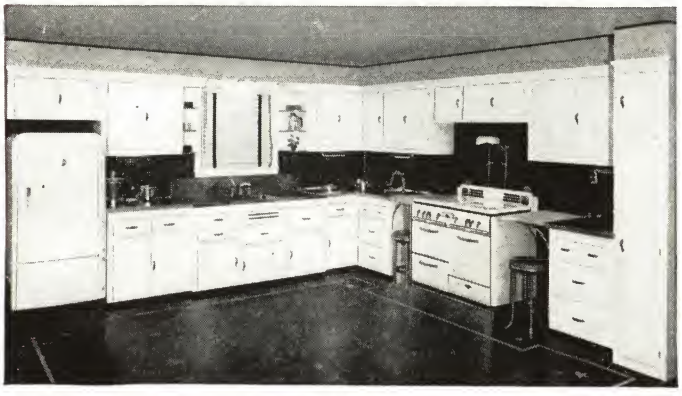
FEATURES

Installation at left shows F & L "De Luxe" features which can be embodied in any kitchen arrangement. Note how accurately the units join into a complete harmonious assembly.

1. One-piece "L" shaped sink top.
2. Ceiling units for extra storage.
3. Wood ceiling arch over sink.
4. Grilled sink front with metal soap container.
5. Sliding table unit, concealed when not in use.
6. Cabinets over refrigerator and stove.
7. Tilting metal flour bin.
8. Metal Bread container.
9. Wire lid rack.
10. Sliding wire shelf.
11. Hardwood cutting board.
12. Felt bottom cutlery tray.
13. Adjustable shelves.
14. Formica base strip.
15. Perfect alignment with stove and refrigerator.
16. Simplicity of design for beauty and cleanliness.

Other F & L "De Luxe" features which can be added are side unit with built-in ironing board and broom closet; over-the-sink cabinet; sugar bin; trays, etc.

Standard base sections can be prepared for electric dishwashing units.



A Large Installation of F & L "De Luxe" Units with Combination Sink Unit



Standard Base Unit Adapted to Electric Dish Washer

SPECIAL CABINETS AND OTHER WOODWORK

Although the standard F & L "De Luxe" Kitchen Units meet the majority of requirements, our factory is fully equipped to produce cabinets of special sizes, special construction, and in various woods in complete harmony with the standard "De Luxe" units or to any architect's details.

As we also manufacture fine interior woodwork, doors, windows, cabinetwork, etc., in large quantities, there is a distinct advantage in combining the kitchen cabinets with other woodwork required into one contract. This insures uniform quality of all material and workmanship and undivided responsibility for proper construction and fitting of all component parts.

ECONOMICAL

Standardization of all parts and quantity production with the most modern machinery enables us to maintain the highest quality in F & L "De Luxe" units and still effect substantial savings to the builder.

PLANNING SERVICE

Our Kitchen Planning Department offers a complete service in kitchen planning and is prepared to suggest the latest and best kitchen equipment at the most economical cost.

Literature showing complete F & L "De Luxe" lines and complete installations sent on request.

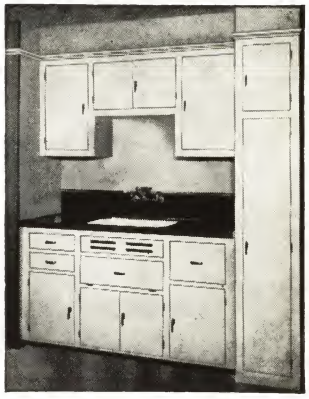
APARTMENTS

F & L "De Luxe" units are easily adapted for apartments and kitchenette installations as shown at right. Unusual conditions can be met by grouping various "De Luxe" parts into special unit arrangements to fit other kitchen equipment.

Send us sketches or details of your requirements and let us submit suggestive layouts.

OTHER USES

F & L "De Luxe" Kitchen Units are also used in many other parts of the home, such as in bathrooms for towel cases; in halls for linen storage; in bedrooms for wardrobes and built-in dressers; in playrooms for toys, books, etc.; in dens for sporting equipment, and in attics for storage.



F & L "De Luxe" Combination Sink Unit with Other Standard Units

Hotels, stores, taverns, restaurants, schools, churches, hospitals, and lodge rooms can also use these convenient cabinets.

GENERAL ELECTRIC COMPANY

Nela Park
CLEVELAND, OHIO

GENERAL ELECTRIC KITCHENS ARE COMPLETE

REFRIGERATOR RANGE DISHWASHER DISPOSALL CABINETS WATERHEATER

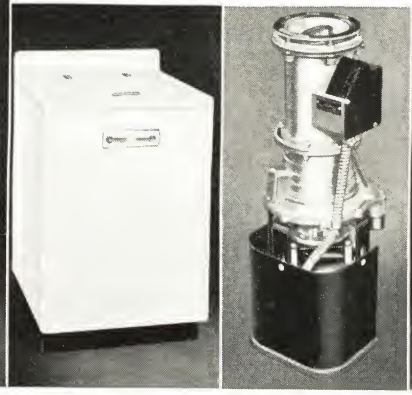


Although a complete kitchen by General Electric includes all the major kitchen appliances and cabinets, planning and installation is simple. Specify G-E for small as well as large homes. Order from one source complete. Appliances and cabinets designed to match. Will fit practically any size and style layout in new or existing homes or apartments.

Proper planning together with electrical appliances to preserve perishable foods, to cook with precision, to wash the dishes and to dispose of garbage, combine to make a beautiful, efficient step-saving kitchen—one that you can be proud to recommend—one that your clients will be proud to own.



The G-E Triple Thrift Refrigerator keeps perishable foods garden fresh



The G-E Dishwasher and G-E Disposall banish the dishpan and the garbage can from the home



The G-E Range, fast, economical, and dependable, permits precision cooking with recipe book results



There is always plenty of hot water with a G-E Water Heater

HOME APPLIANCE DISTRIBUTORS

ALLENTOWN, PA.
General Electric Supply Corp.
1249 Liberty St.

ATLANTA, GA.
W. D. Alexander Co.
380 Peachtree St., N. E.

ATLANTIC CITY, N. J.
Clark Adams, Inc.
2933-35 Atlantic Ave.

BALTIMORE, MD.
General Electric Supply Corp.
5 So. Gay St.

BIRMINGHAM, ALA.
Matthews Elect. Supply Co.
1821 First Ave., No.

BOSTON, MASS.
General Electric Supply Corp.
378 Stuart St.

BOSTON, MASS.
General Electric Co.
Factory Distributing Branch
Appliance & Merchandise Dept.
700 Commonwealth Ave.

BUFFALO, N. Y.
Frank W. Wolf, Inc.
779 Main St.

BUTTE, MONT.
General Electric Supply Corp.
900 E. Front St.

CHARLESTON, W. VA.
Electric Home Appliance Co.
1038 Quarrier St.

CHARLOTTE, N. C.
L. W. Driscoll, Inc.
730 E. Trade St.

CHICAGO, ILL.
R. Cooper, Jr., Inc.
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Gies, Inc.
424 Commercial Square

CLEVELAND, OHIO
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COLUMBUS, OHIO
Bard, Inc.
215 No. 4th St.

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General Electric Supply Corp.
1811 No. Lamar St.

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B. K. Sweeney, Inc.
13th Ave. and Broadway

DES MOINES, IOWA
General Electric Supply Corp.
513 E. Court Ave.

DETROIT, MICH.
General Electric Supply Corp.
2985 E. Jefferson St.

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EL PASO, TEX.
E. O. Cone Co.
P. O. Box 1532.

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General Electric Supply Corp.
2005 State St.

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Dakota Elect. Supply Co.
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FRESNO, CALIF.
Valley Elect'l Supply Co.
San Joaquin Power Bldg.

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Orkil Electric Co., Inc.
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W. A. Ramsay Ltd.
74 Queen St.

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Electric Appliances, Inc.
120 W. North St.

KANSAS CITY, MO.
General Electric Supply Corp.
1411 Walnut St.

LANCASTER, PA.
Raub Supply Co.
James and Concord Sts.

LITTLE ROCK, ARK.
O'Bannon Bros.
101 Terminal Warehouse Bldg.

LONG ISLAND CITY, N. Y.
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25-11 Hunters Point Ave.

LOS ANGELES, CALIF.
The Geo. Belsey Co., Ltd.
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LOUISVILLE, KY.
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E. H. Schaefer Corp.
940 W. St. Paul Ave.

NASHVILLE, TENN.
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128 Sixth Ave., So.

NEWARK, N. J.
Philip H. Harrison & Co.
191 Central Ave.

NEW ORLEANS, LA.
General Electric Supply Corp.
733 Tchoupitoulas St.

OKLAHOMA CITY, OKLA.
General Electric Supply Corp.
127 E. California St.

OMAHA, NEB.
General Electric Supply Corp.
814 So. 14th St.

PHILADELPHIA, PA.
Judson C. Burns, Inc.
31st and Oxford Sts.

PITTSBURGH, PA.
Ochiltree Electric Co.
505 Liberty Ave.

PORTLAND, ORE.
General Electric Supply Corp.
230 N. W. Broadway

PROVIDENCE, R. I.
E. Pulver Cook, Inc.
72 So. Main St.

RICHMOND, VA.
R. S. Montgomery, Inc.
205 E. Grace St.

ST. LOUIS, MO.
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Geo. Patterson, Inc.
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SAN FRANCISCO, CALIF.
General Electric Supply Corp.
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A. Wayne Merriam, Inc.
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SEATTLE, WASH.
General Electric Supply Corp.
1212 First Ave., So.

SPRINGFIELD, MASS.
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Langdon & Hughes Electric Co.
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WHEELING, W. VA.
West Virginia Appliance Co.
1311 Chapline St.

WILLIAMSPORT, PA.
Lowry Elect. Co., Inc.
643 Elmira St.

General Electric Home Bureau, 570 Lexington Avenue, New York, N. Y.

COMMERCIAL EQUIPMENT

The G-E line of refrigeration equipment for business uses covers every field. A complete line of condensing units from 1/4- to 50-hp. capacity, chilling units, water colors, beverage coolers, milk coolers, beer dispensing equipment, and large storage refrigerators makes G-E the complete line. Call General Electric on *any* refrigeration problem.

Our engineers will be glad to co-operate in developing proper equipment for both large and small installations.

ESTABLISHED 1840

JANES & KIRTLAND, INC.

101 Park Avenue, NEW YORK, N. Y.
DIVISION OF HUBENY BROS., INC.—FACTORY: ROSELLE, NEW JERSEY

The WHITE HOUSE Line
TRADE MARK

SECTIONAL STEEL UNITS FOR KITCHENS AND PANTRIES

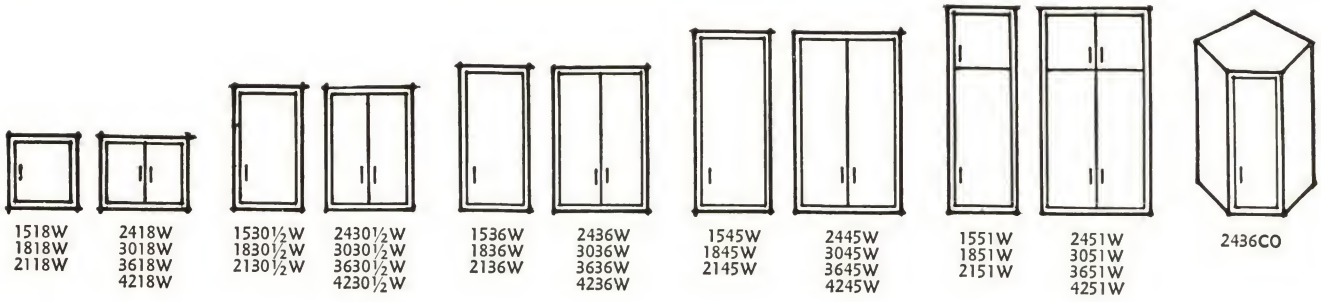
Outline Specifications

All cabinets to be manufactured of first grade furniture steel fully pickled, double annealed and stretcher leveled of 20-gauge throughout. All joints to be acetylene welded and ground flush. All members concealed with the exception of outside members giving maximum space inside of doors and drawers. The doors to be of double type construction 5/8-in. thick, insulated with cane fibre board, fitting into full rabbetted frames, hung on "Octoval" (octagonal Olive knuckle type) hinges in brass chromium plated, and closing on special friction catches against rubber bumpers. Drawer fronts to be double type construction 5/8-in. thick fitted into fully rabbetted frames and operating on roller bearing slides. All shelves to be flanged down on all sides and edges hemmed and to be adjustable on 1-in. centers. All tops, bottoms and backs of all units are flush, leaving no dust pockets. Each unit to be a complete steel case, including top, bottom, sides and back. All doors and drawers to be provided with modern handles of bakelite and chromium.

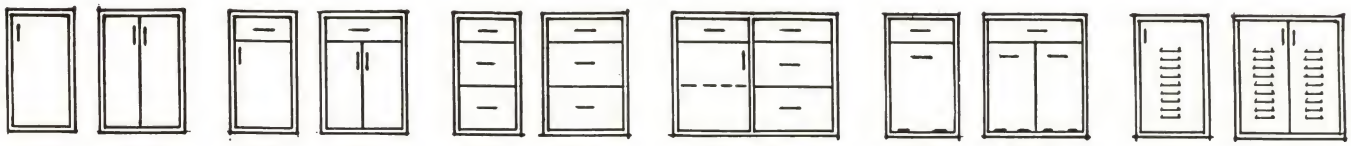
All units to be finished in baked enamel, inside, outside, including the top, bottom and back; four-coat work throughout, sanded between coats and baked to a high gloss. Finish may be white or in color to match samples submitted by customer.



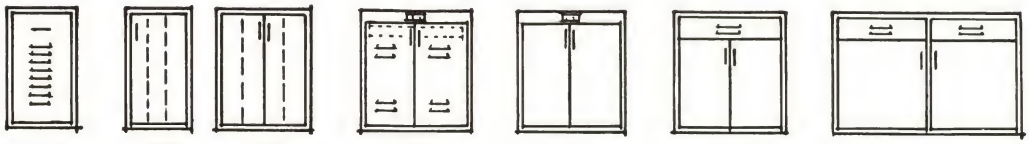
WHITE HOUSE steel units have been on the market for twenty-five years. Each year some improvement is made in design or construction, so that when you buy WHITE HOUSE units you are assured of the most modern equipment for your kitchen and pantry.



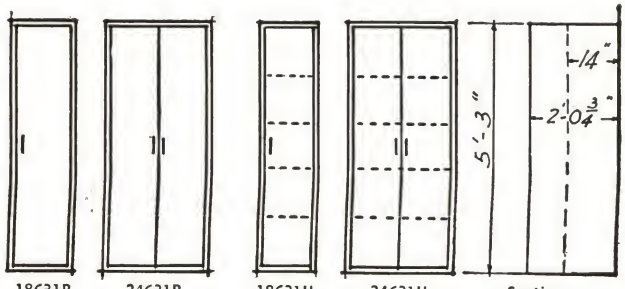
1518W 1818W 2118W | 2418W 3018W 3618W 4218W | 15301/2W 18301/2W 21301/2W | 24301/2W 30301/2W 36301/2W 42301/2W | 1536W 1836W 2136W | 2436W 3036W 3636W 4236W | 1545W 1845W 2145W | 2445W 3045W 3645W 4245W | 1551W 1851W 2151W | 2451W 3051W 3651W 4251W | 2436CO



15AC 18AC 21AC | 24AC 30AC 36AC 42AC | 15CD 18CD 21CD | 24CD 30CD 36CD 42CD | 15AD 18AD 21AD | 24AD 30AD 36AD | 36 COMB. 42 COMB. | 18FB | 30FB | 18VB | 24VB

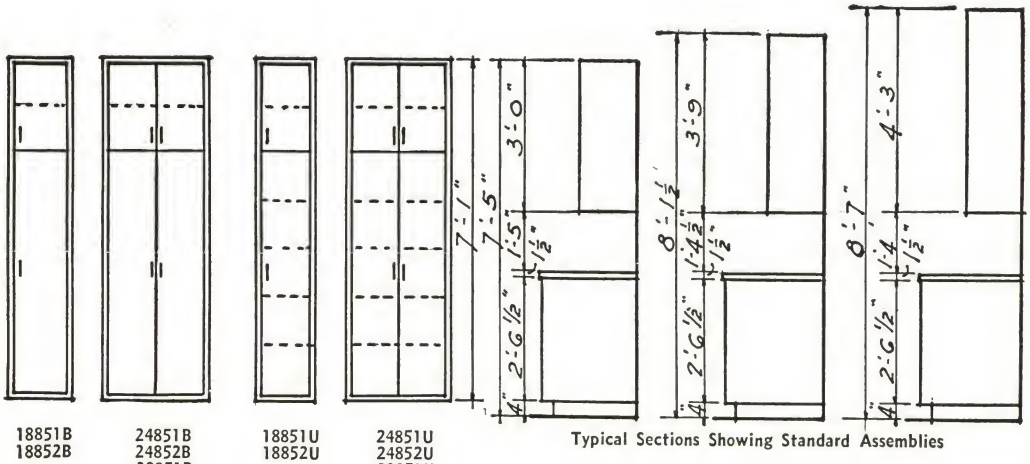


18LB 24LB | 15TB 18TB | 24TB 30TB | 24TD 30TD | 24PW 30PW | 24SF 30SF 36SF | 48SF 54SF



18631B 18632B | 24631B 24632B 30631B 30632B | 18631U 18632U | 24631U 24632U 30631U 30632U | Section Though Tall Closets

AC—All Cupboard
CD—Cupboard and Drawer
AD—All Drawers
TB—Tray Base
LB—Linen Bin
W—Wall Unit
B—Broom Closet
VB—Vegetable Bin
FB—Flour Bin
TD—Towel Dryer
PW—Plate Warmer
SF—Sink Front
CO—Wall Corner Unit
U—Utility Closets



18851B 18852B | 24851B 24852B 30851B 30852B | 18851U 18852U | 24851U 24852U 30851U 30852U | Typical Sections Showing Standard Assemblies

Wall Units

All wall units are made 14 in. deep overall, giving a 13¼ in. clear shelf space inside.

Doors may be metal or glazed as required with the exception that the 18 in. high units are furnished wth metal doors only. Modern handles are placed at conveniently located heights.

Base Units

Base or lower units are made 24¾ in. deep standard. Other depths, however, may be furnished but at extra cost.

A four or five drawer base may be substituted for the three drawers at extra cost. Roller bearing slides on all drawers.

Sink fronts are in sizes as shown with louvre panel and doors, or grille doors for radiator enclosures.

Rods for towels and rack shelf may be furnished on the inside of doors of any sink front.

All base units rest on 4-in. sub-base set back in front 3 in. for toe space. These sub-bases may be of concrete, tile or wood and are usually furnished by another contractor.

Closets

Closets are made 14 in. deep to match wall units or 24¾ in. deep to match base units.

Closets are equipped with hooks and clips for brooms and mops or provided with four steel shelves for general storage or five wire racks for pot and pan storage.

To obtain height of closet to match total overall height of upper units, place wall unit on top of closet.

Other accessories available are locks, reflectors, cup hooks, platter rails, flour bin and sifter for upper units, sugar jars, spice jar racks, and rolling ladder and rails for reaching high upper units.

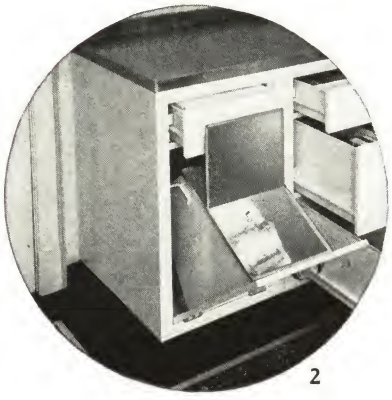
Sinks, drainboards and counters may be furnished of monel metal, stainless steel or linoleum, and made to size to fit conditions.

THESE WHITE HOUSE FEATURES MAKE A COMPLETE, CONVENIENT AND SERVICEABLE LAYOUT


1


9


5


2

(1) Vegetable base with sliding wire baskets.

(2) Flour bin base—removable tilting bins for flour and sugar.

(3) Tray base with removable wire rack partitions for trays and platters.

(4) Soiled linen bin for pantry service.

(5) Electric plate warmer with three-heat switch and pilot light.

(6) Electric plate warmer and towel dryer installation, using plate warmer at counter height for convenience.

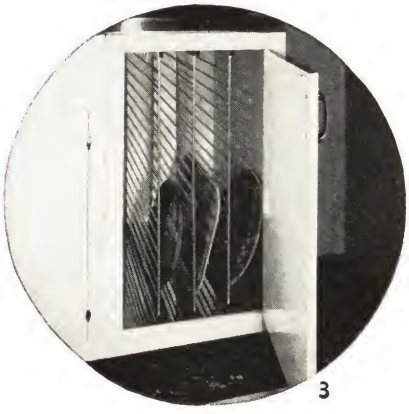
(7) Silver drawer, felt lined and provided with sliding tray and adjustable partitions.

(8) Cutlery drawer with linoleum on bottom and adjustable partitions; sliding bread board.

(9) Pot closet with heavy wire racks for pots and pans.

(10) Wire racks in an all cupboard base for pots and pans; removable flour bin and sifter in wall unit; removable bread tin.

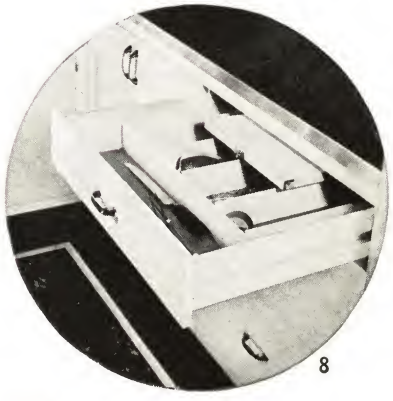

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3


7


4


10


8

THE KITCHEN MAID CORPORATION

ANDREWS, INDIANA

AGENTS

ATLANTA, GA., Dixie Kitchen Maid Sales, 1325 William-Oliver Bldg.
BUFFALO, N. Y., Dohn, Fischer & Co., Inc., 1330-1348 Niagara St.
CHICAGO, ILL., Kitchen Maid Co. of Ill., 2820 South Parkway
CINCINNATI, OHIO, H. H. Fikret, 127 E. Ninth St.
CLEVELAND, OHIO, Porter Building Equipment Co., 6501 Euclid Ave.
DALLAS, TEX., United Builders Equipment Company, 10th Floor, 2nd Unit Santa Fe Bldg.
LOUISVILLE, KY., Henry Koehler & Co., 15th and Oak Sts.
MILWAUKEE, WIS., Kurt W. Niemann, 2114 So. 75th St., West Allis, Wis.
NEW YORK, N. Y., Kitchen Maid Sales Co., 101 Park Ave.
PHILADELPHIA, PA., Philadelphia Gas Range Co., 1117 Chestnut St.
PITTSBURGH, PA., L. A. Rust Company, 142 Gulf Bldg.
RICHMOND, VA., Carter-Armistead-Todman, Inc., 5 W. Grace St.
ST. LOUIS, MO., Frank J. Felker, 3550 Pine Grove Ave.
WASHINGTON, D. C., Building Equipment Company, 1427 Eye St., N. W.

Consult the phone book for agents in other cities—or write Andrews, Indiana

PRODUCTS

BUILT-IN KITCHEN UNITS OF WOOD CONSTRUCTION in a wide variety of standard sizes . . . including Cabinet Bases, Wall Cupboards, Butlery Bases, Broom Closets, Dish Cupboards and numerous storage and service units for every kitchen need. Continuous Sink and Counter Tops are specially fabricated as specified by the architect, for installation with standard units. All units are factory built and finished, shipped ready for installation in combinations as planned for the complete kitchen.

KITCHEN MAID
ORIGINATOR OF STANDARD UNIT KITCHEN CABINETRY

THE ORIGINAL STANDARD UNIT SYSTEM

First developed by Kitchen Maid in 1922, Standard Unit Kitchen Cabinetry has taken rapid strides. It has been used in thousands of homes and apartments with the most satisfactory results. Countless improvements and additions have been made ever since the first units were built . . . so that today Kitchen Maid offers an unusually complete and thoroughly dependable line of cabinetry.

SIMPLICITY OF DESIGN

Kitchen Maid Cabinetry of 1939 is designed and built for complete convenience and cleanliness . . . to harmonize with the most modern kitchen appliances . . . to blend with any decorative motif. Smooth, durable finish, appealing color, flush panels, unobtrusive hardware, and simple lines make it truly modern in every respect.

ADAPTABILITY

Because Kitchen Maid Cabinetry comes in such a wide variety of sizes, it is always an easy matter to make the combination of units for kitchens of any size or shape. Additional lateral flexibility may be gained by trimming down certain units or by the use of mouldings at the wall. In vertical arrangement, the space above wall cupboards is easily utilized with a false wall.

MATERIALS AND WORKMANSHIP

Only clear, sound, thoroughly kiln dried hardwood lumber is used. *Upper cupboard shelves* are $\frac{13}{16}$ in. 5-ply laminated wood. Laminations and crossbanding make these shelves much stronger than plain lumber. *Sliding middle shelves* in base-units are flat, heavily tinned wire, sliding on hardwood guides. *Front frames,* all stiles and rails, upper section ends, wall cupboard ends and 13 in. depth side unit ends are glued up and machined from four-quarter Southern hardwood . . . dressed to full ¾ in. thickness. *Base end panels,* base bottoms, etc., are 3-ply laminated wood or Masonite. Backs of all units are of Masonite.

Kitchen Maid *smooth surface doors* are of the dustproof lip type. Consist of two layers of ¼ in. hard, straight, grainless wood-fibre permanently attached with water-proof glue to a center core of ¼ in. hardwood. Total thickness ¾ in. Guaranteed against warping or deterioration in normal kitchen use. *Catches, strikes and drawer pulls* are of brass, bright chromium plated. Seated in colorful plastic. *Hinges* (semi-concealed type) of steel, bright chromium plated. *Drawers* are of 20-gauge steel, finished in special baked enamel. Spot-welded for strength and durability. Slides and guides are of heavy hardwood treated with paraffin. Self-closing bread box.

All corner joints are "triple nail locked." All front frame rails and stiles are joined with hardwood spiral dowels . . . the strongest joint known in woodworking. The shelves of 5-ply panel stock are dadoed and glued into ends. Backs are rabbeted into top, bottom and ends, and nailed in with cement-coated nails. All base corners are given great additional strength by using 2 in. wood corner blocks with rubbed glue joints.

OUTSTANDING FEATURES

The interior corners of all Kitchen Maid units are rounded, making them as easy to clean as the inside of a cup . . . an exclusive Kitchen Maid feature. The smooth surface doors completely eliminate dust-catching corners. Wide pieces of ¾ in. kiln dried lumber are installed at top and bottom back of each unit, making it easy to fasten Kitchen Maid units to the wall quickly and securely. Installation is made simpler and faster by countersinking holes for screws in the left front stile of each unit. Thus, each unit may be securely fastened to unit at left.

12 ATTRACTIVE COLORS

All Kitchen Maid units are furnished in a choice of 12 beautiful standard colors listed below (samples on request):

Snow White	Light Buff	Dawn Gray
Oyster	Sunbronze Tan	Primrose Yellow
Colonial Ivory	Seacrest Green	Pale Blue
Faint Ivory	Verdas Green	Cobalt Blue

Special colors are extra. Doors and drawer fronts may be striped or lined with contrasting colors or interiors in contrasting colors, when specified . . . at a small additional cost. No decoration unless specified. Finish is applied by spray gun. Triple coated. Hand sanded between coats.

FREE PLANNING SERVICE

Consider the Kitchen Maid Planning Service as part of your staff . . . draftsmen who specialize in kitchen problems exclusively. Just send data on sizes and openings for suggestions on the adaptation of Kitchen Maid units to your plan. Floor plans and elevations will be prepared for your exclusive use. No obligation.

FOR LOWER COST HOMES . . . KITCHEN MAID OFFERS THE STANDARD AND PRUDENCE LINES

In addition to Kitchen Maid Cabinetry illustrated and described here, this company also builds two lower priced lines . . . *Standard* and *Prudence*. This makes it possible for you to specify Kitchen Maid Cabinetry for homes of any size or cost. Write for details and specifications on these lower priced lines.



Linen Storage Drawers



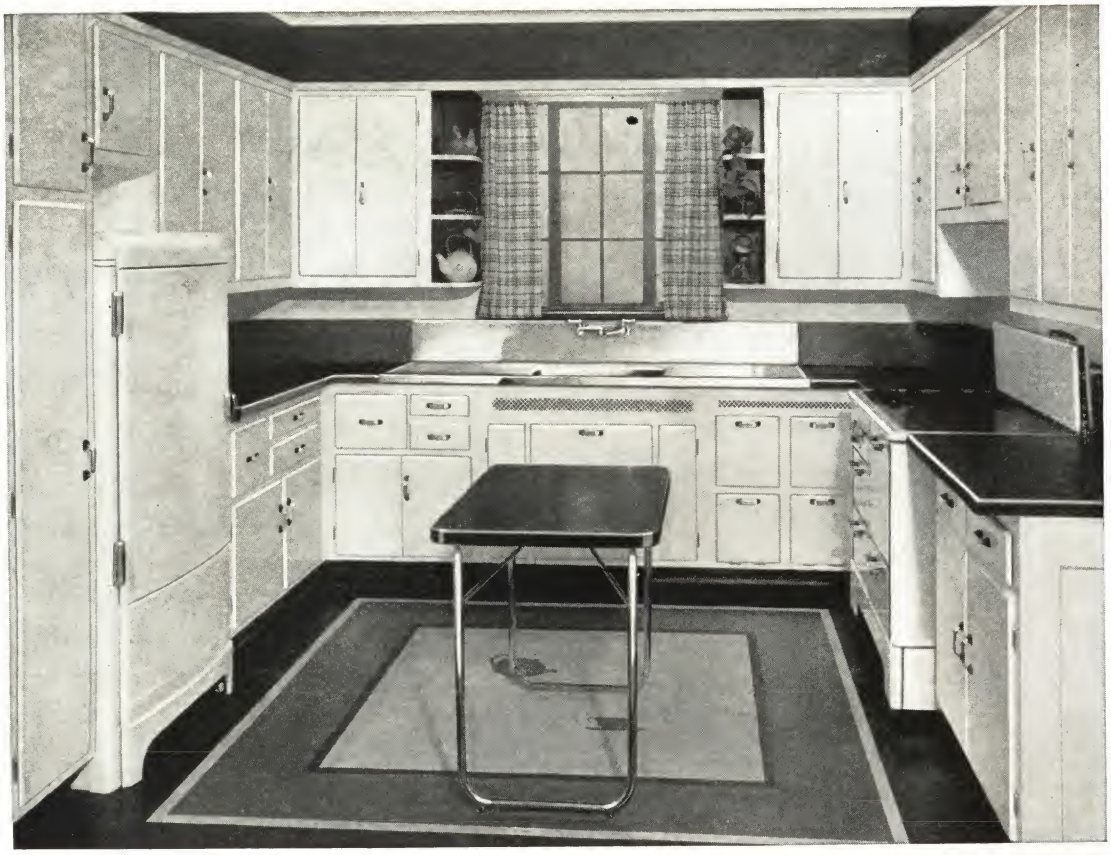
Inside Corner Shelf Unit



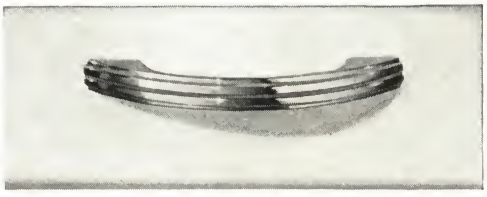
Towel Dryer Rack

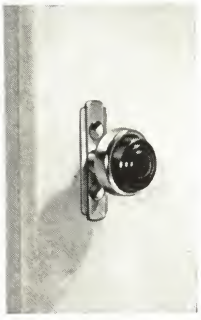


Soiled Linen Bin



Nothing has been overlooked in Kitchen Maid Kitchens of today. They are soundly constructed, serviceable and permanent. They are beautiful and inviting . . . provide the utmost in kitchen efficiency . . . complete in every way.





New 1939 Hardware

Always a step ahead in cabinetry design, Kitchen Maid offers completely new and exclusively designed hardware. The time-tested mechanical part of the catches remains practically the same . . . but the pull is a round knob, 1½" in diameter, with a center plunger of red, black or white. The drawer pull is a full-size bar, chromium-plated, with a very attractive pin stripe of red, black or white. Hinges are semi-concealed.

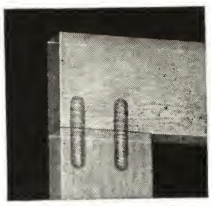


Temperprest and Prestex Counter Tops

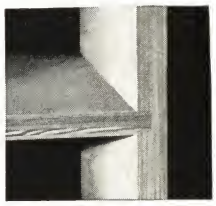
Kitchen Maid offers a perfect solution to the problem of sink and counter top construction with two distinctive materials . . . *Temperprest* and *Prestex*, two ideal kitchen work surfaces that assure practicaly every feature the modern housewife wants and needs at a substantial saving.

Temperprest—an all-wood product, highly compressed and sealed in its own resin. Warm to the touch. Chemically treated to resist moisture, grease and acids. Jointless construction makes it water-tight, clean and easily cleaned. Has remarkable resiliency, which means kitchen quiet and reduced chances of dish breakage. Unusually economical. Outlets may be cut on the job, thus reducing installation costs. In five attractive colors . . . Brick Red, Persian Brown, Russet Brown, Mottled Green and Jet Black.

Prestex—for those who prefer sink and counter tops in brighter colors and higher finishes. A high quality linoleum securely attached to a base of prestwood fiber. This material assures work surfaces that are quiet, resilient and colorful. It is beautiful in appearance, acid-resisting, water-tight, easy to clean and cannot chip, crack or craze. It withstands severe wear and is widely accepted as a practical sink and counter top material. Available in seven standard colors . . . solid black, blue, red and green; marbelized buff, black and blue. Any other standard linoleum pattern may also be used at small additional cost.



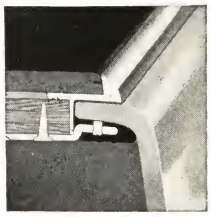
Front frames have most precise dowel joints . . . assuring perfect alignment, greater strength.



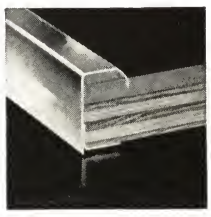
All shelves of 5-ply lumber, securely dadoed into side panels. Painting seals all joints.



Top view of base cabinet. Note the accurate mortise and tenon joints, also heavy corner block.



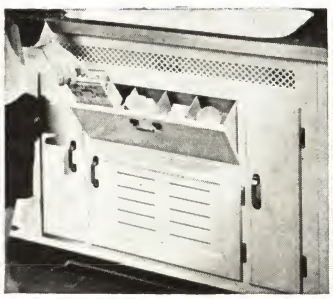
Cross section shows how tightly the sink bowl is made to fit counter top. Always easy to clean and keep clean.



Counter top cross section. Note the wood base with work surface securely attached, also attractive metal moulding.



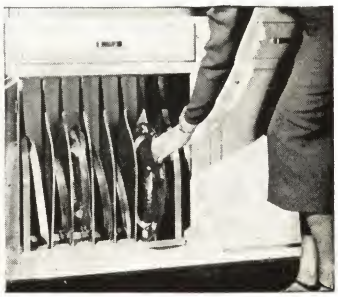
Open Corner Base



Utility Bin



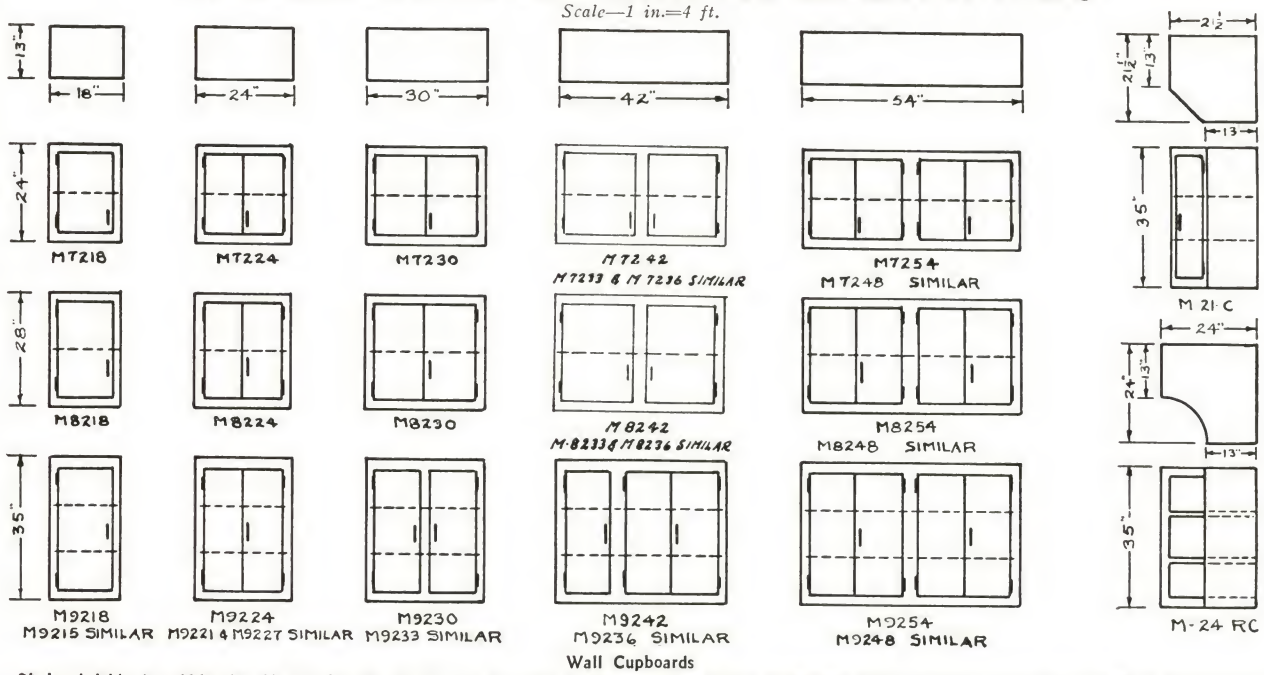
Beverage Base



Tray Storage Base

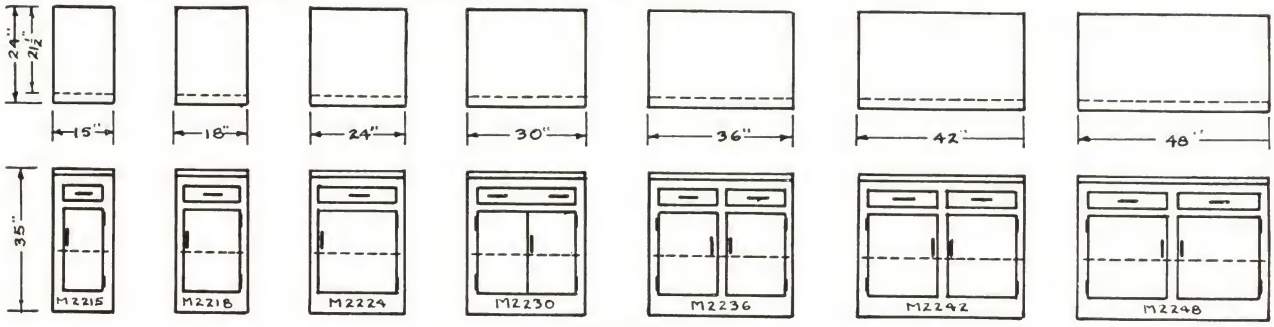
STANDARD KITCHEN MAID UNITS FOR MODERN KITCHENS

Scale—1 in.=4 ft.



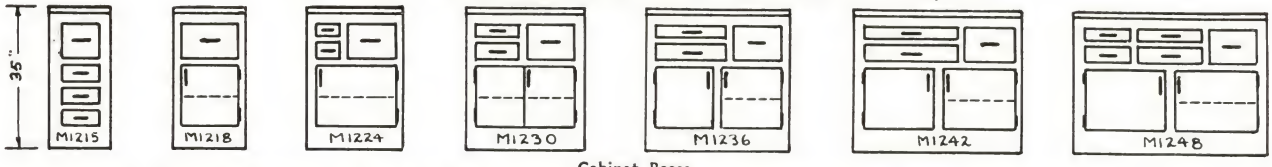
Wall Cupboards

24 in. height: in widths 18, 24, 30, 36, 42, 48 and 54 in. (over ranges, refrigerators, etc.) **28 in. height:** same. **35 in. height:** in widths 15, 18, 21, 24, 27, 30, 33, 36, 42, 48, and 54 inches. Inside measurements of shelves, 12⅞ in. deep. **Corner cupboards:** M-21-C with door at 45° angle, M-24-RC open with concave front frame.



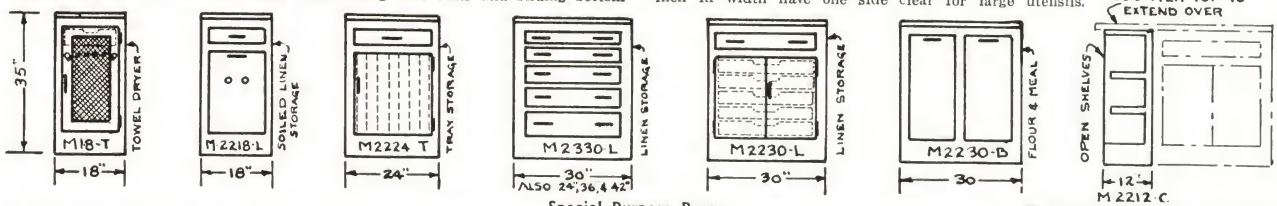
Butlery Bases

In sizes shown. 4 in. high drawer above, storage space below with one stationary shelf.



Cabinet Bases

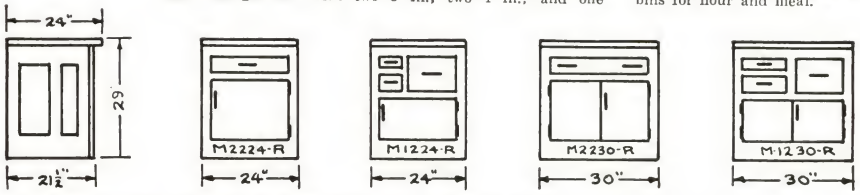
In sizes shown. All units excepting the 18 in. have bread box and cutlery drawer. Pot and pan storage below with sliding wire shelf and sliding bottom tray for convenience, in all but 15 in. unit. Bases over 30 inch in width have one side clear for large utensils.



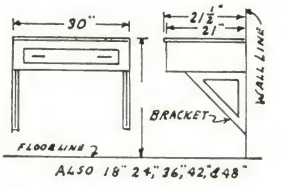
Special Purpose Bases

M-18-T: with ventilated grille door, sliding rustproof towel drying rack of 4 rods below, 5 in. high drawer above. **M-2218-L:** 4 in. drawer above, ventilated, tilting bin below for wet towels. **M-2224-T:** 4 in. drawer and storage space with removable tray rack. **M-2330-L:** linen storage base with two 3 in., two 4 in., and one 6 in. drawers. Widths, 24, 30, 36, and 42 in. **M2230-L:** linen storage base with one top drawer, and 5 drawers behind door. **M-2230-B:** two large tilting wooden bins for flour and meal.

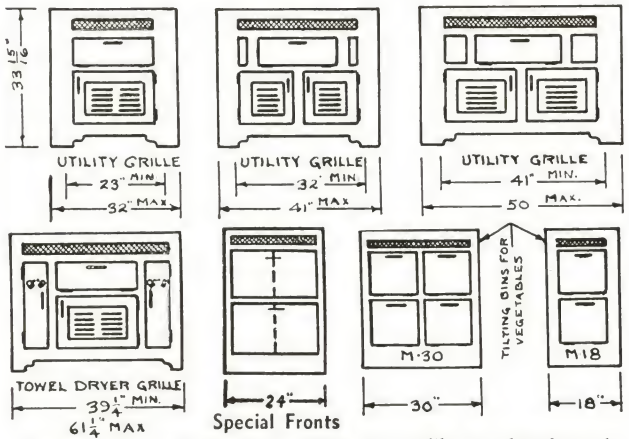
M-2212-C: rounded open shelf base for use near door. A modern unit.



Range Bases — Used principally in kitchenettes. 29 in. high to line up stove with other base tops.

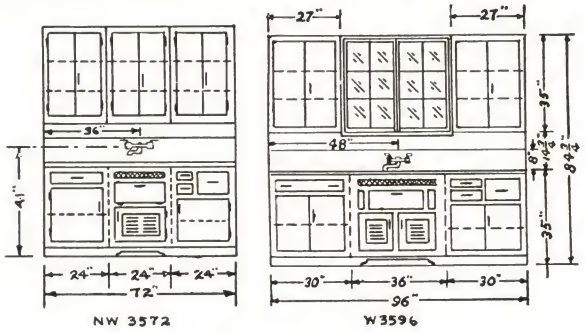


Desk — For planning menus, ordering supplies, etc. New bracket design available.



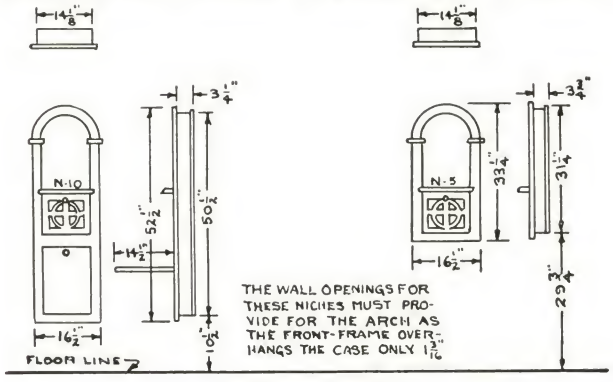
Special Fronts

Utility Grilles, for use under sinks, have grilles or slotted panels, access doors and removable, metal tilting bins for soap, etc. *Towel Dryer Grille* includes also sliding, rustproof wire rack for towels. M-30 and M-18 have removable, tilting metal bins for dry vegetables.



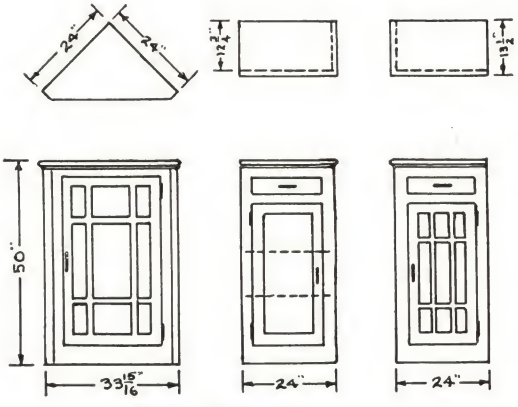
Package Units

Specially priced combinations of butlery base, sink front, cabinet base, and sink top in widths 60, 72, 84, and 96 in., assembled at factory. Available as bases only. Shown with wall cupboards above.



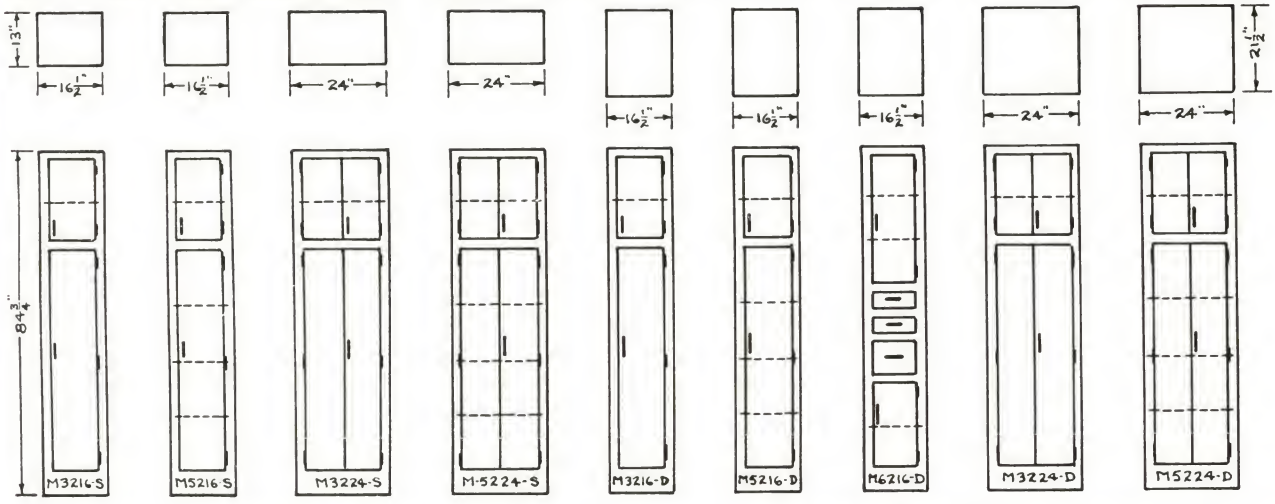
Telephone Niches

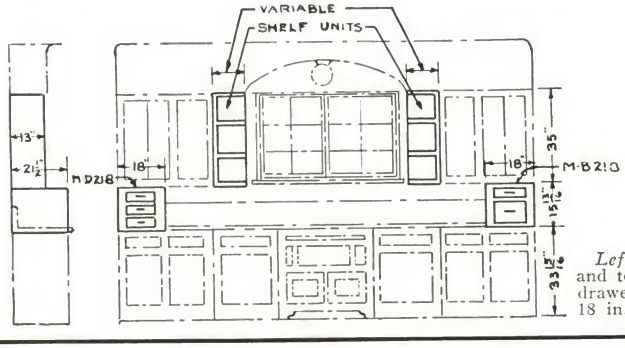
N-10 houses bell box and includes folding seat. *N-5,* without seat. Ready to install between standard studding. Finished or unfinished.



Divider Cupboards

Wide unit has 3 shelves. *Narrow units,* between kitchenette and dinette, with silver drawer, and 2 shelves. Panel or glass door.





Broom Closets and Utility Cupboards

These side units are available in two widths and two depths, with no shelves in bottom part for broom storage, or with three shelves for dishes, linen, pans, etc. M-6216-D has two 4-in cutlery drawers and one bread box.

KITCHEN MAID
STANDARD UNIT CABINETRY

For further information call the Kitchen Maid dealer, or write THE KITCHEN MAID CORPORATION, Andrews, Indiana.

Left: Typical use of rounded open shelf units, for modern touch and to admit more light. Available in any size. Also counter height drawer units, with three drawers or drawer and bread box. Size 18 in. wide, 15⅜ in. high, 21½ in. deep.

MODERN STEEL EQUIPMENT CO.

Manufacturers of Modern Steel Kitchens

GENEVA, ILLINOIS

Modern Steel Kitchen Cabinets are styled with flush fronts, eliminating side mullions or completely framed fronts. By eliminating excess lines the kitchen presents a more modern appearance of simple design, promoting easy cleaning and smoother operation of doors and drawers.

From the wide range of standard sized cabinets available, efficient and beautiful layouts can be planned to meet any building condition. Fillers are available to take up odd spaces and provide end wall clearance, thus reducing installation labor to a minimum.

We offer the services of our Kitchen Planning Department in preparing colored perspective drawings and detailed blueprints of our suggestions. Furnish us a floor plan of the kitchen space, showing door and window locations, together with overall dimensions of range and refrigerator to be used. It will also be helpful to indicate a preference on type and material for sink surface.



Modern Steel Kitchens for Fine Residences

Above illustration shows a typical Modern Steel Kitchen installation, using a porcelain enameled sink, available through your plumber in conjunction with adjoining work tops of various materials.

The gap between sink and work top is effectively sealed by means of a T moulding strip set in place with a waterproof caulking compound.

Custom-built sink tops are also available in stainless steel, linoleum and porcelain enamel, built to your individual requirement, and can be fitted with various sized sink bowls, according to choice.



For Apartments

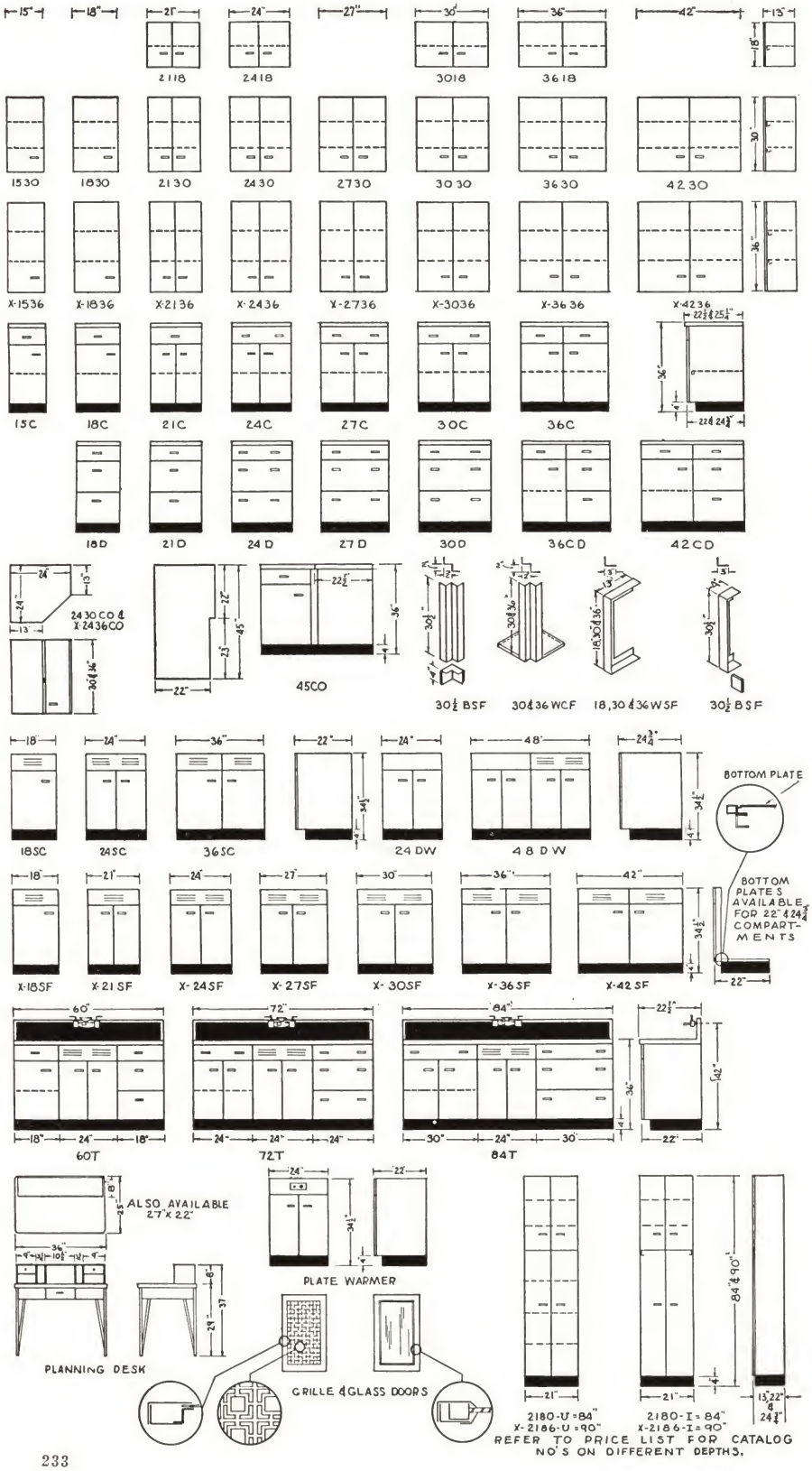
The photo at the left illustrates a typical Modern Steel apartment type installation. Due to the flexibility of our wide range of sizes, efficient apartment groupings are easily planned. Our moderate prices further encourage the use of steel in apartment installations.

For further information and descriptive literature, please feel free to write for complete catalog.

MODERN STEEL KITCHENS

QUALITY CONSTRUCTION FEATURES OF MODERN STEEL CABINETS

DIMENSIONAL GUIDE—The work sheet below gives complete dimensional information, together with door, drawer and shelf arrangement of the entire line of Modern Steel Cabinets.



MATERIALS—All kitchen cabinet units are fabricated from high grade furniture steel of heavy gauges to insure rigidity and long term durability. Work surfaces can be furnished in various materials to suit requirements.

CONSTRUCTION—Steel cabinet parts are carefully formed and electrically welded into position. This type construction assures maximum strength, and freedom from metallic noises. One piece, reinforced shelves tightly fitted to cabinet make for easy cleaning and eliminates dust catching corners. All door and drawer fronts are ⅝" thick, of double steel construction, scientifically sound deadened, closing against rubber to eliminate noise and rattling. Drawers set to cabinet on lead coated, interlocking, self lubricating type of slide, equipped with locking device. Drawers are easily removed from cabinet for cleaning.

FINISH—After fabrication, joints and welds are polished to a smooth surface, then immersed in a chemical bath to remove any traces of diret and grease. Two coats of synthetic enamel are then applied and baked to the steel under high temperature in evenly controlled gas fired ovens, producing a lustrous and durable finish of the highest quality.

HARDWARE—Door and drawer pulls are of modern design, stamped from heavy gauge metal, to which a heavy coat of chromium is applied. Hinges of semi-concealed design possess unusual strength, being fabricated of heavy gauge steel. A friction type catch is used which experience has proven to be the most successful kind available.

WORKMANSHIP—Built to exacting standards on modern, up-to-the-minute equipment, leaving little to the human element, with the one thought in mind to "produce the finest cabinet possible" in its field.

ACCESSORIES—A full line of labor-saving accessories is available for use with Modern Steel Cabinets. These accessories are designed as package units, and may be easily installed on the job, being so constructed as to slip into place without extra work.

MEMORANDA

MURPHY DOOR BED COMPANY

19 West 44th Street NEW YORK, N. Y.
710 North Wells Street CHICAGO, ILL.
315 No. 10th Street ST. LOUIS, MO.
2459 Grand River Avenue DETROIT, MICH.

OFFICES AND SALES ROOMS IN PRINCIPAL CITIES

For Murphy Disappearing Beds, see File Index

MURPHY CABRANETTE KITCHENS—PORCELAIN ON STEEL

The exclusive feature which gives crowning beauty to Murphy Cabranette Kitchens is porcelain. It is this porcelain, on a body of steel, which gives permanent economy. It is genuine porcelain like that on a bathtub or kitchen range, inorganic materials fused into the pores of steel at kiln temperature of 1550°. All exposed surfaces are porcelain and never require refinishing. Grease and dirt of every sort wash off without leaving a trace.

Base cabinets of various styles are available in widths from 12 to 42 in. Wall cases, in three heights, range from 12 to 66-in. widths. Accessories include every known kitchen convenience.



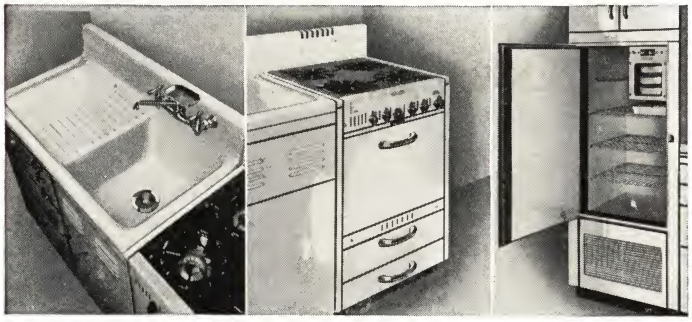
For Apartments

Standard assemblies, including range, refrigerator and sink, are made from 39-in. compacts to any desired width and arrangement. Ample air supply is furnished both refrigerator and range from the front. Cabinets placed on either side will not impair efficiency. Toe space provided under complete assembly.

For Residences

Money cannot buy greater kitchen beauty or greater economy based on years of unblemished service. Assemblies arranged to meet individual requirements. Standard ranges and refrigerators may be used. Sinks and work table tops of porcelain, stainless steel, monel, linoleum or maple.

EVERY CONVENIENCE IN MURPHY CABRANETTE KITCHENS





Exclusive Murphy Sinks

Porcelain on cast iron, made from our own patterns. Note generous depth and size of bowl. Note large drain outlet made to hold basket type strainer and valve so that water may be held in sink. Stainless steel, monel, or linoleum top sinks also furnished.

Exclusive Murphy Ranges

Gas or electric, Though only 21 in. wide, this apartment range has cooking capacity comparable with any domestic range. Oven 17x18x12 in.; broiler compartment 4 in. high. Burners light automatically. Oven control and hinged top available.

Exclusive Murphy Refrigerators

Gas or electric. Adequately insulated; full porcelain interior and front. Automatic temperature control, illuminated interior. May be installed tightly between cabinets or against building wall. High and low types. Shipped assembled.

Undersink Cabinets and Utility Drawer Bases on Series 81-90 Kitchens

Two arrangements may be had; either 21 in. Utility Drawer Base with separate cabinet under bowl of sink or the Type "D" full-length Undersink Cabinet.

Utility Drawer Base (above) has sliding cutting board. Top drawer is linoleum lined with adjustable partitions for cutlery. Three other drawers, the middle having removable tin box for bread or cake, with sliding cover. Lower large drawer for utensils.

Broom Closets Linen Closets

May be added to either or both ends of kitchens. All 87 in. high and either 13¾ in. deep to match wall cases or 23 in. deep to match base cabinets. 21 and 24 in. have two upper and two lower doors.



MURPHY CABRANETTE NO. 480 KITCHEN

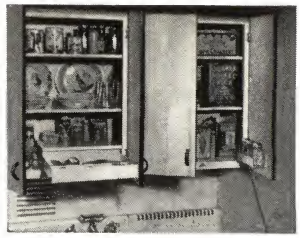
A real kitchen in a width of only 48 inches

Oven and broiler fully insulated, porcelain lined. Placed as on finest domestic range . . . down where roaster or broiling pan can be removed conveniently and safely. Oven has two adjustable shelves. Oven door covers both baking and broiling compartments, opens downward to make a handy shelf. Range available in gas model of latest automatic lighting type and in electric model with 3 burners each controlled by automatically controlled 3-heat switch.

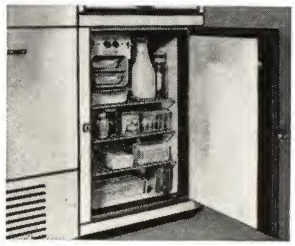
Full-width upper storage cabinet with 12 square feet of shelf area. Six spice jars, removable wooden cutting board, partitioned drawer for cutlery and small utensils.

Modern electric refrigerator, porcelain exterior and interior. Automatic interior lighting, temperature control with 10 freezing speeds. Two ice trays hold 4½ pounds ice in 42 cubes. Refrigerating unit located behind lower removal grilled panel.

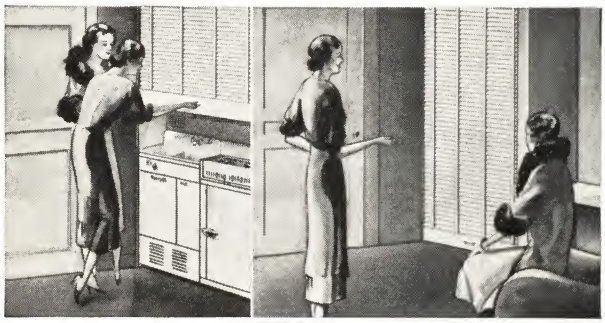
Shipped in three sections to facilitate handling. Base section ready for use. Gas or electric range requires but one service connection.



Storage Cabinet
24 in. high on No. 480
30 in. high on No. 480-A
Has adjustable shelves



Refrigerator is modern in all details

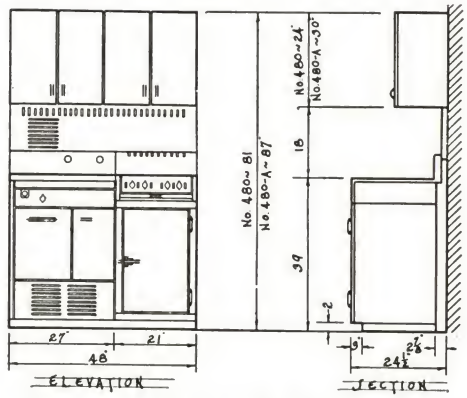


MURPHY CABRANETTE

With Counterbalanced Blind

When the kitchen, attractive though it may be, faces directly upon living quarters, concealment may be desired. A carpenter can make an enclosure of studs and plaster board and place the Murphy Counterbalanced Blind in front. The finished effect is attractive; the blind opens and closes with ease.

All Murphy Cabranette Kitchens are steel with fronts of vitreous porcelain.

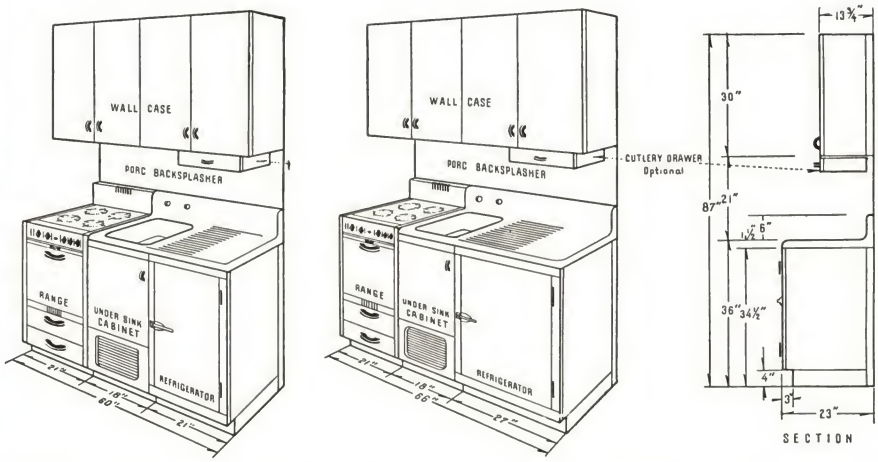


Fits in recess 48¼ in. wide, 25½ in. deep.
No. 480 requires 82¼ in. height.
No. 480-A requires 88¼ in. height.
Larger recess required if Counterbalanced Blind closure is used.

MURPHY CABRANETTE KITCHENS NOS. 60 AND 66

The most popular assemblies in the entire Murphy line. Full-sized gas or electric range, modern refrigerator, latest type sinks and commodious storage space. These two assemblies (60" and 66") may be had with range and refrigerator at either end. Broom or linen closets may be added at either or both ends.





Size	Overall	Refrigerator	Sink	Wall case
No. 60	60 in.	4.22 cu. ft.	23 x 39	15 sq. ft. shelf area
No. 66	66 in.	5.76 cu. ft.	23 x 45	16.5 sq. ft. shelf area



MURPHY CABRANETTE KITCHENS

Series 81 to 90

Here are four sizes in the finest apartment kitchen that money can buy—designed for the building where rentals justify a somewhat higher cost—where greater capacity is required and where space is available. Nos. 81, 84, 87 and 90 are identical in appearance but with variations in size of refrigerators, sinks and storage cabinets.

Refrigerator

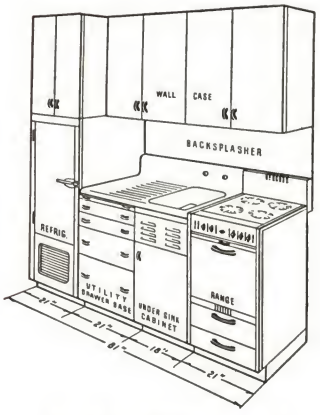
Refrigerator food space is at conventional height, with refrigerating mechanism in the base. The wall case immediately above the refrigerator is deep enough for storage of trays and large utensils. A very desirable unit—the utility drawer base—is located under the sink drainboard.

Gas or Electric Range

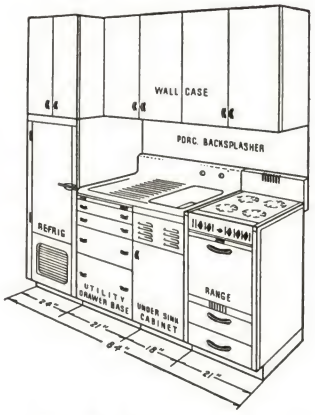
The range (gas or electric) is ample in capacity, with large, fully insulated oven and separate broiler compartments. All base units, including range and refrigerator, have set-back base to provide toe space.

Sinks are made with right or left drainboard in order that exact reverse of arrangement illustrated is available when kitchens are installed back to back.

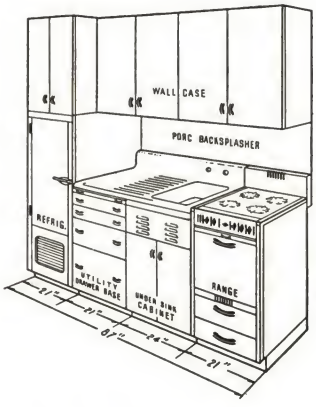
Stock colors of all Murphy Cabranette Kitchens are white or ivory with black trim. Other color combinations on special order.



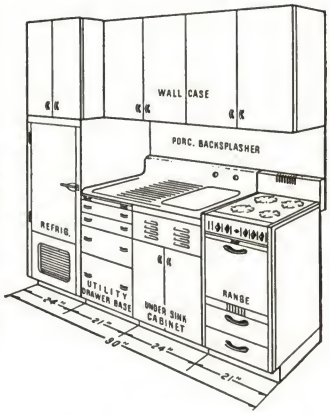
No. 81—Assembly No. 3
Refrigerator: 5.57 cu. ft.
Sink: 23 x 39″
Wall case: 24.3 sq. ft. shelf area



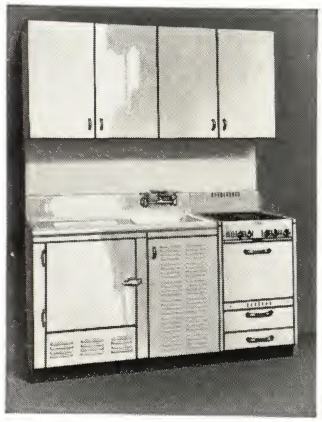
No. 84—Assembly No. 3
Refrigerator: 6.66 cu. ft.
Sink: 23 x 39″
Wall case: 25.6 sq. ft. shelf area



No. 87—Assembly No. 3
Refrigerator: 5.57 cu. ft.
Sink: 23 x 45″
Wall case: 25.8 sq. ft. shelf area



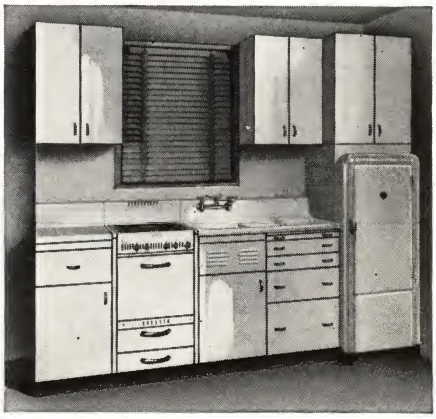
No. 90—Assembly No. 3
Refrigerator: 6.66 cu. ft.
Sink: 23 x 45″
Wall case: 27 sq. ft. shelf area



MURPHY CABRANETTE ALL-GAS REFRIGERATORS

Gas refrigeration may be had in these finest of apartment kitchens. Models G-48, G-69 and G-66 are built with special Murphy Refrigerator cabinets designed to receive Servel Elextrolux gas refrigeration units obtainable through local dealers.

Two other models, GS-84 and GS-90 are made to include the complete standard No. 410 Electrolux refrigerator. To the right is shown a still larger assembly made of standard Murphy Cabranette units with a 410 Electrolux. Assemblies can be made to fit any space requirements.



MURPHY WOOD KITCHENS

A complete line to meet the requirements of every kitchen. Only selected materials are used in painstaking construction. Doors are five-ply construction, banded on all four sides to reduce possibilities of warping to a minimum.

With modern paint department facilities, we apply a finish which we claim is not duplicated in the kitchen field. Every cabinet receives three coats, thoroughly sanded.

Write for literature.

MUTSCHLER BROTHERS COMPANY

NAPPANEE, INDIANA

Porta-Bilt Cabinet Units—Are the product of over 40 years of fine cabinetmaking. Because of modern factory production, an accurately constructed line of high quality equipment is available at a cost comparable to that of locally made millwork. The wide variety of sizes and arrangements of individual cabinets provides a flexibility of arrangement to fit any plan condition.

Materials and Construction—PORTA-BILT units are constructed of hardwood. They represent the finest type of cabinet construction. All drawers are designed to stand hard usage and have center guides for smooth operation. Drawers have dovetailed fronts and backs with three-ply wood bottoms boxed in. Fronts and backs are heavy, solid hardwood. Marine doors are flush both sides with rounded edges and are of *Rezo* patented, grid core construction, making them light in weight, free from warping and very strong. Since the doors of kitchen cabinets are opened and closed countless times in kitchen operations, the strength and lightness of PORTA-BILT cabinet doors are an extremely important consideration—and not available in ordinary millwork cabinets.

Finish—Hard enamel finishes in white, off white, and ivory, are smooth and completely resistant to grease and stain. Base cabinets are finished on four sides. For quotations on special colors, write the company.

Hardware—Wide choice, including colors. Designed to be in keeping with the modern trend. Rust-resisting, French chrome pulls in satin (Butler) finish are standard. Hinges are made of strong, rust-resisting French chrome, finished to match the cabinet pulls. They are semi-concealed to enhance the modern attractiveness of the units. *Silent Catch* relieves noise in opening and closing.

Installation—Each unit is completely finished and assembled, delivered ready to install. The average installation is completed in a few hours' time at a very nominal cost—as compared to the assembly, installation, fitting and finishing of milled cabinets. The separate units of a PORTA-BILT installation are merely placed side by side and fastened to the floor, wall and adjoining units. By combining cabinets of different widths, PORTA-BILT units will fit any given kitchen arrangement or design. Sink fronts have a tolerance of 6 in. PORTA-BILT units are made in a wide assortment of sizes in many useful drawer arrangements, offering a complete selection to suit any individual need. The flush sides of the units allow an extremely close fit of cabinets placed adjacent to each other.

Fittings—The high quality and completeness of the fittings available in PORTA-BILT cabinets are features not obtainable with milled cabinets. All cabinet doors are provided with pan racks. Storage compartments have metal sliding shelves. Base cabinets may be fitted with a metal pastry drawer for the convenient storage of bread and pastry, equipped with a metal sliding tray and a close fitting, sliding ventilated cover. A tilting flour bin, holding 35 lbs. of flour, may be specified. In the extended position, the flour bin automatically tilts down for convenience, and a close fitting lid is used for protection. A 25-lb. sifter flour bin may be installed in the 3 ft. 0 in. wide by 2 ft. 6 in. high wall cabinet. In its extended position, its location is such to facilitate using and refilling. One drawer in each cabinet base is partitioned for cutlery.

THOUSANDS OF COMBINATIONS ARE POSSIBLE WITH PORTA-BILT



5418 Single Door Wall Cabinet
Widths: 15″, 18″, 21″, 24″
Heights: 18″, 30″, 36″
Depth: 13″

All base units are designed 22¾ in. deep by 34½ in. high without tops. The top installed is 25 in. deep by 36 in. from the floor; the most comfortable, easiest and least fatiguing working height. *Snug fit* of portable cabinets is essential. All PORTA-BILT units join neatly when placed one adjacent to the other. Top drawers are partitioned for cutlery. Below are a few of the most popular PORTA-BILT units. Full line specifications are diagramed on page 4.



5430 Double Door Wall Cabinet
Widths: 27″, 30″, 36″, 42″
Heights: 18″, 30″, 36″
Depth: 13″



5422¾-C Corner Wall Cabinet
From back corner wall measurements 22¾″ each way. Heights 18″, 30″ and 36″. Depth, sides, 13″

STYLES OF CABINETS SHOWN WITH INDIVIDUAL TOPS



5218
Widths: 18″, 15″
25″ deep
36″ high



5224
Widths: 18″, 21″, 24″
25″ deep
36″ high



5227
Widths: 27″, *30″, *36″
25″ deep x 36″ high



5230-D
Widths: 30″, 36″
25″ deep x 36″ high



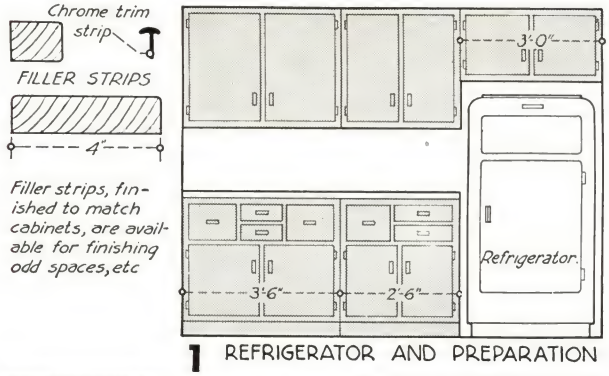
5242
42″ wide x 25″ deep x 36″ high

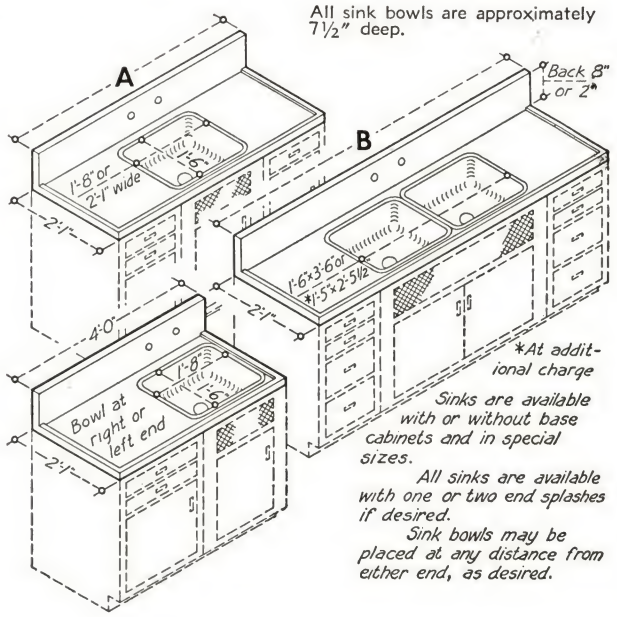


With PORTA-BILT, Thousands of Combinations Are Possible; for Kitchens of Every Size and Type. Adjacent Units Fit Snug as a Glove.

Obviously, Installation Cost of a Complete Tailor-made PORTA-BILT Sink Is the Very Minimum.







Kitchen Planning Principles

The usual approach to the kitchen planning problem is to consider the activities as being performed at 3 principal centers: (1) refrigeration and preparation center, (2) cleaning center, (3) range and serving center. The attempt is usually to arrange these so that the refrigerator is nearest the delivery entrance and the range and serving center closest to the dining room entrance, the sink or cleaning center being conveniently placed between them. The drawings above merely indicate one of the innumerable arrangements that is possible with PORTA-BILT cabinets. By the selection of units of various widths, any shape or dimension of room with any refrigerator or range, can be fitted with PORTA-BILT cabinets.

Sink Fronts—Sink fronts can be trimmed as much as 6 in. from their nominal widths, allowing any fractional part of 6 in. to be easily adjusted.

*Sinks are available with or without base cabinets and in any size, in other words, built to your specifications.

All sinks are available with one or two end splashes.

Sink bowls (various types available) may be placed at any distance from either end, as desired.

Sinks and Counter Tops—Linoleum, Monel Metal, Stainless Steel, porcelain and Micarta sinks and counter tops available.

Linoleum Tops—Stainless Steel banded with porcelain, Monel or Stainless Steel bowls can be supplied to match or contrast any kitchen color scheme. Only the finest quality of specially treated linoleum used.

Monel tops are ideal for kitchen use. This alloy of nickel and copper stays silvery clean and will never wear out.

Stainless Steel also available.

Porcelain Enamel tops are flint hard, nonporous, will not easily scratch, wear or become dull.

Complete information on other types furnished on request.

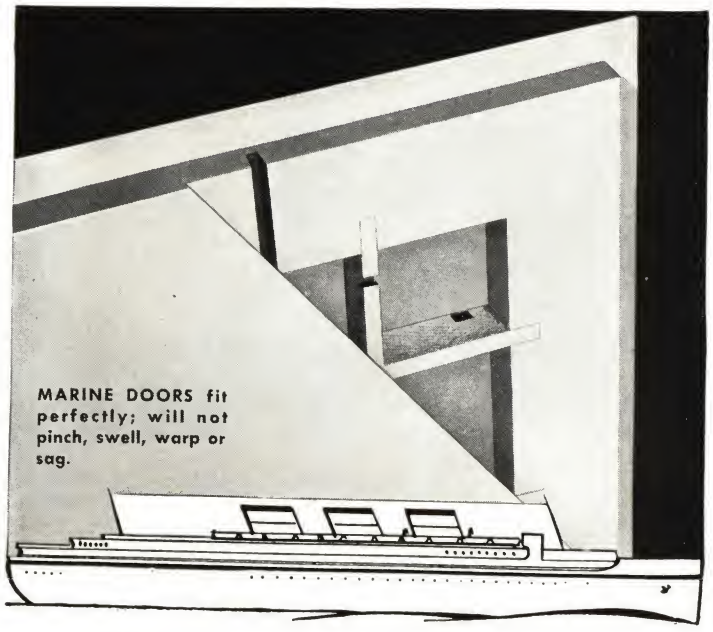
Sizes—A wide range of standard sizes is available, which will supply most ordinary needs. For sinks of special design or sizes, address the factory. The table at the right shows the dimensions of standard single and double bowl, double drainboard sinks. The right or left end single bowl sink is standard in a 4' 0" length only.

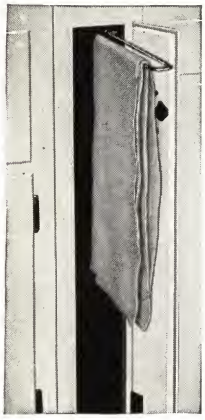
A Length of Single Bowl Sinks	B Length of Double Bowl Sinks
5' 0"	.....
6' 0"	.....
7' 0"	7' 0"
8' 0"	8' 0"
9' 0"	9' 0"
10' 0"	10' 0"
10' 6"	10' 6"
11' 0"	11' 0"
12' 0"	12' 0"

DISTINCTIVE PORTA-BILT FEATURES THAT EVERY WOMAN WANTS

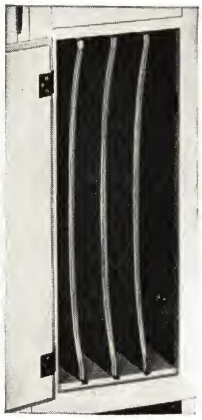
PORTA-BILT MARINE DOOR
Banishes Door Troubles

Cabinet doors have long been a source of many annoying troubles—pinching in summer, loose in winter, and generally warping or sagging. PORTA-BILT *Marine* doors follow the general construction details adopted by ocean liners. Ship doors, subject to vibrations, to severe climatic changes as well as to the abuse of storm strains, require a special construction. PORTA-BILT ventilated *Marine* doors are light but enduring; have a special "honeycomb" construction that assures well-fitting, smooth-swinging doors resistant to warping and swelling. This door has been subjected to outside inclement weather conditions without changing its original shape. Beautiful and trustworthy doors are most essential to cabinet installations.



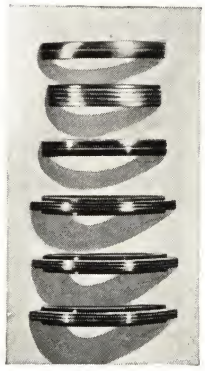


Towel Rack
Out of sight but ever ready, this PORTA-BILT rack is a striking convenience.



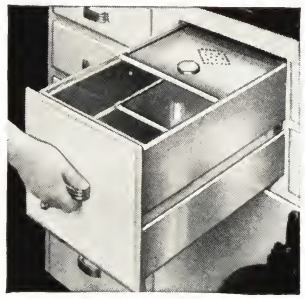
Drawer Pulls
Quality — all rust-resisting—Choice Butler finish, bright chrome or combination de luxe bright chrome and red, blue or black Bakelite.

Tray Base
For convenient vertical storage of serving trays and large platters.





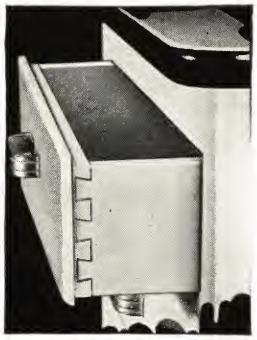
Snug Fit
Two cabinets butted together. Finished on four sides, units can be used separately. Used together, precision fit looks like a custom-built job.



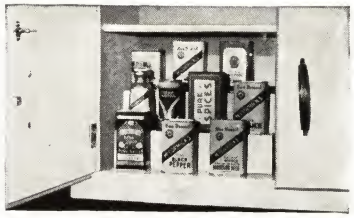
Metal Pastry Drawer
A metal sliding tray to increase capacity. Close fitting, sliding, ventilated cover protects contents. Deep wood drawer or flour bin may be substituted.



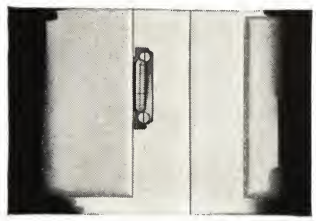
Sugar or Flour Bin
Metal lined for easy cleaning, for sanitation. Readily accessible. Tilts for easy use. Deep wooden drawer or metal bread bin may be substituted.



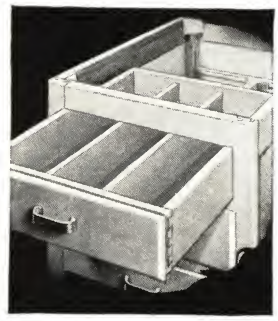
Dovetailed Drawers
Heavy, solid hardwood front, back and sides; 3-ply wood bottoms. Carefully sanded and fitted.



Step Shelves
Are constructed for an orderly, visible and handy arrangement of those smaller, often-used items.

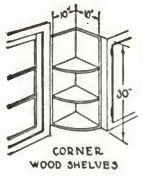


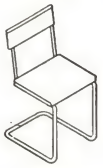
Hinges
Are semi-concealed. Strong five knuckle, rust-resisting French or polished chrome. Finish to match cabinet pulls.

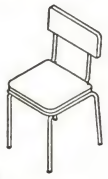


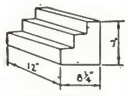
Cutlery Drawer
All top drawers are partitioned front to back to store conveniently all utensils and tableware.

SPECIFICATIONS
Wall Cabinets 13" deep.
Base Cabinets 22¾" deep.



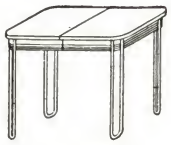

*2 CHAIR


*1 CHAIR


STEP SHELF



24" HIGH STOOL


*6333 TABLE
34"35" CLOSED 34"52" OPEN

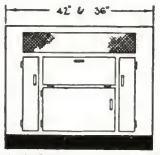

FILLER STRIP - 1" AND 4" WIDTHS


CAP MOLD

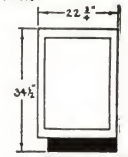

COVE MOLD


SCRIBE-WIDTHS 1"-1½"-2¼"


CHROME TRIM STRIP



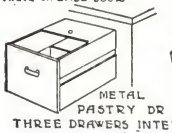
NUMBERS SFT-36 & SFT-42

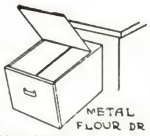


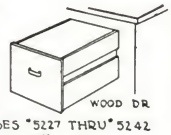
SINK FRONT END



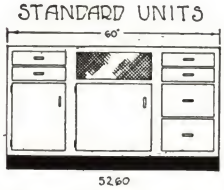
SOAP CONTAINER
HANG on BASE DOOR


METAL PASTRY DR


METAL FLOUR DR

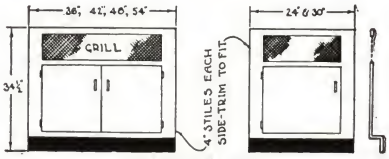

WOOD DR
THREE DRAWERS INTERCHANGEABLE IN BASES "5227 THRU" 5242

STANDARD UNITS

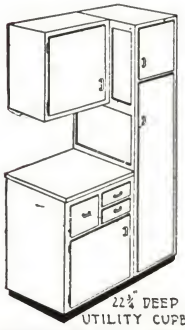


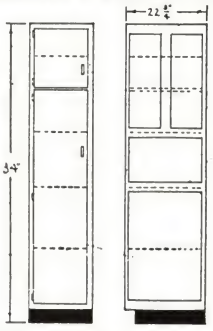
5260

SINK FRONTS

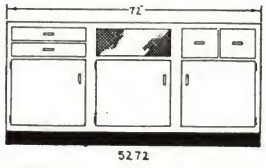


NUMBERS 245F to 545F

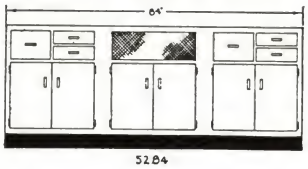

22¾" DEEP UTILITY CUPBOARD COMBINED WITH WALL CASE & BASE



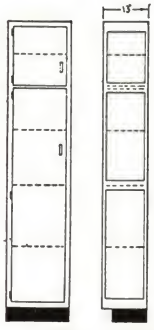
B-5418-D
NOTE - *B-5418-B SAME AS *B-5418-D BUT WITHOUT THREE LOWER SHELVES



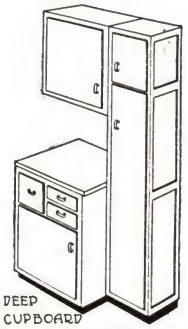
5272



5284

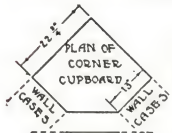


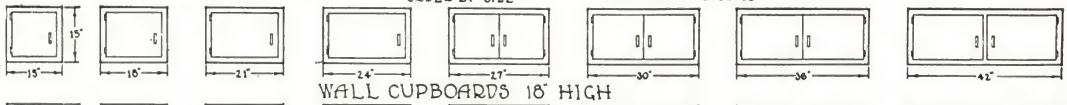
5418-D


13" DEEP UTILITY CUPBOARD COMBINED WITH WALL CASE & BASE

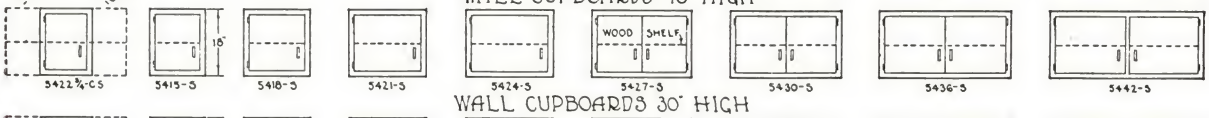
NOTE - *5418-B SAME AS *5418-D BUT WITHOUT THREE LOWER SHELVES

PANEL FRONTS ONLY
ORDER BY SIZE

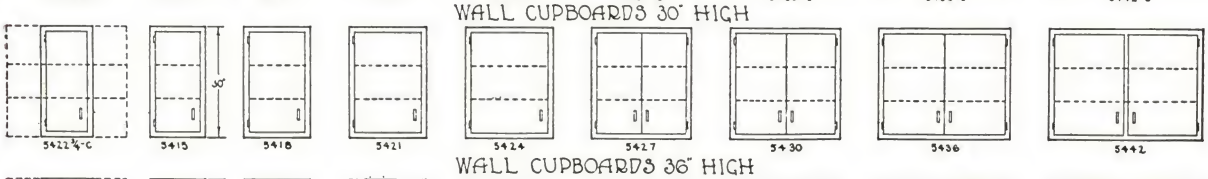




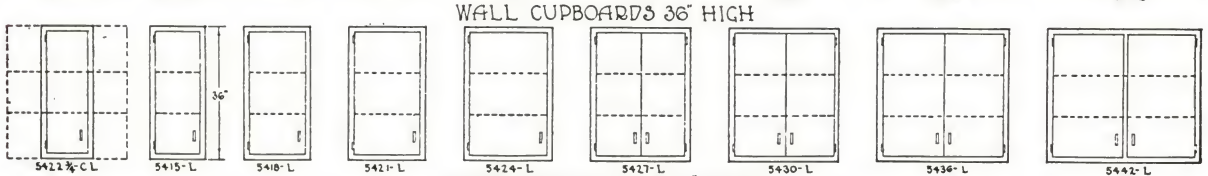
WALL CUPBOARDS 18" HIGH



WALL CUPBOARDS 30" HIGH



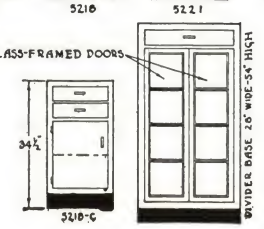
WALL CUPBOARDS 36" HIGH



BASE CABINETS 34½" HIGH



*5206 EQUIPPED WITH SLIDING TOWEL RACK

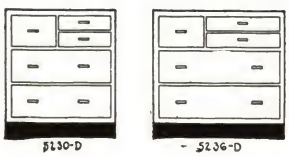


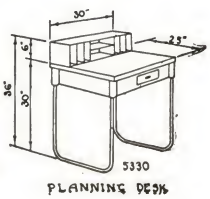
5218-G

NOTE - LAST TWO DIGITS IN MODEL NUMBER DE-NOTE WIDTH OF CABINET.

GRAPHIC SCALE
0" 6" 1" 2" 3"



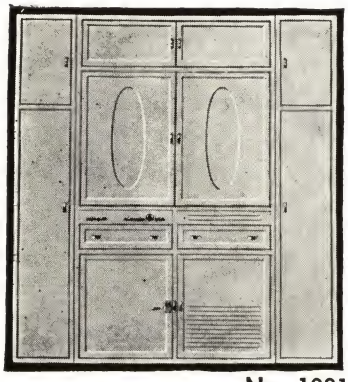

5230-D
5236-D



5330
PLANNING DESK

THE PARSONS COMPANY

15000 Oakland Avenue, DETROIT, MICH.



No. 1081

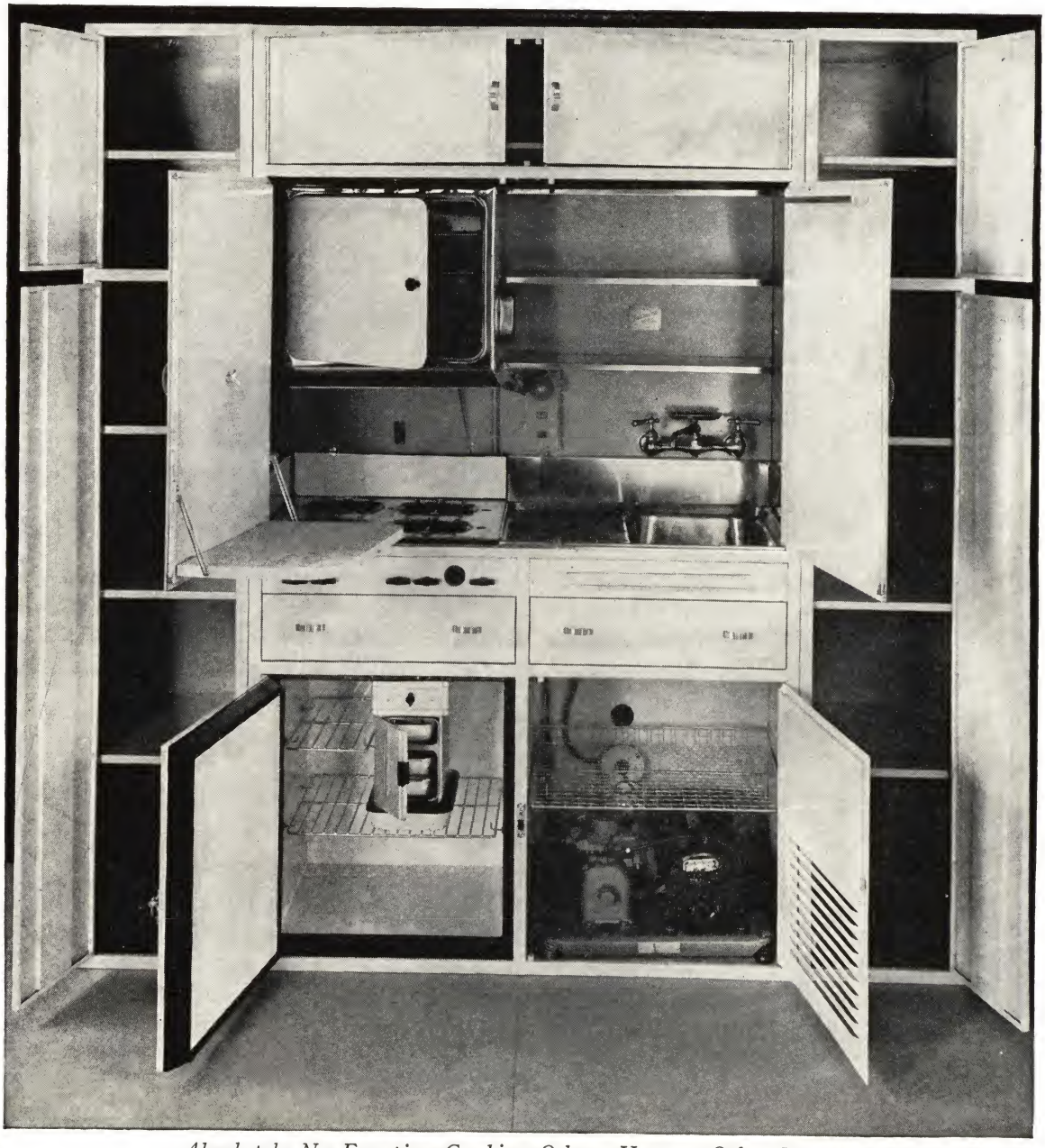
PARSONS Pureaire KITCHEN

Full Details on Following Page

PARSONS PUREAIRE KITCHENS FOR APARTMENTS, REMODELING OPERATIONS, HOTEL SUITES, OFFICE SUITES AND HOMES

No. 700

No. 1080



Absolutely No Escaping Cooking Odors, Heat or Other Vapors

Patented and Patents Pending

Exclusive Advantages

(1) Saving of floor space. The "Pureaire" occupies less than 8 sq. ft. Permits 10% more apartments on any building plot.

(2) It has everything within reach, and is easy to keep clean.

(3) Cooking behind closed doors keeps apartment clean, cool and sanitary.

(4) Saves re-decorating expense, as fumes are carried off through the flue.

(5) It eliminates the fire hazard of the open stove.

(6) Low initial cost, because of being produced in dies by an efficient manufacturing organization. All parts interchangeable.

(7) Installs in one piece, direct from crate. No additional doors needed. No delays waiting for this or that unit.

(8) Attracts and holds tenants, as proved by apartment and hotel installations from coast to coast.

Models

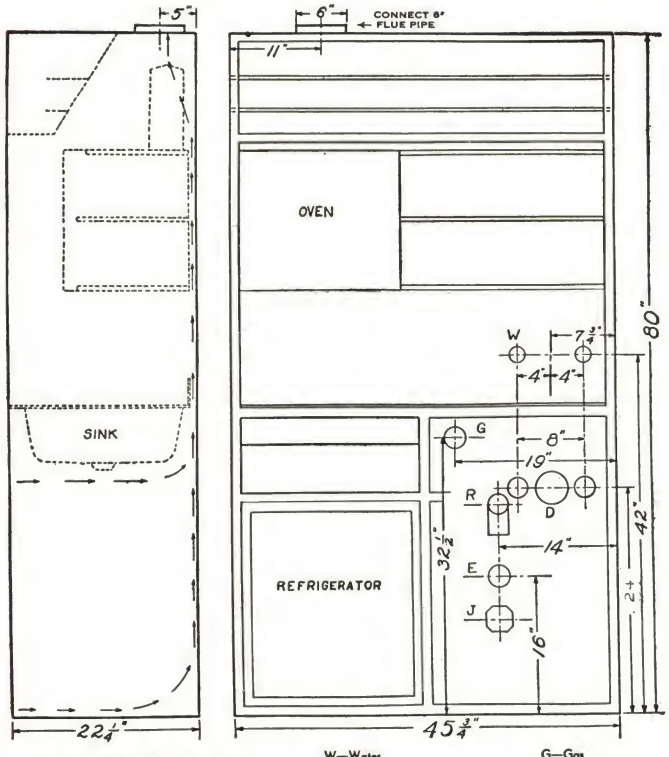
No. 700 has gas range and electric refrigerator.

No. 1060 (All Electric) has highest quality type electric range.

No. 1200 (All-Gas) has gas range and side unit and includes top cabinet which fits over Electrolux J-410 gas refrigerator.

No. 1080, Right Side Unit, and No. 1081, Left Side Unit, are all-steel with continuous hinges. Each is 14 in. wide and adds 12½ ft. of shelf space. Shipping weight, 125 lbs. each.

PLUMBING DIAGRAM No. 6



PARSONS "PUREAIRE" KITCHEN
45¾" Wide x 80 High x 22¼" Deep

W—Water
D—Drain
E—Elec. Wires
G—Gas
J—Junction box
R—Receptacle

We furnish all electrical equipment inside the cabinet.

"Pureaire" Electric Kitchen takes 110-220 volt, three wire circuit. Connected load 7200 watt.
Also a separate 110-volt 2-wire circuit



A Beautiful, Money Making Apartment

Description

Cabinet—Sheet steel welded to a steel frame with flush joints. Doors on chromium plated, continuous piano hinges.

Range—A full-size modern 4-burner gas range and oven with automatic lighters. Concealed manifold. Porcelain grates. A.G.A. approved. Electric range optional.

Oven—16-in., heavily insulated. Porcelain lined. Broiler and baking compartments.

Refrigerator—A 4¼-cu. ft. electric refrigerator. All-steel cabinet. Maple door frame. "Dry zero" insulation—the kind rated 100% by the United States Government. Or furnished to take Electrolux J-410 gas refrigerator.

Electric Refrigerator Unit—Built to our order by an old-line manufacturer. Serviceable anywhere. Absolutely unexcelled in performance and reliability.

Sink—One-piece sink and ribbed drainboard. Monel standard.

Cupboard—20 sq. ft. of cupboard and shelf space for dishes and cooking utencils.

Utility Drawers—Two 20x20x4½ in. with padded compartment for silverware.

Light—Electric light and a handy electric outlet built in above the sink.

Ventilation—Patented Parsons Pureaire vents placed directly above oven and overhead shelves. Air is taken in from bottom of the cabinet. There is an air space behind the splashboards and shelves, permitting circulation of air through the entire cabinet.

Weight—520 lbs.; crated, 600 lbs.

Size—80 in. high, 45¾ in. wide, 22¼ in. deep.

Color—Ivory exterior; Chinese red or Jonquil green interior.

Guarantee

Every detail of every Parsons Pureaire Kitchen is fully and responsibly guaranteed by this company. We have produced thousands of these Kitchens since 1929. So far as we know, every "Pureaire" shipped is still in satisfactory service.

MEMORANDA

RECEIVADOR DIVISION
METAL OFFICE FURNITURE CO.

Manufacturers of Hospital and Institutional Furniture

GRAND RAPIDS, MICH.

THE RECEIVADOR

RECEIVADOR
"The Automatic Servant"
TRADE-MARK

The Receivador is an automatic self-locking delivery receptacle for wall or door installation in apartment buildings or private residences. It obviates the necessity of delivery men entering the home by providing an outside depository for packages, parcels, etc.

The entire Receivador cabinet is made of high grade, heavy gauge furniture steel. All joints are electrically welded. No screws or rivets are used. Each unit is equipped with two doors—one opening from the outside, the other from the inside. Ample storage space between the two doors.

Doors are of double steel-wall construction with a substantial filler of insulating material between the two sheets of steel. Each door has a sturdy "dead bolt" lock operated by solid brass thumbpieces (no keys). All hardware exposed to wear is solid brass.

Methods of Locking

The Receivador interlock is a special device that prevents both doors being opened at the same time. It insures complete and secure closure at all times between the outside and the inside of the home.

The interlock consists of a solid steel bar which slides back and forth between the doors alternately engaging the locks. When the outer door is closed and the thumbpiece turned, the interlock is engaged, thereby securely locking the outside door and releasing the inner door. Conversely, by locking the inner door after removal of the contents of the cabinet, the outer door is again released for the next delivery. This renders the Receivador thiefproof, and positively guards the home against intrusion, as the inner door cannot be opened while the outer door is unlocked.

Key-locked Receivadors

For apartment buildings where tradesmen are not permitted to deliver directly to tenants, Receivadors are furnished with master-keyed locks. Service men then make deliveries "en masse" at regularly appointed times. Locks are of high grade steel and are protected against rust by cadmium plating.



The Receivador

Where Receivadors Are Installed

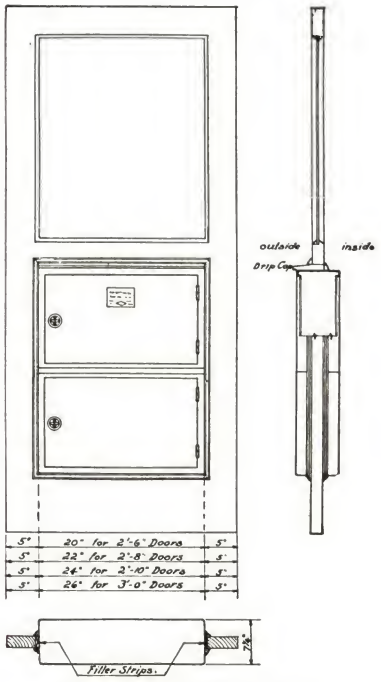
In private homes Receivadors may be installed either in the rear service door or in the adjacent wall. In apartment buildings, the Receivador is installed in the service door of the apartment or in the wall leading to the kitchen. In single entrance apartments, where other space is neither available or convenient, Receivadors are installed in the main entrance door.

How Installed

Receivadors are provided with holes for fastening with screws. Rough openings with standard frames should be left when walls are erected and Receivadors installed when carpenters install other trim. Receivadors can be used in any door. When installed in new doors, it is suggested that the mill making the doors install the Receivadors.

Various Types

Receivadors are made in one- or two-compartment sizes and are also built into multiples to meet any requirement and arrangement. The Standard Receivador consists of two compartments to accommodate two deliveries before being emptied. The "Junior" is for moderately priced homes and apartments.



Double Unit in Stock Door

DIMENSIONS

Double compartment units, in.		Single compartment units, in.		Size door, ft. in.	
Width	Height	Width	Height		
Standard Receivadors					
20	32	20	16	2	6
22	32	22	16	2	8
24	32	24	16	2	10
26	32	26	16	3	0
Junior Receivadors					
14	32	14	16	2	0

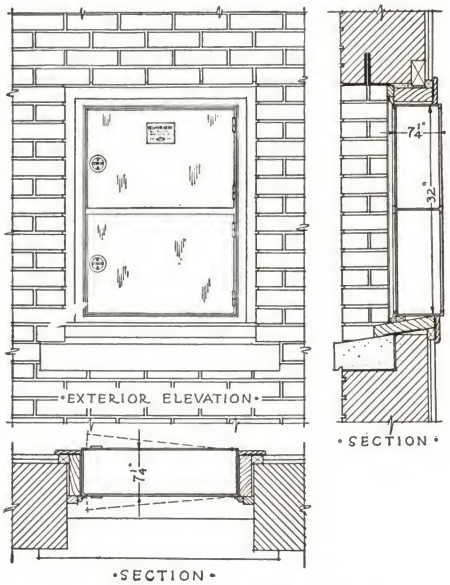
All cabinets are 6¼ in. deep inside, and 7¼ in. over all. Sizes listed are standard and carried in stock. Special sizes and compartment arrangements can be furnished for the larger operations.

Colors

Standard Receivadors are finished in olive green, non-rusting, baked enamel which will harmonize with practically any color scheme. Also supplied in any grained finish to match the natural wood at a nominal additional cost.

Guarantee

Receivadors are unconditionally guaranteed for one year from date of delivery. They are in nation-wide use and have been specified by architects and used by builders for more than twenty years.



Double Unit in Brick Wall

A portfolio, with complete information and details of types, construction and typical installations, is available on request

ST. CHARLES MANUFACTURING COMPANY

ST. CHARLES, ILLINOIS

DISTRIBUTORS IN PRINCIPAL CITIES

St. Charles Steel Kitchen Cabinets

Two Complete Lines—St. Charles Steel Kitchen Cabinets are made in two styles, making it possible to design a St. Charles planned kitchen economically for any type of dwelling—from the small home or apartment to the largest and finest mansion. Each style comes in a full range of standard sizes including wall, base, sink base cabinets, and implement and utility cabinets.



The Master Styling emphasizes vertical lines, eliminating horizontal or cross lines wherever possible. An identifying feature is the exposed rabbeted stile on either side. Top and bottom rails are concealed. Double bottom gives a smooth, flush surface to interior and exterior of the bottom of the cabinet. Master Line hardware is of extruded brass, chrome-plated with satin finish. Shelves are adjustable.

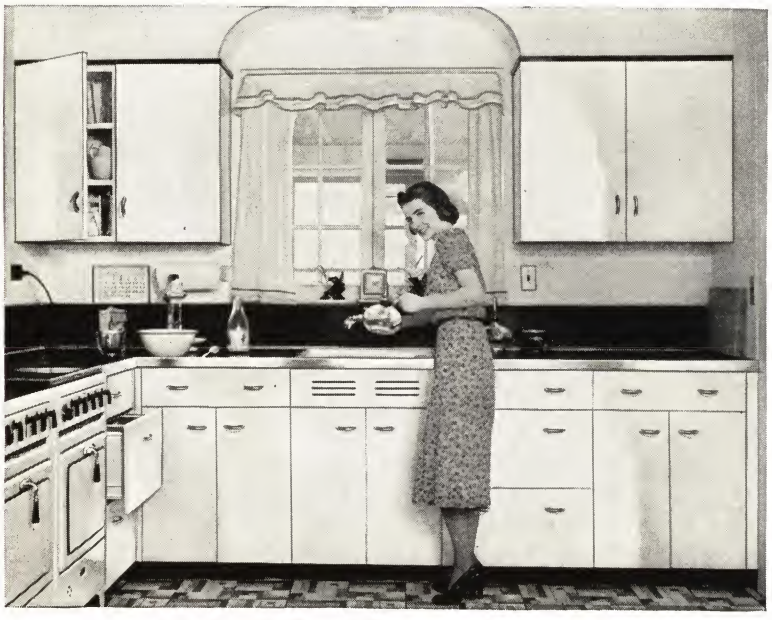


The Leader Styling—Stiles and rails are concealed and doors and drawers are flush or full faced. Hardware is a combination of bakelite and cadmium plated metal. Shelves are welded in place. Leader Line cabinets meet the condition where price is a factor without sacrificing the fundamentals of quality, style, construction and finish.



A St. Charles Planned Kitchen—Master Line Cabinets

Construction—Both Master and Leader cabinets are made of selected, heavy gauge furniture steel. All doors and drawers are of double panel construction, liner being telescoped into front and arc welded. Interiors of cupboards and drawers are smooth, without projections. Doors and drawer fronts are filled with sound-deadening material and close against rubber silencers. Drawers operate easily and quietly on heavy steel and terne plate slides, capable of supporting loads much greater than normally required. Drawers have a positive automatic stop, which may be easily released when necessary. The hinge, of chrome plated steel, is virtually invisible, adding to the streamlined effect as well as giving unusual strength. Doors swing full 180 degrees. Standard construction provides for cabinets to rest upon a 4″ sub-base set back 3″ to allow toe space.



A St. Charles Planned Kitchen—Leader Line Cabinets

Finish—Three coats of high quality synthetic enamel are sprayed on and baked in our specially designed, gas fired ovens. The St. Charles finish will maintain its color and lustre under any ordinary conditions involving contact with heat, acid or liquids, and will not chip, crack or craze. Three standard colors—white, light ivory and dark ivory—other colors available at small additional cost.

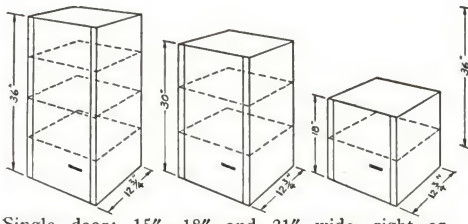
St. Charles cabinets have the approval of Good Housekeeping Institute.

Easily Installed—St. Charles cabinets are easily and quickly installed. Cabinets are anchored to wall by screws fastened to wood grounds or studs, and are attached to each other by binder head screws. Detailed instructions accompany each shipment.

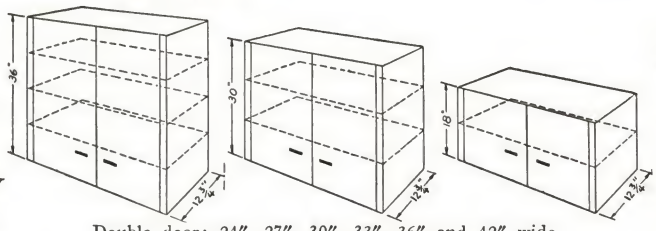
For dimensional details and description of convenience accessories, see next two pages. For data on tops, St. Charles Planning Service and the use of St. Charles cabinets in apartments, schools and hospitals, see page four.

DIMENSIONAL DETAILS

WALL CABINETS



Single door: 15″, 18″ and 21″ wide—right or left hand swing.

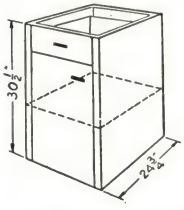


Double door: 24″, 27″, 30″, 33″, 36″ and 42″ wide. Glass doors are also available.

Master Line: shelves adjustable except for 18″ high cabinets in which shelves are removable, but rest on fixed supports.

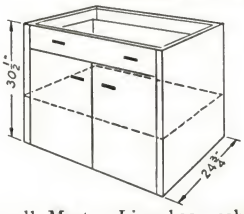
Leader Line: all shelves are welded in place. 48″ high wall cabinets also available in selected widths in Leader Line.

CUPBOARD BASE CABINETS



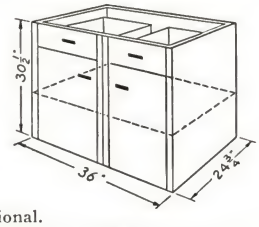
Master Line: 1 drawer, 1 door, 1 adjustable shelf, —15″, 18″ and 21″ wide. Door with right or left hand swing.

Leader Line: same except shelf welded in place.



Master Line: 1 drawer, 2 doors, 1 adjustable shelf —24″, 27″, 30″ and 33″ wide.

Leader Line: same except shelf welded in place.

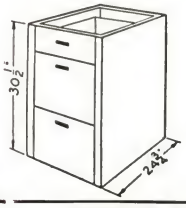


Master Line: 2 drawers, 2 doors, 1 adjustable shelf —36″ wide.

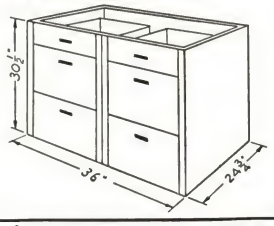
Leader Line: same except shelf welded in place.

In all Master Line base cabinets wire shelves optional.

DRAWER BASE CABINETS



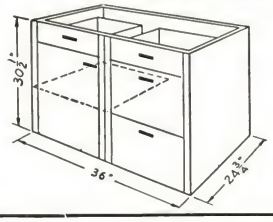
Master Line and Leader Line: 1 shallow drawer, 2 deep drawers—15,″ 18″, 21″, 24″, 27″, 30″ and 33″ wide.



Master and Leader Line: 2 shallow drawers, 4 deep drawers—36″ wide.

NOTE: All dimensions given for base cabinets are exclusive of sub-base and work top. Standard sub-bases are 4″ high and work top 1½″ high which, added to base cabinet height of 30½″, makes 36″ working height.

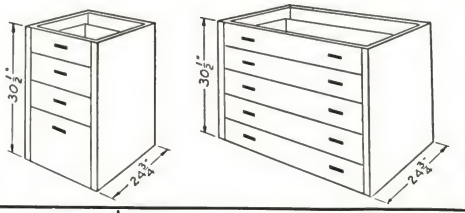
CUPBOARD AND DRAWER BASE CABINETS



Master Line: 2 shallow drawers, 2 deep drawers, 1 door—right or left hand swing—1 adjustable shelf —36″ wide. Wire shelf optional.

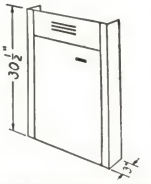
Leader Line: same except shelf welded in place.

FOUR AND FIVE DRAWER CABINETS

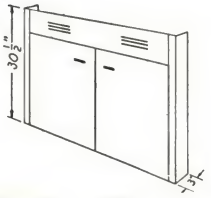


Two shallow drawers may be substituted for any deep drawer for slight additional cost. In this way, various drawer arrangements are available.

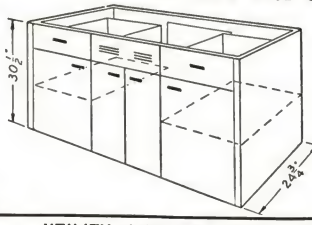
SINK FRONTS



Master and Leader Lines: single door, standard widths —15″, 18″ and 21″. Right or left hand swing. Double doors, standard widths—24″, 27″, 30″, 33″ and 36″. Louvred panels at top. Grilled doors also available.

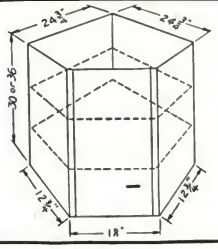


60″ SINK BASE CABINET



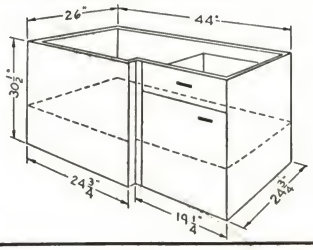
2 shallow drawers (right hand drawer furnished with dividers for cutlery storage) 2 doors, 2 shelves welded in place. Louvred panel and storage in center.

CORNER WALL CABINET



Master and Leader Lines: same construction. Two shelves welded in place in 30″ high cabinets. Three shelves in 36″ high cabinets.

CORNER BASE CABINET



Leader Line only: For utilizing space in corner which would otherwise be unavailable. 1 shallow drawer, 1 door, 1 welded shelf.

Same purpose accomplished in Master line by use of standard cabinet with a special panel.

UTILITY AND IMPLEMENT CABINETS



Master Line: two widths and depths as shown—18″ wide, 2 doors right or left hand swing; 24″ wide, 4 doors.

Utility cabinets: 80″ high, 6 shelves; 86″ high, 7 shelves.

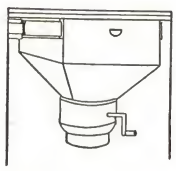
Implement cabinets: 80″ high, 2 shelves, 2 broom clips, 2 coat hooks; 86″ high same except 3 shelves.

Leader Line: 18″ wide only, 12¾ or 24¾″ deep. Equipment same as in 18″ wide Master Line cabinets except shelves welded in place.

NOTE: Above dimensional drawings shown in Master Styling except Corner Base Cabinet.

ST. CHARLES MANUFACTURING COMPANY

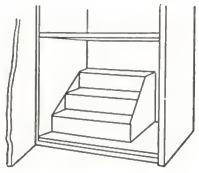
CONVENIENCE ACCESSORIES



SLIDING FLOUR SIFTER BIN
Holds 12 pounds—Sliding Sugar Bin same without sifter.



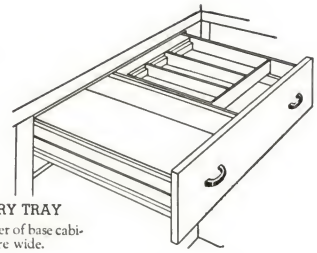
END CORNER SHELVES
Made of crystal clear glass; attached with steel channels.



STEP SHELVES
For use in wall cabinets to hold condiments.



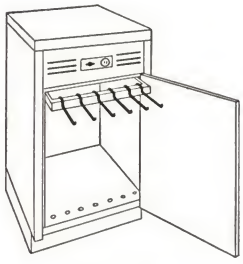
UTILITY SHELF
Enameled steel with chrome edging. Fastened to wall with chrome steel brackets.



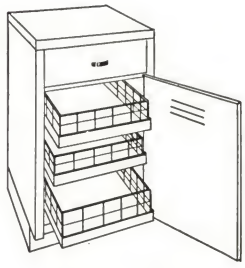
SLIDING CUTLERY TRAY
For use in shallow drawer of base cabinets—18" or more wide.



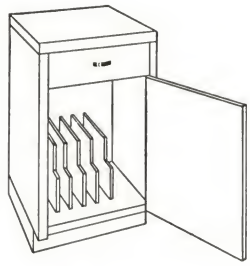
LINEN STORAGE
Top sliding tray for candles. Shelves below for luncheon sets. Bottom compartment for bulk linen storage.



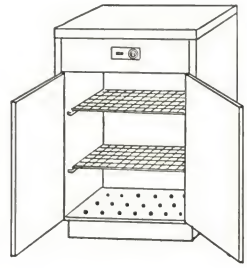
TOWEL DRIER
Equipped with heating element. Sliding rack for towels.



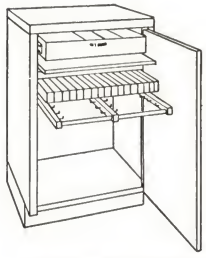
VEGETABLE CABINET
Sliding trays for vegetables. Ventilated door.



TRAY STORAGE
Cupboard base cabinet divided into sections.



WARMING CABINET
Insulated cupboard cabinet equipped with two racks, pilot light, maximum heat control.



MEAT TOOL STORAGE
A place for every tool — large and small. Protects keenness and temper. Removable cutting board and chopping block.



UTENSIL STORAGE
Six compartments for orderly storage of pots and pans.



FLOUR MEAL & SUGAR BIN
3 separate containers with covers. For 15" and 18" drawers.



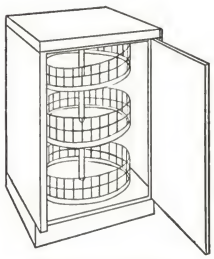
SLIDING TABLE SHELF
Fits below shallow drawer of cupboard base cabinet. Convenient table height. Operates on heavy terne plate slides.



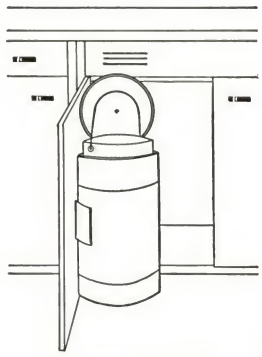
TILTING FLOUR BIN
May be inserted in any cupboard cabinet. Holds fifty pounds.



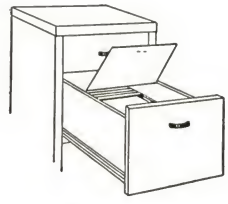
CURVED END BASE CABINET
16½" radius door. Will increase convenience and improve appearance of many kitchen layouts.



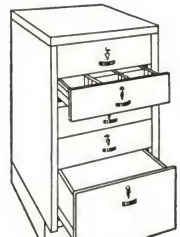
REVOLVING SHELF
For use in any base cabinet. Shelves of wire.



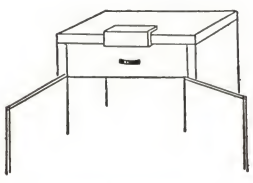
GARBAGE RECEPTACLE
Attached to sink compartment door Lid raises automatically.



BREAD AND CAKE RECEPTACLE
Hinged cover Wire shelf for cake.



SILVER STORAGE
Three top drawers with divided inserts, plush lined. Fourth drawer for larger flatware, bottom deep drawer for bulky items, both plush lined. Paracentric locks



GRINDER ATTACHMENT
For fastening meat grinder to linoleum tops. Removable.



SLIDING CUTTING BOARD
May be furnished for any 15" or 18" base cabinet above shallow top drawer.



ALBA LAMP
Quarter cylinder in shape. Fits under wall cabinet or in corner, in either horizontal or vertical position.



PLANNING TABLE
Pigeon holes on top for recipes. Linoleum top. Chrome plated tubular legs.



PLANNING DESK
Modernistic design. Cupboard cabinet at left. Linoleum top.

Also towel rod, auxiliary storage rack attached to sink front doors, tumbler locks for doors and drawers, flat key locks, pastry board for insertion behind door or in shallow drawer of any cupboard cabinet, polished asbestos core pad to rest on linoleum top, enamelled trim moulding, stainless steel trim moulding, sink compartment bottom plates, cup hooks, tilted dish drainer. Any cabinet may be louvered for ventilation.

SINKS AND CABINET TOPS

St. Charles sinks and cabinet tops are available in various materials (see below) 25 in. deep, 1½ in. thick and in standard sizes or special lengths to fit individual requirements—U shaped, L shaped or straight.



Linoleum—St. Charles Custombilt linoleum sink and cabinet tops are of heavy gauge linoleum on extra heavy steel core, reinforced and sound deadened. Available in black and a variety of standard colors. Bowls are acid resisting white porcelain enamel on cast iron—other types available.

Also available, St. Charles Standard Linoleum sink and counter tops, primarily for apartment installations and other multiple projects. These are of medium gauge linoleum on heavy reinforced steel core. Bowls are acid resisting, white porcelain enamel on steel. Standard color of work surface—black.

Stainless Steel—St. Charles Stainless Steel sinks and tops are of heavy stainless steel bonded to a sturdy steel plate. Drainboards and splashers are integral. The entire unit is solidly reinforced and the under surface sound deadened.

For schools, hospitals, institutions and large dwellings there is available a top of extra heavy stainless steel—also reinforced and sound deadened.

Monel Metal—Is available as alternate material at the same price.

Maple and Marble—Cabinet tops also available in maple, marble and other materials.



For Apartments

St. Charles Leader Line cabinets are particularly adapted to economical arrangements for apartment type kitchens. Ask for special quotation on apartment or other multiple installations.





For Hospitals

St. Charles cabinets are adapted to many uses—in diet kitchens, service rooms, dressing rooms, sterilizing rooms and as instrument cabinets.

For Schools

Requirements of up-to-date foods laboratories, model kitchens and laundry rooms in Home Economics Departments of schools are efficiently met by use of St. Charles Steel Cabinets.

Our School Planning Department welcomes the opportunity to consult with school architects in planning efficient layouts, submitting recommendations and estimates without charge or obligation. Plans designed for unit kitchens or laboratory type of layout or both.

Planning Service

Experience gained in planning thousands of residence, apartment and institutional kitchens is available through our Kitchen Planning Department. Send us blueprint of plan, or rough sketch giving general arrangement desired with dimensions, ceiling height, door and window openings and any special details. Floor plan and elevation of recommended arrangement will be submitted with estimate. No charge or obligation for this service.

SHIRLEY CORPORATION

330-332 East St. Joseph Street, INDIANAPOLIS, INDIANA

UNISTEEL MATCHED UNIT KITCHEN CABINETS

MODERN—Unisteel cabinets are not adaptations of old, outmoded models. They are designed and built on the newest principles of construction and finish.

COMPLETE—Every feature necessary for a perfect kitchen is available in Unisteel. The wide selection of standard size units allows almost unlimited latitude of harmonious, flexible groupings, giving your kitchen a custom-built appearance in beauty and efficiency.

PERMANENT—Unisteel cabinets are built of steel, the permanent material, to last a lifetime.

SANITARY—Unisteel cabinets are easy to keep clean and are vermin and rodent proof. Special odorless and tasteless baked-on enamels are used throughout.

STRONG—Built to withstand years of hard usage. Metal thicknesses are carefully gauged to give maximum strength.

QUIET—Rubber bumpers and sound-deadened doors and drawer fronts completely eliminate noise.

BEAUTIFUL—Simplicity of design features all Unisteel Kitchens. The smartest colors are available.

LINOSTEEL COUNTER AND SINK TOPS—Shirley Linosteel Sink and Cabinet Tops are constructed of linoleum on steel for long life and sturdy wear, having the desirable qualities of a resilient, cushion-like quiet work surface that minimizes the breakage of fine China and glassware. A wide choice of colors is available.

PLANNING SERVICE—Our Planning Department is maintained solely to help you design a scientifically correct kitchen unit grouping for your home at no extra cost.

SHIRLEY CONSTRUCTION FEATURES—All Unisteel units are electrically welded and fabricated by the most modern machinery and methods from finest cold rolled furniture steel.

Each door and drawer front is built of two thicknesses of steel, separated by sound absorbing insulation, welded together. See Fig. 1.

Rubber bumpers are furnished on door and drawer fronts for a cushioned stop and on all shelving, eliminating metal to metal contact, thus assuring absolute quietness.

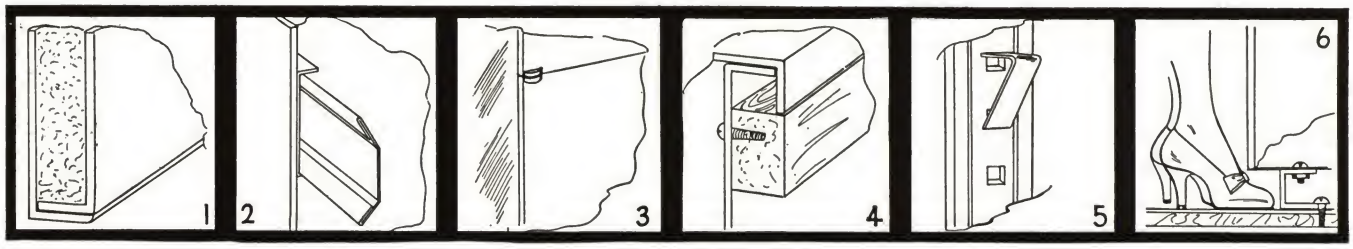
All drawers and sliding shelves are suspended from the sides on steel tracks and slides welded in place. This construction assures constant, positive operation with roller bearing-like action. See Fig. 2.

The door and drawer fronts form the entire front of each unit. This flush type construction offers a smooth, even surface, easy to keep clean.

All door and drawer pulls are of the most modernly designed hardware with smooth, rounded ends which will not catch or tear clothing. The plated hinges are especially designed for flush door construction and are practically invisible. See Fig. 3. All spring door catches are positive and operate with ease.

"Porcelite," a quality, synthetic, high-baked enamel, is used exclusively. It is especially prepared for Shirley Unisteel *steel* units. All baking temperatures are controlled thermostatically, assuring a tough, durable finish with permanent flexibility and adhesion. All units are completely enameled on all surfaces, inside and out.

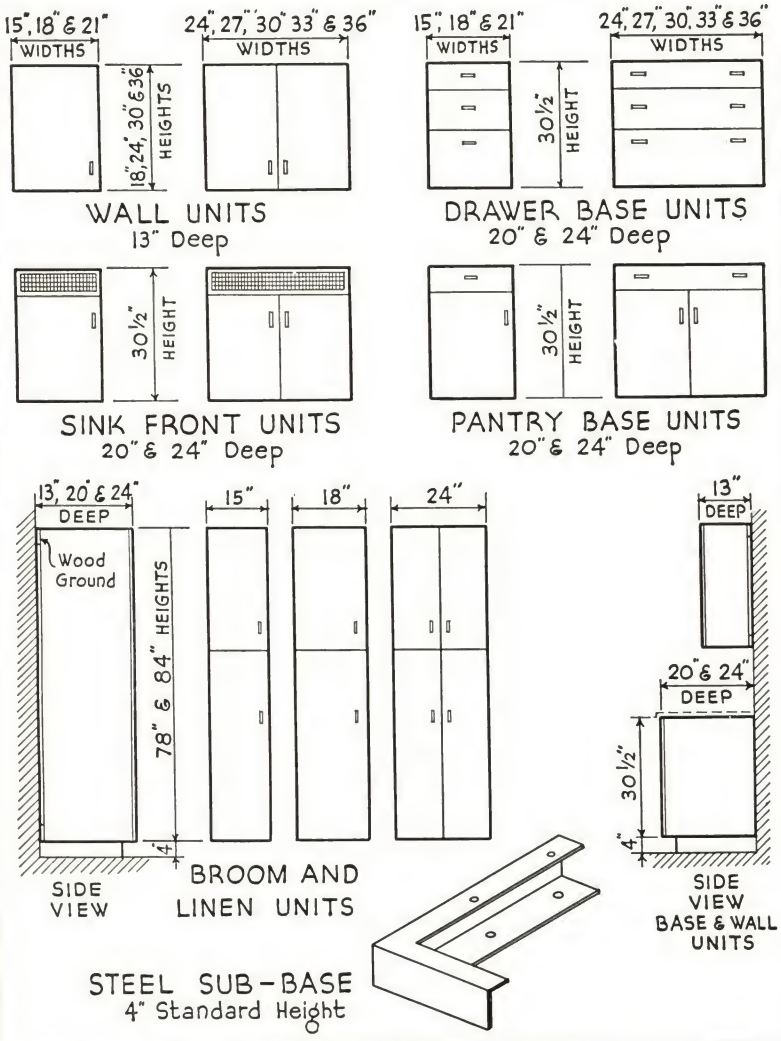
Wall cabinets have recessed backs for rigid attachment to wood strips on wall surface, quickly and economically. See Fig. 4. Shelf standards are adjustable and are tested to 700 pounds. See Fig. 5. Sub-bases are recessed for comfortable toe room and easy floor cleaning. See Fig. 6.



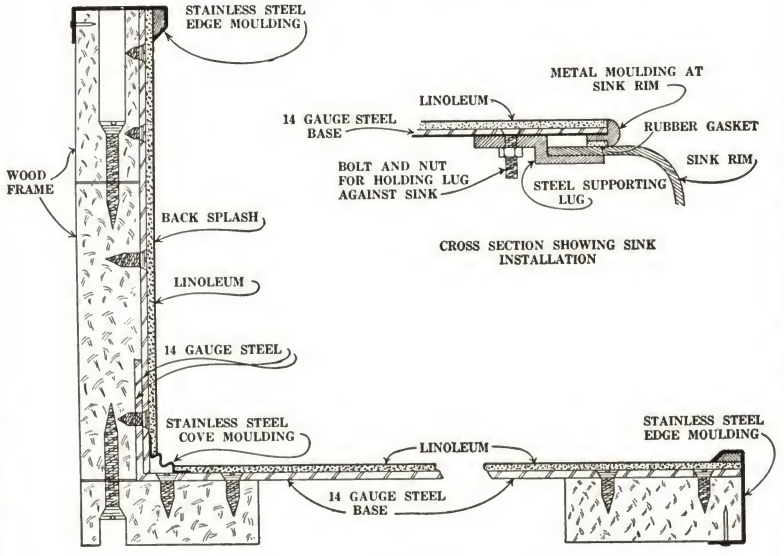




DETAILS OF CABINETS



DETAILS OF SINK AND COUNTER TOPS



CABINET SPECIFICATIONS

Wall Units

Wall units 30 and 36 in. high are furnished with 2 adjustable shelves; 24 in. high wall unit, 1 adjustable shelf; 18 in. high wall unit, without shelves. The ¾ in. recessed backs on the wall units allow easy installation by attaching to wood grounds fastened to the surface of the wall.

Pantry Base Units

Pantry base units offer one 6¼ in. deep top drawer and two drawer-like sliding shelves, enclosed by one or two doors, depending on the width.

Drawer Base Units

Drawer base units are equipped with three drawers, 6½ in., 10 in., and 14 in. deep.

Sink Front Units

A Sink Front unit is not a complete cabinet but a frame with a grille opening at the top, one or two doors depending on the width, and a steel floor for under the sink.

Broom and Linen Units

Broom units are equipped with two adjustable top shelves and linen units with five adjustable shelves. The ¾ in. recessed backs of these units allow easy installation by attaching to wood grounds fastened to the surface of the wall.

Steel Sub-Base

This base is available as standard in a 4 in. height and the length is determined by the width of the unit or unit grouping.

SINK AND COUNTER TOPS SPECIFICATIONS

Materials

The finest heavy medium gauge linoleum is cemented to a sturdy 14-gauge steel base with special waterproof cement. Black linoleum is a standard but any color is available. Sink bowls are acid resisting white porcelain enamel with openings for Duo type strainers. Double compartment, dish washer, stainless steel and monel metal bowls are available on order. Sinks and tops are painted on underside with aluminum bronze.

Construction Details

All edges of tops, backs, and end splashers have 18-8 stainless steel edge moulding raised to prevent overflow; moulding at bowl is flush for drainage; watertight cove moulding is used where back splash and top join. Sinks are joined with a watertight, secure connection (see detail drawing). Sink and cabinet tops may be furnished with special cutouts and irregularities as specified. Faucet holes are bored at the factory at any desired location specified.

Sizes

Back and end splashers are built in any height up to and including 16 in. Tops have standard widths of 21 in. and 25 in. available in any length and in "L" and "U" shapes. Sink tops up to 90 in. long have 16 x 24 in. bowls; 90 in. and longer have 18 x 30 in. bowls.

ACME RADIATOR FURNITURE

SHIRLEY CORPORATION also manufactures Acme All-steel Radiator Furniture—a complete line of radiator shields and custom-built radiator enclosures. For further details regarding Acme All-Steel Radiator Furniture, see your local dealer or write the factory direct.

MEMORANDA

UNITED METAL BOX CO., INC.

168-186 Seventh Street, BROOKLYN, N. Y.

For United Cabinets, Venetian Blinds, Waste Receptacles and Mail Boxes, see File Index

MODERN STEEL SINK AND KITCHEN CABINETS

The new United Steel Cabinets sound the true keynote of a scientifically designed kitchen, and its utility is enhanced by the natural grouping of overhead wall cabinets and adjacent work cabinets.

These cabinets are manufactured in various standard sizes which lend themselves readily to flexible setups adaptable to every size kitchen. Constructed of the finest material, fabricated in a most durable manner and finished with a glistening white Dulux enamel sprayed on and baked at a high temperature, these cabinets combine the elements of truly fine kitchen equipment.



SINK CABINETS

Cat. No.		Type of Sink	Description
Bevelled Corner	Round Corner		
500	600	42x20-in. RH drainboard	2 drawer—2 compartment
501	601	42x20-in. LH drainboard	2 drawer—2 compartment
504	604	52x20-in. RH drainboard	2 drawer—2 compartment
505	605	52x20-in. LH drainboard	2 drawer—2 compartment
506	606	60x22-in. double drainboard	4 drawer—3 compartment
510	610	42x22-in. sink and tray	2 door—reversible
511	611	50x22-in. sink and tray	3 door—reversible
520	620	42x20-in. drainboard	2 door—reversible
560	...	42x25-in. RH drainboard	2 drawer—2 compartment
561	...	42x25-in. LH drainboard	2 drawer—2 compartment
566	...	60x25-in. double drainboard	4 drawer—3 compartment
567	...	42x25-in. double sink	tray with 2 compartment

WALL CABINETS—12 IN. DEEP

Cat. No.	Width	Height	Number of shelves
1821	21 in.	18 in.	1
1827	27 in.	18 in.	1
1830	30 in.	18 in.	1
2821	21 in.	28 in.	2
2830	30 in.	28 in.	2

BASE CABINETS—35 IN. HIGH

Cat. No.	Width	Depth
2221	21 in.	22 in.
2230	30 in.	22 in.

Write for Complete Catalog of United Products

WHITE CABINET CORPORATION

Manufacturers of Kitchen Compacts, Door Beds, Breakfast Room Furniture, Dressing Room Cabinets and Bathroom Cabinets

102 East 40th Street, NEW YORK, N. Y.

COMPLETE EQUIPMENT FOR APARTMENT AND HOME BY ONE MANUFACTURER

"White" Kitchen Compacts—Consist of standard units manufactured and finished complete at the factory, and packed in individual cartons. These 29 units can be assembled into any one of hundreds of combinations of complete kitchen equipment, and when so assembled create a White Kitchen Compact combining Cabinets, Sink, Refrigerator and Range into a single symmetrical and beautiful compact installation.

In the hundreds of combinations, from the smallest installation of a kitchenette in a hotel room to a de luxe installation in a large apartment, residence, hotel or institution, the same units are used but are simply assembled into different combinations.

The standard unit combinations may be made to suit any condition for new work, and are easily adaptable for alteration or remodeling work especially because all water and gas piping may be placed outside the wall in the vent spaces behind the cabinets.

These units contain all of the latest kitchen conveniences. The corner units utilize kitchen corners, combining large glass door china cabinets, large work tables, six revolving supply drawers, two revolving shelves for utensils and equipment.

The Range Units—Of the latest designs, ovens and broilers fully insulated. Burners are of the speed-simmer type and may be combined for two, four, six or eight burners; one or two ovens and one or more broilers. Range Units are so designed that the Gas Burners and Electric Elements are interchangeable.

The Refrigerator Units—In sizes of 3, 4½, 6, 8 and 10 cu. ft. capacity, porcelain enameled interiors, fully insulated, equipped with either air cooled, gas refrigeration, or with sealed electric refrigeration, both fully guaranteed and serviced. Thus these Kitchen Compacts may be either all-gas or all-electric, or a combination of both.

All units are equipped with two hanging studs and are erected by attaching to keyholes in hangers. Hangers stand against, but not attached to the wall. All Compacts are self-supporting and self-ventilating. Pipe shafts are eliminated, as water and waste pipes, electric conduits, etc., may be placed against the wall, between the hangers and are thus always accessible.

Sinks, Work Tops, and Back Splashes—Of stainless steel.

The illustrations show only three arrangements of these standardized units, but the number of arrangements is unlimited.

Breakfast Room Furniture—This consists of folding chairs with seat and back cushions and extension wood tables.

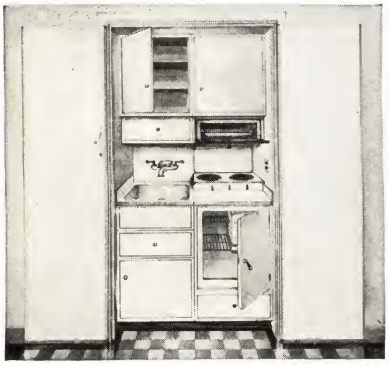


Dressing Room Cabinets—Made of white wood. The shoe boxes and tray inserts are of hard wood left in the white, all equipped with pull-out hangers and hat racks.

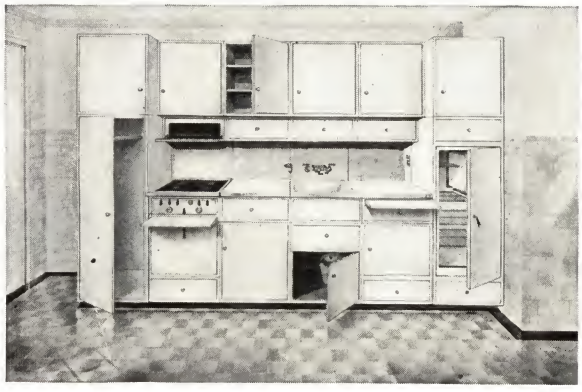
Bathroom Cabinets—These combine toilet, lavatory and shower cabinet, all of metal, finished in baked enamel, and fitted together with fillers of any width. These units contain water closet, clean linen cabinet, large triple mirrors, medicine cabinet, and soiled linen cabinet. Showers are equipped with curtains or glass doors.

"White" Door Beds—All improved in style with wood head and foot boards, in Italian, English, French, Early American and Modern designs. They may be equipped with either coil or box springs, either on the door or jamb type installation, and are in single, three-quarter or full sizes.

Planning—Service through our engineering department.



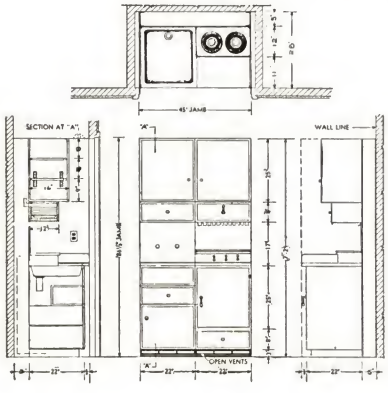
No. 200 Compact

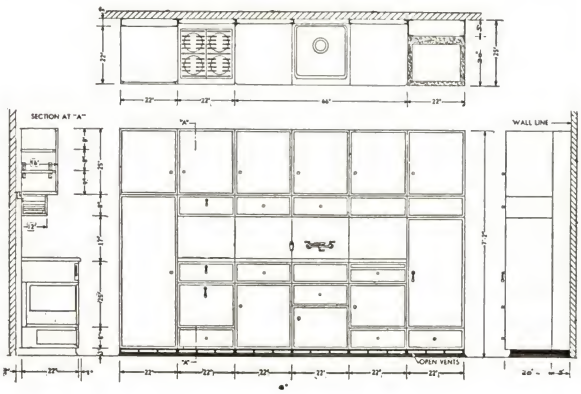


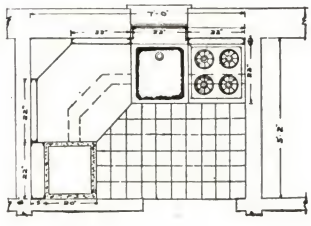
No. 600 Compact



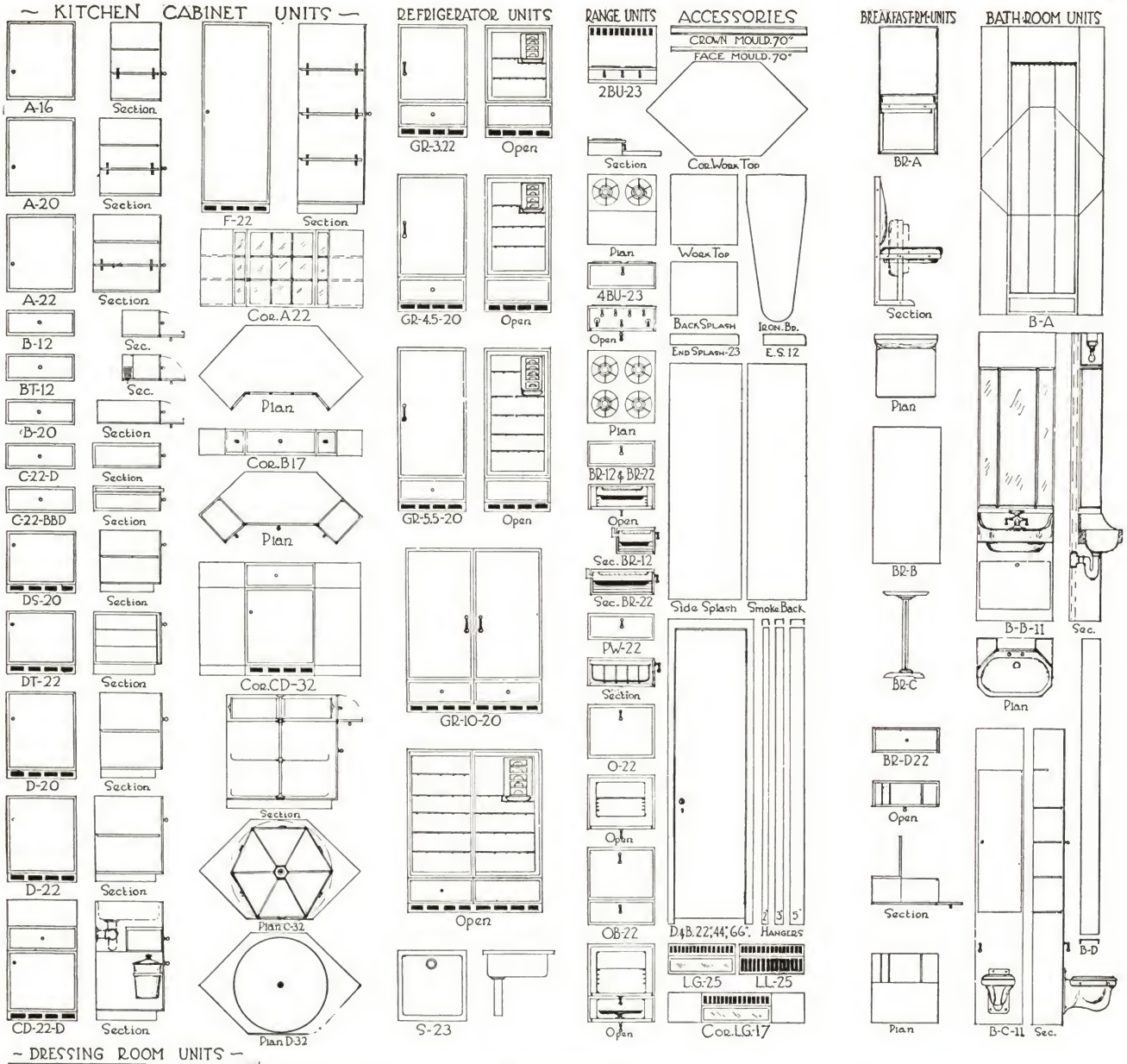
No. 400 Corner Compact

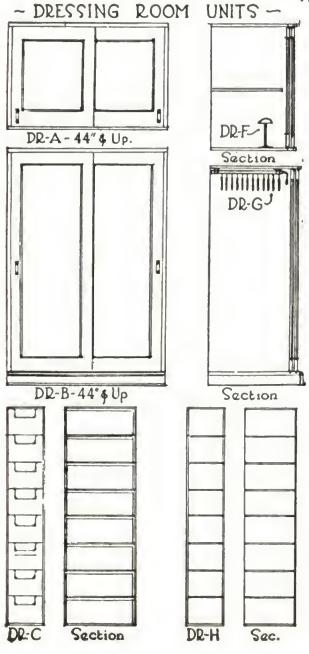






WHITE CABINET CORPORATION





SPECIFICATIONS

The Kitchen Cabinet Units, Breakfast Room Units and Bathroom Units are all made of steel, finished in baked enamel.

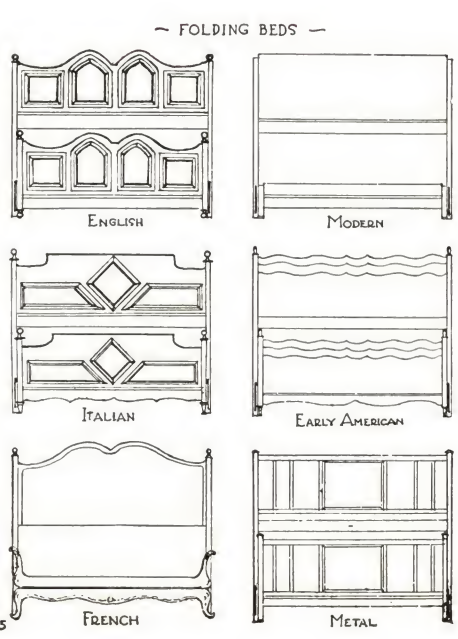
The Sink, Work Tops, and Splash Backs are stainless steel.

The Range Units are all heavily insulated, finished in white enamel and trimmed with stainless steel.

The Dressing Room Units are made of clear white wood, and the Insert Units "C" and "H" are made of hard wood, all left in the white.

The Bed Chassis is of steel angles and square tubing. The Bed Ends of oak, maple and walnut.

WHITE CABINET CORPORATION
Chas. C. White, Pres.
102 East 40th St., New York, N. Y.



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EDISON GENERAL ELECTRIC APPLIANCE, INC.

5600 West Taylor Street
CHICAGO, ILL.

COMMERCIAL COOKING AND BAKING EQUIPMENT

A Complete Line

Edison-Hotpoint manufactures more than 100 separate items in its group of specialized heavy duty electric kitchen appliances. Space considerations limit us to presenting only a few typical products in this catalog.

The complete line includes Baking and Roasting Ovens, Ranges, Broilers, Hot Food Storage Units, Plate Warmers, Stock and Fry Kettles, Griddles, Waffle Bakers, Egg Boilers, Hotplates, Grills and Toasters.

On request we will gladly furnish descriptive data and detailed specifications on any piece of equipment.

Commercial Kitchen Planning Service

In the highly technical, highly specialized problem of laying out efficient large-scale kitchen installations we modestly claim to be authorities. Our engineers and technicians have had years of training and experience in the design and installation of every type of commercial, institutional and governmental kitchen layout—from small restaurants, to the complexity of great hotel commissaries and the marine galleys of ocean-going liners.

Whenever a specialized kitchen problem arises—restaurants, hotels, hospitals, community buildings, college dining halls, factories, church buildings, public institutions of all kinds, we invite architects to turn to us for assistance (without obligation). The service may include cost and wiring estimates, engineering aid, complete kitchen layouts, complete specifications, or even sales help in presenting a proposal to a client or prospective client.

Edison specialists are in close touch with building and remodeling operations throughout the country and are often in a position to reciprocate the co-operation offered them by architects.

Note: Our policy is to recommend "adequate equipment at minimum expense."

Why Outstanding Architects Specify Edison Hotpoint Commercial Appliances

Because the heating element of our commercial equipment is the long-life Calrod unit. The ruggedness, speed and dependability of this efficient unit are the architect's best guarantee of satisfaction.

Because of the simple, dependable, automatic temperature control mechanism.

Because we make an all-inclusive line. Two distince advantages result:

(1) Kitchens may be planned as units.

(2) Sizeable savings derive from the advantage of lump-sum bids from a single manufacturer.

Because of the proven-in-service sturdy construction of Edison Hotpoint appliances.

Because, as in the case of Hotpoint domestic equipment, the commercial line comes with a year's guarantee against defect, provided it is properly installed.

Because Edison Hotpoint has thousands of successful commercial installations to its credit.

NEW "BRAWNY LAD" LOW PRICED EDISON-HOTPOINT COMMERCIAL RANGE

Description—A low priced range of commercial construction and wide adaptability, the "Brawny Lad" is designed to meet the needs of the "borderline" market. For installations where the extra heavy construction, larger capacity, and higher cost of standard commercial ranges are not justified, yet where long hours of service and commercial conditions prevail, which render domestic type ranges unsuitable, the "Brawny Lad" is the answer to the architect's requirements. In this classification fall large residences, tea rooms, wayside stands, Church Vestries, small restaurants, hospital diet kitchens, etc., where food is prepared for from ten to fifty persons per meal.

Custom Top—Range is available with either (a) four, 2100 watt Hi-Speed Calrod Surface Units, (b) two, 2100 watt Hi-Speed Calrod Surface Units and one 12 in. x 24 in. Automatic Temperature Controlled Griddle, or (c) one, 24 in. x 24 in. Automatic Temperature Controlled Griddle.

Large Oven—Range is equipped with a large oven, 19 in. wide, 12 in. high, 21 in. deep, with individually controlled top and bottom Calrod Units and Automatic Temperature Control.

Five Heat Switches—Five heat switches are provided on 115/230 volt, 3 wire, A.C. circuit ranges for surface and oven units. Three heat switches on ranges for other circuits.

Wattage—Oven, 3.6 KW; Surface Units, each, 2.1 KW; 12 in. x 24 in. Griddle, 3.0 KW; 24 in. x 24 in. Griddle, 6.0 KW.

Standard Voltage—197/219 or 220/240 single or three phase A.C. or D.C. 115/230 volt, single phase, three wire A.C.

Finish—Polished steel top, chromeplate switch panel and door handle, black Japan body.



With Griddle and Hi-Speed Calrod



Catalog No. R200
Range with Four Hi-Speed Calrod Units

With Automatic Griddle



EDISON Hotpoint

COMMERCIAL EQUIPMENT



R170 "Husky" Range

Classification—Sectional, custom top, commercial range.

Dimensions—36 in. wide, 38 in. deep, 32 in. high. Oven interior 22¾ in. wide, 27½ in. deep, 12 in. high. Available with storage space in lieu of oven.

Surface Units—Specify number and arrangement of 2100 watt Hi-Speed Calrod Units; 10x10 in. Cast-In Calrod 2000 watt boiling plates; 10x20 in. (3.0 kw.) or 20x20 in. (4.0 kw.) Automatic Griddles (right side of range only).

Wattage and Voltage—Average wattage, Cooking Top, 12.0 kw.; Oven, 6.0 kw., voltage 197/219 or 220/240 single or three phase a-c. or d-c.

Finish—Polished steel top, black japan body.



N166 "Husky" Oven

Classification—"Ad-A-Deck" all purpose, kitchen oven. Sectional type. Available in one, two, or three sections.

Dimensions—Exterior—36 in. wide; 36 in. deep; height, single section, 45 in.; two sections, 55½ in.; three sections, 70 in. Each compartment, interior—22¾ in. wide; 27½ in. deep; 12 in. high.

Capacity—Oven area per section 3.9 sq. ft.

Wattage and Voltage—Wattage 6.0 per section. Voltage 197/219 or 220/240 single phase, three phase (on ovens with more than two switches) a-c. or d-c.

Finish—Black japan.



NA57 Automatic

Classification—"Ad-A-Deck" portable baking oven, sectional type. Typical of 27 models of baking, roasting and combination ovens, ranging in capacity from ten 1-lb. loaves or 60 lbs. of meat to 400 1-lb. loaves.

Dimensions—62¼ in. wide, 75 in. deep, 77 in. high. Each compartment 37⅜ in. wide, 57 in. deep, 8 in. high.

Capacity—Baking area, 45 sq. ft. (120 1-lb. loaves).

Wattage and Voltage—16.2 kw. standard voltage—105/115, 116/125, 190/210, 211/230, 231/250 a-c. (single or three phase) or d-c. circuit.

Finish—Standard, battleship gray—black enamel trim. Special, monel or nickel-chromium steel, with trim to match.



K32 Automatic

Classification—Fry kettle.

Dimensions—20 in. wide, 29 5/16 in. deep, 32 in. high. Fat container (less foam compartment), width, 14¼ in., front to back, 12¼ in. foam compartment, width 17¼ in.; front to back, 15¾ in.

Capacity—Fat, 25 lbs.

Wattage and Voltage—7 kw. standard voltage—110/120, 197/219 or 220/240; single phase, two phases of a three phase a-c. circuit, or d-c.

Finish—Standard, black japan-polished steel top. Special, polished monel or nickel-chromium steel base.



Hot Food Storage Receptacles

Note: Each counter ensemble is specially constructed to meet particular needs by leading kitchen equipment houses.

Round Food Jars—4, 7, or 10½ qts. Rectangular Counter Meat Pans, No. 200 (12x20 in.) and No. 165 (9x16 in.). Pans may be standard, divided, or two half pans.

Automatic Temperature Control—Each receptacle has adjustable thermostat, controlling Calrod units. Each may be turned on or off separately.

Construction—Receptacles are aluminum castings with Calrod cast in bottom. All sides and bottom enclosed in a housing of galvanized sheet metal, forming an efficient dead air space insulation.

Voltage—Either high voltage 200/240 or low voltage 100/120. Either a-c. or d-c.



435 K11

Classification—Stock kettle.

Dimensions—24 in. wide, 27 in. deep, 44¼ in. high. Diameter of container, 18¾ in.

Capacity—20 gal.

Wattage and Voltage—5 kw. standard voltage—110/120, 197/219, or 220/240 a-c. (single phase) or d-c. circuit.

Finish—Body, black enamel; top, polished nickel.

For Sale by Leading Kitchen Equipment Houses Everywhere

THE EBCO MANUFACTURING CO.

Manufacturers of Ebco Dish Washing and Flat Rim Sinks

COLUMBUS, OHIO

AGENCIES IN ALL PRINCIPAL CITIES

For Toilet Partitions, Drinking Fountains and Iced Water Coolers, see File Index

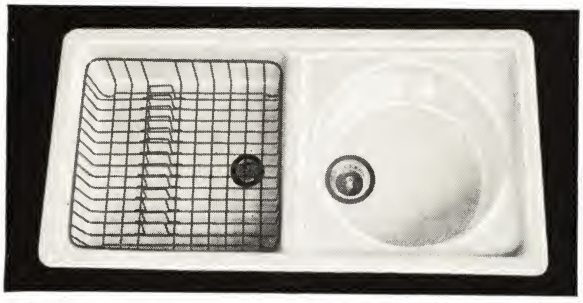
EBCO FLAT RIM SINKS

Ebco Flat Rim Sinks are designed for kitchen cabinets or built-in sink tops of linoleum, tile, metal or composition. They are attractive in appearance and embody convenience and sanitary features that appeal to every woman. Made of cast iron, heavily enameled with acid-resisting enamel, they offer lasting qualities that few other materials have been able to equal. Economically priced, arranged for easy installation and offered in various types, sizes and colors, there is an Ebco Sink to suit individual preferences and every home owner's pocketbook.

Accessories include Ebco Twin Waste Fitting with large Crumb Cup, Rubber Dipped Drain Basket, and special Ebco Swing Spout Faucet with concealed hose spray arranged to disappear in sink back or top.

Ebco Sinks are manufactured by an established, reputable company, long known in the plumbing field, who has complete manufacturing facilities including foundry, porcelain enameling plant and brass works. A quality product from start to finish.

Model LR-141 Dishwashing Sink



A two-compartment dishwashing sink of large size for the larger home. Eliminates the need for a dishpan. Reduces dishwashing to three simple steps—from round washing compartment, the dishes are racked; then scalded with convenient spray fixture and left to self-dry, after which time they are ready to put away. Spray and double compartment is also handier for other sink tasks.

Specifications

Genuine cast iron, porcelain enameled either regular or acid-resisting. Colors: White, Ivory or Green.

Dimensions—39¼x20 in. Dishpan 15½ in. diameter, 9 in. deep. Draining compartment 17½x18 in., 7 in. deep.

Draining Basket—No. 107, rubber dipped. Color: Black.

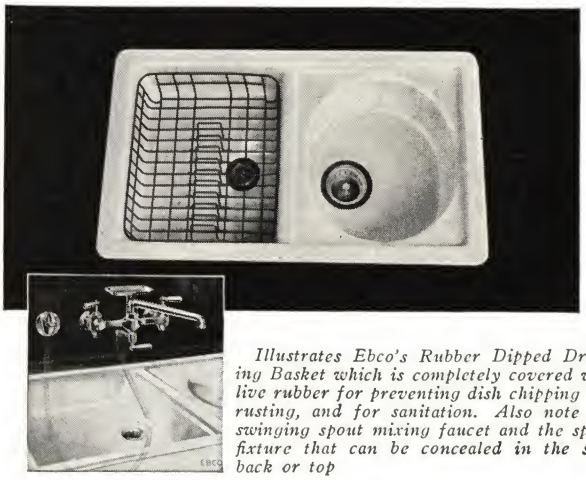
Ebco Faucet—*No. 189-B* with hose spray through sink back. *No. 189-T* with hose spray through table top.

Red brass, chrome-plated mixing faucet with long swing spout to reach both compartments of sink, with transfer valve to transfer water from spout to hose spray head—including hose and chrome-plated spray head and fittings. Chrome-plated soap dish.

Ebco Waste Fitting—No. 115, Duo-strainer with large lift-out crumb cup and metal gravity plug. Removable strainer in draining compartment. All parts brass chrome-plated.

Model LR-131

A dishwashing sink similar to the Model 141 described at left, but of smaller size. Dishwashing bowl is of elliptic shape, rather than round. An ideal sink for the apartment kitchen where the convenience of a dishwashing sink is desired.



Illustrates Ebco's Rubber Dipped Draining Basket which is completely covered with live rubber for preventing dish chipping and rusting, and for sanitation. Also note the swinging spout mixing faucet and the spray fixture that can be concealed in the sink back or top

Specifications

Genuine cast iron, porcelain enameled either regular or acid-resisting. Colors: White, Ivory or Green.

Dimensions—30x18 in. Dishpan 12x14 in.—elliptical—7 in. deep. Draining compartment 12½x15 in. 5 in. deep.

Draining Basket—No. 106, rubber dipped. Color: Black.

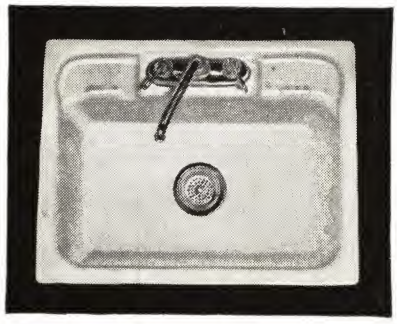
Ebco Faucets—*No. 189-BS:* with hose spray through sink back. *No. 189-TS:* with hose spray through table top.

Red brass, chrome-plated mixing faucet with swing spout to reach both compartments of sink, with transfer valve to transfer water from spout to hose spray head, including hose and chrome-plated spray head and fittings. Chrome-plated soap dish.

Ebco Waste Fitting—No. 115 Duo-strainer with large lift-out crumb cup and metal gravity plug. Removable strainer in draining compartment. All parts brass chrome-plated.

SINGLE COMPARTMENT FLAT RIM SINK

This sink offers a number of advanced features of design that put it in a class by itself for the home or apartment. Integral soap dishes and chromium-plated swing spout mixing faucet are conveniently arranged on the back ledge. This arrangement makes piping in the wall unnecessary, simplifying installation and practically eliminating frozen pipe difficulties. Duo-strainer is easy to keep clean and is sanitary. Rim is level and straight, providing for watertight joint. It is very reasonably priced, offered in two practical sizes and is of the same high quality porcelain enameled cast iron construction offered in the Ebco Dishwashing Sink described above. Here is a sink that wins favor with owners, buyers or renters.



Specifications

Sink—Genuine gray iron casting finish in acid-resisting porcelain enamel. Colors: White, Ivory or Green.

Dimensions—*TS-28-20:* length 28 in., width, 20 in., depth of bowl 7½ in., ledge 3 in. wide. *TS-24-18:* length 24 in., width 18 in., depth of bowl 7½, ledge 3 in. wide.

Ebco Faucet—No. 125 Deck-type with swing spout. Extra long supply tailpieces with union couplings. Finished in bright chrome-plate.

Ebco Waste Fitting—No. 116, 3½ in. Duo-strainer Waste Assembly with 1½ x 4 in. tailpiece. Finished in chrome-plate.

Draining Basket—No. 108 rubber dipped. Color: Black. Size 20½ x 11⅜ x 4¼ in. for either model sink.

ELKAY MANUFACTURING COMPANY

4704-4714 Arthington Street, CHICAGO, ILLINOIS

ELKAY REPRESENTATIVES

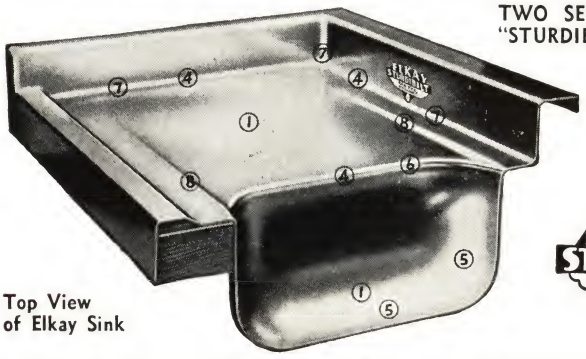
ATLANTA, GA., Robert E. Holcombe, 205 Walton Bldg.
BALTIMORE, MD., Richard B. Fulton, 12 W. Madison St.
BOSTON, MASS., Harry Adelson, 44 School St.
BUFFALO, N. Y., L. J. Drescher, 856 Amherst St.
CINCINNATI, OHIO, Calvin C. Huenefeld, 626 Broadway
CLEVELAND, OHIO, Alfred W. Avery, 1200 W. 9th St.
DETROIT, MICH., Hugo C. Schwan, 2457 Woodward Ave.
HOUSTON, TEX., Thomas E. Price, 11 Oak Court
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LOS ANGELES, CAL., William J. Long, 2237 Rogers Ave.
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MINNEAPOLIS, MINN., C. G. Herbert, 253 Plymouth Bldg.
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NEW YORK, N. Y., Robert I. Shwab, 249 E. 43rd St.
PHILADELPHIA, PA., Caleb W. Cope, 3038 Chestnut St.
PITTSBURGH, PA., Paul V. Clarke, 3119 Wainbell Ave., Dormont
ROANOKE, VA., H. S. Woodward, 840 Virginia Ave.
ST. LOUIS, MO., Arthur F. Becker, 305 Buder Bldg.
WASHINGTON, D. C., R. Harvey Stacy, 1673 Columbia Rd., N. W.
WAUWATOSA, WIS., Byron F. Stickler, 2683 No. 89th St.

FOREIGN REPRESENTATIVE: GENERAL ENGINEERING AND SUPPLY SERVICE, Bouret Marina Bldg., San Juan, P. R.

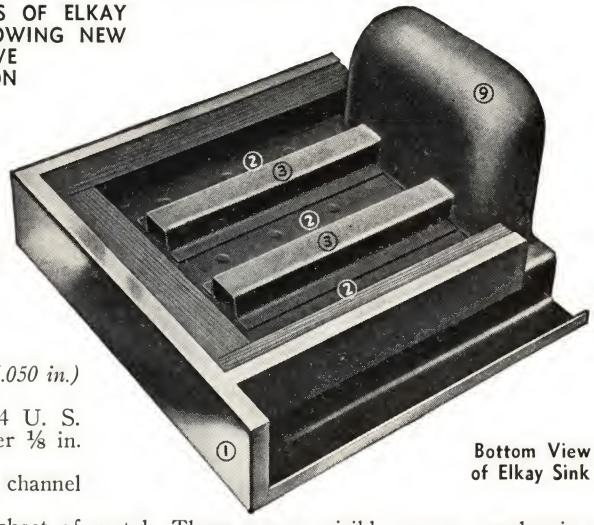
ELKAY "STURDIBILT" CABINET SINKS, CABINET TOPS AND KITCHEN SINKS

The name "STURDIBILT" which designates the products of the ELKAY MANUFACTURING COMPANY, is more than a trade name. It is an accurate description of the rugged, sturdy construction that characterizes all "STURDIBILT" Stainless Steel Kitchen and Cabinet Sinks, Cabinet Tops and Pantry Sinks, assuring a lifetime of service, utility, beauty, sanitation, and efficiency. The silvery untarnishable and stain-resisting Stainless Steel surfaces present a most pleasing appearance which harmonizes perfectly with any color scheme. ELKAY "STURDIBILT" Sinks are custom built to fit any requirements and specifications.

TWO SECTIONAL VIEWS OF ELKAY "STURDIBILT" SINK SHOWING NEW AND EXCLUSIVE CONSTRUCTION FEATURES



Top View of Elkay Sink



Bottom View of Elkay Sink

1 ELKAY "STURDIBILT" *Sinks are built of No. 18 U. S. Standard gauge (.050 in.) genuine 18-8 Stainless Steel.*
2 The stainless steel tops are bonded to and reinforced with No. 14 U. S. Standard gauge *(.078 in.)* steel plates, making a total thickness of over ⅛ in. of solid metal.
3 These solid metal tops are reinforced with heavy longitudinal steel channel plates which run the full length of drainboards.
4 *Drainboards, Sink Bowls, Rims, and Splashers are welded into one* sheet of metal. There are no visible seams, overlapping flanges, or soldered joints or crevices to catch dirt, filth, particles of food or germs.
5 All corners in sink bowls—horizontal, lateral, and vertical—are rounded to 1¾ inch radius.
6 Intersections where sink bowls meet drainboards are rounded to ⅜ inch radius.
7 Intersections where drainboards meet back and return end splashers and where back splashers meet return end splashers, are rounded to ¼ in. radius. There are no sharp corners or edges. This construction permits of quick and thorough cleaning.
8 Drainboards are pitched full (or partial) length to sink bowls, forming a drain ledge and insuring positive drainage.
9 Sink Bowls are sound deadened.

Because of these extra heavy gauges and the reinforced steel construction, ELKAY "STURDIBILT" sinks will not warp, sag, bulge, or buckle, as a result of expansion and contraction due to atmospheric conditions.

Suggestions for Architect's Specifications

Cabinet Sinks, and/or Cabinet Tops, and/or Sink Bowls, to be of sizes and dimensions as shown on plans, and to be as manufactured by ELKAY MANUFACTURING COMPANY, Chicago, Illinois, or equal; and to be fabricated as follows:

To be made of No. 18 U. S. Standard gauge (.050 in.) genuine 18-8 Stainless Steel, backed up with No. 14 U. S. Standard gauge (.078 in.) steel plates making a total thickness of not less than .128 in.* (over ⅛ in). These metal tops to be reinforced with heavy longitudinal steel channels to run the full length of drainboards. Drainboards, rims and backs are to be made integral of one sheet of metal. Drainboards are to be pitched full (or partial) length to sink bowls. Sink Bowls butt welded integral to drainboards, presenting invisible flush integral seam. No overlapping or soldered edges permitted. Edge where Sink Bowls and Drainboard meet, to be rounded to ⅜ in. radius (no sharp right angle). Intersections where back splasher meets return end splashers to be rounded to ¼ in. radius. Intersections where back splasher and return end splashers meet drainboard to be rounded to ¼ in. radius. Thickness of back to be not less than 1½ in. (reduced to 1 in. when pedestal type faucets are used). Distance from inside of Sink Bowl to outer edge of front rim to be not greater than 2½ in. Drainboards pitched full (or partial) length to sink bowl provided a drain ledge both front and back and insuring positive drainage. (Drainboards may be pitched and grooved if desired.) All corners of Sink Bowl (horizontal, lateral, and vertical) to be rounded to 1¾ in. radius. All 18-8 Stainless Steel surfaces to have number 4 (Standard) polish.

*Sink Bowls are sound deadened, but are not backed up with steel plates.



Modern Elkay "Sturdibilt" Cabinet Sink with Double Bowl and Ample Work Space—Note the Radiator Grill in Corner

New Revised 1938 Edition Elkay Catalog on Request

Our new revised 1938 edition ELKAY Catalog contains a complete listing of all ELKAY "STURDIBILT" products, with sizes, specifications and full details. Send for your copy today.

ELKAY CUSTOM BUILT CABINET SINKS, CABINET TOPS AND KITCHEN SINKS

Elkay "Sturdibilt" Stainless Steel Cabinet Sink CS 18 LB RE

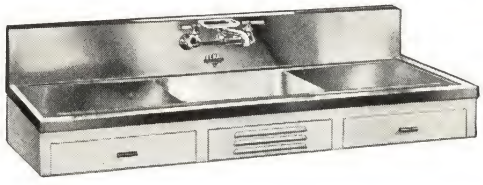


With single pitched (not grooved) drainboard single bowl at left end and one return end back. Made of 18-gauge (.050-in.) thickness throughout. Drainboards will be grooved as well as pitched when so specified.

Width over all	Length over all	Sink bowl	Depth of bowl	Back
25"	48" and longer	18"x20"*	7½"	8"

*Our 18"x25" Bowl incorporated in fixtures 72" and longer.
Can also be supplied with 1½-in. back. If required, return end may be on left-hand side or on both sides of top. Bowl may also be on right-hand side. Can be supplied in any size to meet specifications.

Elkay "Sturdibilt" Stainless Steel Cabinet Sink CS 18



With double pitched (not grooved) drainboards and single bowl in center. Made of 18-gauge (.050-in.) thickness throughout. Drainboards will be grooved as well as pitched when so specified. If required, return end blocks may be added to either side or both sides.

Width over all	Length over all	Sink bowl	Depth of bowl	Back
25"	48" and longer	18"x20"*	7½"	8"

*Our 18"x25" Bowl incorporated in fixtures 72" and longer.
Can also be supplied with 1½-in. back. Can be supplied in any size to meet specifications.

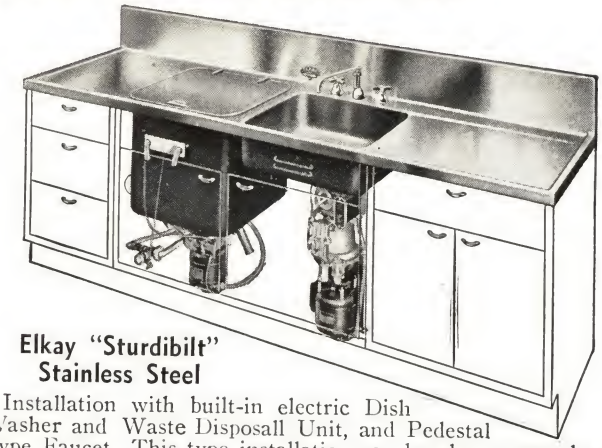
Elkay "Sturdibilt" Stainless Steel Cabinet Sink CS 28 BE



With double pitched (not grooved) drainboards and double bowl in center. Made of 18-gauge (.050-in.) thickness throughout. Drainboards will be grooved as well as pitched when so specified.

Width over all	Length over all	Sink bowl	Depth of bowl	Back
25"	72" and longer	18"x42"*	7½"	8"

*Our 18"x52" Bowl incorporated in fixtures 111" and longer.
Can also be supplied with 1½-in. back. Can be supplied in any size to meet specifications. If required, one or both return end blocks may be eliminated.



Elkay "Sturdibilt" Stainless Steel

Installation with built-in electric Dish Washer and Waste Disposall Unit, and Pedestal Type Faucet. This type installation can be also arranged with faucet on back splasher. Can be supplied in any size or shape to meet special conditions and dimensions.

Elkay "Sturdibilt" Stainless Steel Kitchen Sink KS 18

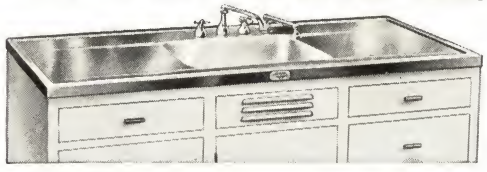


With double pitched and grooved drainboards and single bowl in center. Apron in front and ends. Made of 18-gauge (.050-in.) thickness throughout.

Width over all	Length over all	Sink bowl	Depth of bowl	Back
25"	48" and longer	18"x20"*	7½"	8"

*Our 18"x25" Bowl incorporated in fixtures 72" and longer.
Can also be supplied with 1½-in. back. If required, return ends may be added to either side or both sides and bowl may be placed at either end. Can be supplied in any size to meet specifications.

Elkay "Sturdibilt" Stainless Steel Cabinet Sink CS-1R



With Pedestal Type Faucet

With double pitched (not grooved) Drainboards and Single Bowl in center. Made of 18 gauge (.050-in.) thickness throughout. Drainboards will be grooved as well as pitched if desired, and when so specified.

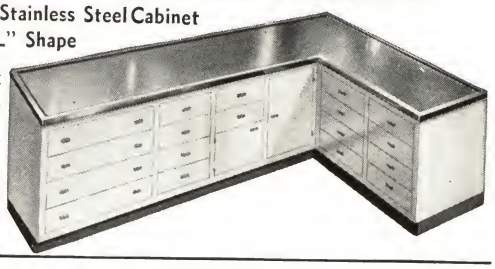
Plate number	Width overall	Length overall	Sink bowl	Depth of bowl	Back	Shipping weight
CS-1R	25"	48" and Longer	18"x20"*	7½"	No Back Raised Rim all around	30 lb. L. Ft.

*Our 18 x 25-in. bowl incorporated in fixtures 72 in. and longer. Can be supplied in any size or shape to meet specifications.

Elkay "Sturdibilt" Special Cabinet Installation

With Two CT-R Stainless Steel Cabinet Tops Joined in "L" Shape

This type unit can be built in "L" or "U" shapes or any special size or shape to meet individual requirements.



The ELKAY "STURDIBILT" Stainless Steel units illustrated and described on this page give only a slight indication of the great variety of installations possible with ELKAY Kitchen and Cabinet Sinks and Cabinet Tops. Our new revised 1938 Catalog gives more complete information. Send for it today.

ELKAY "STURDIBILT" SCULLERY SINKS

ELKAY "STURDIBILT" Scullery Sinks are made of 12-gauge (⅛-in.) copper-bearing blue annealed steel. Can also be made of 10-gauge steel if so specified. Roll rim, front, bottom and back made of one sheet, coved at corners to prevent collection of grease and dirt. Ends are welded in.

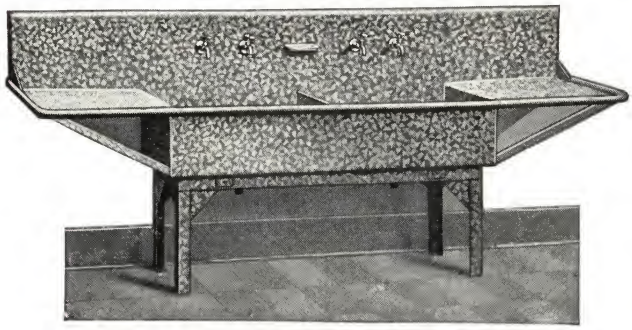
Supported on 2x2x⅛-in. steel angle legs with gusset plates arranged to fasten to floor. Legs are detachable for shipping.

All hot dip galvanized after fabrication, insuring all edges against rust and corrosion.

Drilled for faucets, waste and overflow.

Unless otherwise specified, all sinks will be set 32 in. floor to rim. (36-in. height optional.)

Can also be manufactured of 18-8 stainless steel.



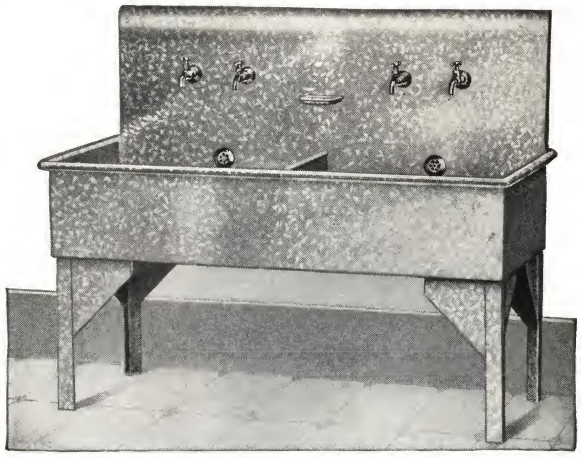
Elkay "Sturdibilt" Scullery Sink—60 DB

(Federal Specifications WW-P-541. August 1, 1933. E-5c. Fig. 26. Outfit S-108-D.)

Two-compartment, with roll rim on front and ends, integral drainboards and back, also soap dish, frame and legs.

Length of sink	Depth of sink	Height of back	Floor to rim	Length of drainboards
60″	12″	15″	36″	24″ each

Over all dimensions 2 ft. 3 in. x 9 ft. x 4 ft. 3 in. high. Special sizes made to order.



Elkay "Sturdibilt" Scullery Sink S-820

Two-compartment, with roll rim on front and ends and with 15-in. high integral back, with legs and soap dish.

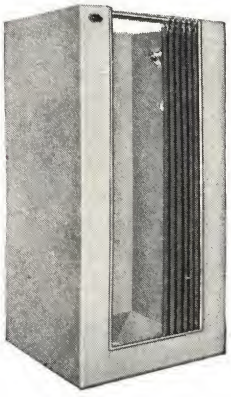
Length	Width	Depth	Back
30″ to 60″	24″	12″	15″

Measurements are inside and do not include roll rim, drainboards or boxed back. For over all dimensions add 2½ in. to length and 3 in. to width.

Special sizes made to order.

ELKAY "STURDIBILT" SHOWER BATH CABINETS

ELKAY "STURDIBILT" Shower Bath Cabinets are made in four different models: The "ARISTOCRAT" and the "COMMODORE" which are the "unit" type and the "AMBASSADOR" and the "JUNIOR" which are the "knocked down" type. Each of these models has certain distinctive features which have made them a standard of efficiency, practicability, and serviceability.



The Aristocrat

Made of 11-gauge (⅛-in. thick) copper-bearing sheet steel. Pilasters, sides and back are made of one continuous sheet, electrically welded to riser and receptor. Complete compartment includes Elkay mixing valve, chromium-plated and adjustable ball joint, cast brass, self-cleansing water saving shower head and arm, ¾-in. outside diameter chromium-plated brass curtain rod with flush type flanges, chromium-plated Universal type strainer for 2-in. lead, iron or soil pipe, chromium-plated soap dish. No curtain. Finished in two coats of metal paint. In finishing and decorating after installation, a good coat of waterproof enamel paint should be used. The Commodore is identically the same as the Aristocrat, except that it is equipped with the two-valve shower instead of the Mixing Valve.

DIMENSIONS OF ARISTOCRAT AND COMMODORE SHOWER STALLS

Width	Depth	Height
28″	40″	72″
30″	32″	72″
32″	32″	72″
36″	36″	72″
40″	28″	72″

The Ambassador

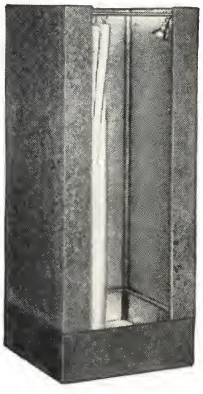
"The Ambassador" is a high quality product throughout and yet inexpensive in original cost, installation and upkeep. It is shipped crated, unassembled and can be installed and assembled in a space no larger than the stall itself.

The walls are galvanized, copper-bearing steel, prepared for enamel or duco finish. Receptor or base is heavy gauge copper-bearing steel, hot galvanized after fabrication and chemically treated in preparation for enamel or duco finish. The receptor is of the inverted type.

Complete compartment includes chromium-plated brass two-valve shower, adjustable ball joint, self-cleansing, water saving shower head, curtain rod, waste strainer, soap dish and white duck curtain. Ambassador and Junior shower stalls can be supplied in baked enamel or Duco finish.

DIMENSIONS OF AMBASSADOR SHOWER STALLS

Width	Depth	Height
32″	32″	76″
36″	36″	76″





The Junior

The J-30 "Junior" is a completely equipped, self-contained cabinet combining economy of space, low installation cost and efficiency in operation. It can be easily and quickly installed in any room, closet or space in the home or building where water supply lines and waste pipes are available.

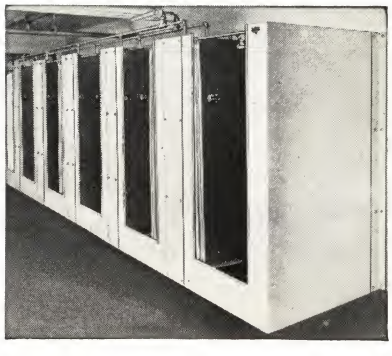
The J-30 "Junior" shower bath stall is crated in "knocked-down" sections.

The walls are galvanized copper-bearing steel, prepared for enamel or duco finish. The receptor or base is heavy gauge copper-bearing steel, hot galvanized after fabrication and chemically treated in preparation for enamel or duco finish.

Complete compartment includes satin finish chromium-plated brass two-valve shower with adjustable ball joint, self-cleansing, water saving shower head and arm, waste strainer, soap dish and white duck curtain. Junior stalls come in one size only—30x30x76 in. Can be supplied in baked enamel or Duco finish.

Elkay Shower Bath Batteries

Shower Bath Batteries are ideal for schools, colleges, universities, clubs, gymnasiums, fraternity houses, employes' locker rooms, tourist camps, etc. Batteries can be built of either "unit" or "knocked-down" types of shower cabinets to meet individual needs. Cabinets are usually supplied in plain copper bearing galvanized steel, chemically treated to take any good finishing enamel, or finished in any color baked enamel at slightly increased cost. Batteries are supplied in any standard sizes and number of units desired.



INGRAM-RICHARDSON MFG. CO. OF INDIANA, INC.

Manufacturers of Enameled Steel Parts and Table Tops
Enamelers of Cast Iron and Formed Steel Parts

OFFICES, LABORATORIES AND PLANT
FRANKFORT, INDIANA

PORCELIRON SINK TOPS FOR BETTER AND GREATER WORKING SURFACE

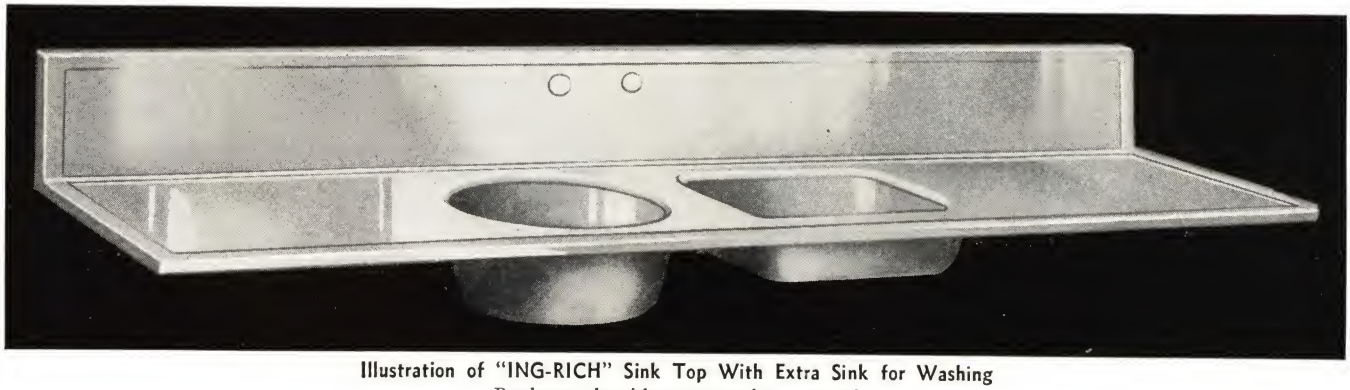


Illustration of "ING-RICH" Sink Top With Extra Sink for Washing
Bowls may be either rectangular or round

ADVANTAGES OF PORCELAIN ENAMEL OVER OTHER MATERIALS

QUICKLY AND EASILY CLEANED—No expensive cleaning compounds are needed—a moist cloth will restore the crystal cleanliness of the porcelain top without resorting to scouring.

PORCELIRON

"The Perfect Porcelain Enamel"

SANITARY—Porcelain is an inorganic material which is non-porous. Its smooth fused surface does not permit dirt to enter. It is one of the best resistants known.

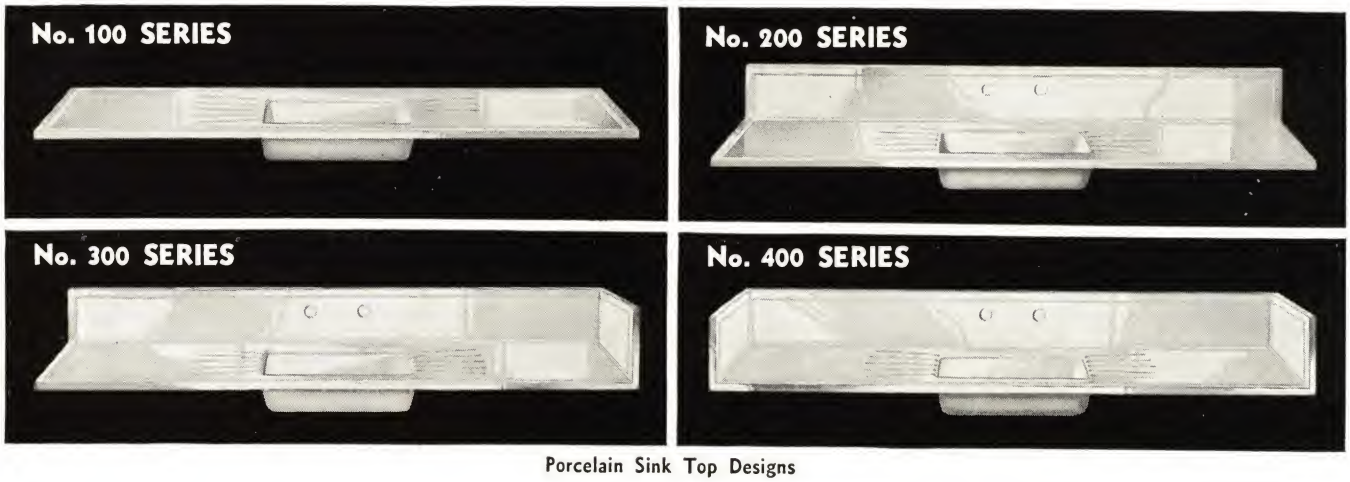
DURABLE—Hard surface resists points of sharp objects under normal usage, where soft metal or compositions are easily marred. Porcelain enamel is not affected by wet or dry conditions and does not warp. Will not break or cause breakage unless unusual steps taken. Tops mounted with sound-deadening paper and proper frames ready for lifetime service.

HEAT-RESISTING—Hot pans, scalding liquids or the heat from flame will not leave an enduring mark, as porcelain enamel is fused into the steel base at a temperature of 1500 degrees Fahrenheit.

ACID-RESISTING—Working surfaces are finished in acid-resisting porcelain enamel, so that food acids, beverages and other agencies will not stain the tops.

ECONOMICAL—Initial cost less than polished metallic tops and also more economical during lifetime of service. No replacements required because of scratches, stains, or other defects common to softer organic materials. Tops fabricated to fit many and varied sizes with sinks welded to form one-piece sink tops.

BEAUTY—Porcelain enamel, like glass, is inorganic and has fadeless beauty. Tops are furnished in smooth, glossy finishes and colors that do not become tiresome and in patterns that do not become out moded. Colors fit in readily with many decorative schemes.



Porcelain Sink Top Designs

PORCELIRON SINK TOP SPECIFICATIONS

Top Specifications

All tops are furnished 25 in. in depth, including thickness of the back splasher. A minimum of 23 in. depth can be furnished, if necessary, without extra charge.

Sink tops are furnished in lengths of from 42 to 132 in. The length size includes thickness of end splasher.

Back splashers are limited in height to 12 in. They cannot be shorter than length of top.

When back and end splashers are required, they can be furnished to suit requirements—fractional inches, if necessary—but cannot be over 12 in. in height. This measurement is taken from the surface of top. Back or end splashers cannot be less than 3 in. in height.

End splashers are 25 in. deep over-all, including width of backs. Can be furnished less in depth and height, if necessary, at extra charge.

Wide 1½ in. embossing extends around edges of splashers as well as around working surface of top. Beaded edge, or quarter-round, at back along splasher is an aid in keeping top clean. A lug is welded along back of tops having splashers as an aid in installing top.

Supply pipe holes can be spaced in the back splashers according to specifications, but center of holes cannot be closer than 3 in. from top of splasher. Unless otherwise specified, the holes are spaced 5 in. up and 8 in. apart on centers. Pipe holes can also be supplied on the working surface.

All tops can be furnished in our standard colors: white, ivory, orchid, green, blue, light brown, or black. Other colors may be furnished with a slight extra charge.

Sink Specifications

All sinks have drain-holes in center and are made for either a regular strainer (2-in. opening) or a dual strainer for a 3½ or 4-in. opening.

Rectangular sinks are 12 x 18 in., 16 x 22 in., and 16 x 28 in. Round sinks are 18 in. in diameter. These are inside measurements. All rectangular sinks are 6½ in. deep; the round sink 8 in. deep.

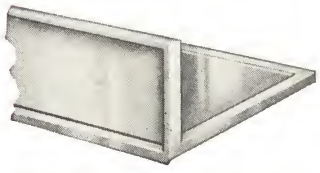
Tops under 54 in. normally supplied with the 12 x 18 in. sink; tops 54 in. to 96 in. with the 16 x 22 in. sink; tops 96 in. and over with the 16 x 28 in. sink. The 18 in. round sink may be substituted for the rectangular sinks except in tops 23 in. or under in depth.

When two sinks are required, they cannot be spaced closer together than 5 in. Sinks cannot be spaced closer than 4⅞ in. from edge of top at front or ends. However, when back splashers are used as an integral unit, they can be spaced within 2 in. of the back.

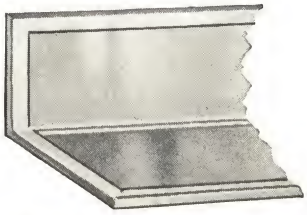
Drain grooves may only be supplied on tops using the 16 x 22 in. or 16 x 28 in. sinks. Grooves are 9, 12, 14, or 15½ in. long.



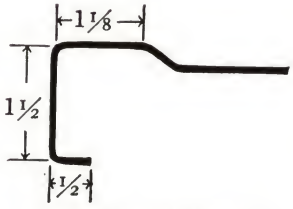
Section Showing Special Lip Construction in Welding of Sink Which Decreases Splashing



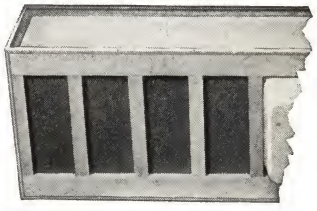
View Showing Special Lug for Installations



Beaded Edge and Full Embossing



Section Showing Type of Embossing Appearing Around All Edges



View Showing Sound-deadening Backing and Wooden Framing Supplied on All Builder Tops

SINK TOP SIZES

42 in. x 25 in. to 132 in. x 25 in. inclusive

No. 100 Series

Flat tops with sinks, no splashers.

Particularly suitable for center-room installations. Supply pipe holes furnished on surface if required.

No. 200 Series

Tops with sink and back splasher, no end splashers. Usually furnished with back splashers 4, 8, or 12 in., but intermediate heights may be secured.

No. 300 Series

Tops with sink, back and one end splasher (right or left). Usually furnished with splashers 6, 10, or 12 in. in height, but intermediate sizes available.

No. 400 Series

Tops with sink, back and two end splashers. Generally supplied with 3, 6, 10, or 12 in. splashers. Intermediate heights may be furnished.

PLAIN TOPS AND TOPS WITH SPLASHERS AND NO SINKS

Square corner, wide embossed, 1½ in. flange plain tops may be had in sizes from 15 x 25 in. to 132 x 25 in.

Porceliron tops with splashers and no sinks also available in these sizes.

All tops 60 in. and longer are made from 14 gauge enameling steel; those under this size from 18 gauge stock.

Write for quotations or further data. Price lists sent on request.

JUST MANUFACTURING COMPANY

Manufacturers of Custom-Built Stainless Steel and Monel Metal Cabinet Sinks and Cabinet Tops

4614-20 West 21st Street
CHICAGO, ILL.

JUSTLINE SINKS AND CABINET TOPS are entirely custom-built of either Stainless steel or Monel metal. JUSTLINE units offer all the beauty and durability that are expected of products of the highest quality.

JUSTLINE FLEXIBILITY—JUSTLINE cabinet sinks and tops can be easily mounted on any make or type of base cabinet (steel or wood) and can be fabricated for the installation of dishwashers, ranges and other appliances required.

ADVANTAGES OF JUSTLINE CUSTOM-BUILT CONSTRUCTION

The selection of JUSTLINE sinks and cabinet tops is unlimited because all JUSTLINE units are custom-built. Any new or remodeled kitchen being planned can be equipped with a JUSTLINE sink or cabinet top.

Sinks and cabinet tops can be furnished in straight, "L," or "U" shaped forms in any lengths or widths. Single or double bowls can be supplied in a wide range of sizes.

There is a choice between Stainless steel and Monel metal. Finally, there is a choice between JUSTLINE's two major types of construction—DE LUXE and KITCHENEER.

JUSTLINE OFFERS A CHOICE OF TWO TYPES OF CONSTRUCTION

Justline De Luxe

JUSTLINE DE LUXE products have the matchless perfection of design and construction that classes them as the finest of custom-built sinks and cabinet tops.

Bowls are welded to drainboards with invisible seams insuring a working surface all Stainless steel or Monel metal. The method used in JUSTLINE seamless, welded-in bowl construction insures a double thickness of solid Stainless steel or Monel metal at the junction of the bowl and drainboard.

Drainboards are two way pitched for perfect drainage without the use of channels or grooves. This offers maximum sanitary working space and eliminates all uneven surfaces which might cause damage to china.

Justline Kitcheneer

A line of sturdy lighter gauge Stainless steel and Monel metal sinks and cabinet tops with sweated seam construction designed to meet the demands in the field of moderately priced homes, apartments and speculative building.

With the same underframe, steel backing, double-pitched drainboards and other features, including the polish and finished workmanship of our DE LUXE line, the KITCHENEER offers the conservative buyer a lighter gauge sink at a price within his means and yet, with all the outstanding beauty, long life and efficiency of the heavier gauge, all welded DE LUXE line itself.



An L-Shape Sink and Cabinet Top Provides Spacious Working Surface with Sealed Joints and Seams



An Example of Justline Custom-Built Construction with Scientific Drainboards Insuring Perfect Drainage

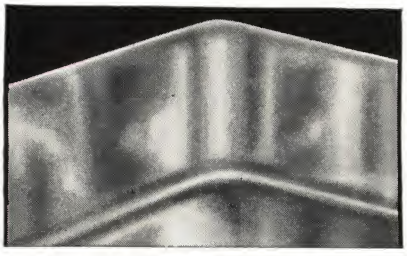


ABOVE: A typical JUSTLINE single bowl sink. Also shown above, a cabinet top of simple, beautiful design.

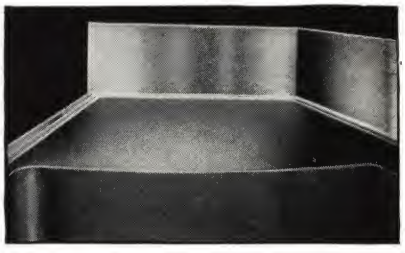


ABOVE: A JUSTLINE double-bowl sink of modern design. Also shown above and at left are the gleaming bowls that enhance JUSTLINE sinks.

NOTE THESE JUSTLINE FEATURES



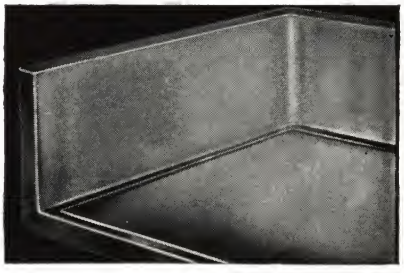
Round Corners with No Joints or Seams —JUSTLINE DE LUXE sinks and cabinet tops are of rounded, seamless construction. No crevices or hidden corners to catch and hold dirt. All tops and splashers are integral formed of one piece of metal.



Perfect Drainage— Scientific construction insures perfect drainage. Drainboards are pitched two ways toward sink bowls. There are no grooves and channels that are hard to keep clean or that might damage fine chinaware or stemware.



Easily Cleaned — The solid Stainless steel or Monel metal used in all JUSTLINE units will not rust, chip or crack and is easy to keep clean. A soft cloth and an ordinary cleansing agent keeps the surface bright and clean. Constant use, stains or discolorations will not mar its everlasting brilliance.



Sturdy Construction —JUSTLINE construction is designed for maximum strength and lifelong service. All splashers are solidly backed entire length and height. All JUSTLINE units are completely sound deadened. Special wood frame and heavy steel backing are treated with silencing compound.

SPECIFICATIONS

(*See next page for details*)

Justline De Luxe

All (sinks) (cabinet tops) shall be JUSTLINE DE LUXE as manufactured by JUST MANUFACTURING COMPANY, Chicago, Illinois, of sizes and dimensions as shown on plans as follows:

Units shall be fabricated of No. 20 U. S. Standard Gauge (.031) (18-8 Stainless Steel) or (Monel Metal) backed with and securely bonded to No. 14 U. S. Standard gauge (.078) steel plate. Drainboards and splashers shall be integral. All joints shall be welded and entire surface ground and polished to a satin finish. Sink bowls shall be No. 18 U. S. Standard Gauge (.050) (18-8 Stainless Steel) or (Monel Metal) welded to drainboards with invisible seams. Drainboards are to be two way pitched for drainage without fluting, channelling or grooving. The entire unit shall be solidly reinforced with spot welded steel channels and a kiln dried white pine frame protected by moisture-proof paint. The entire metal undersurface shall be sound deadened.

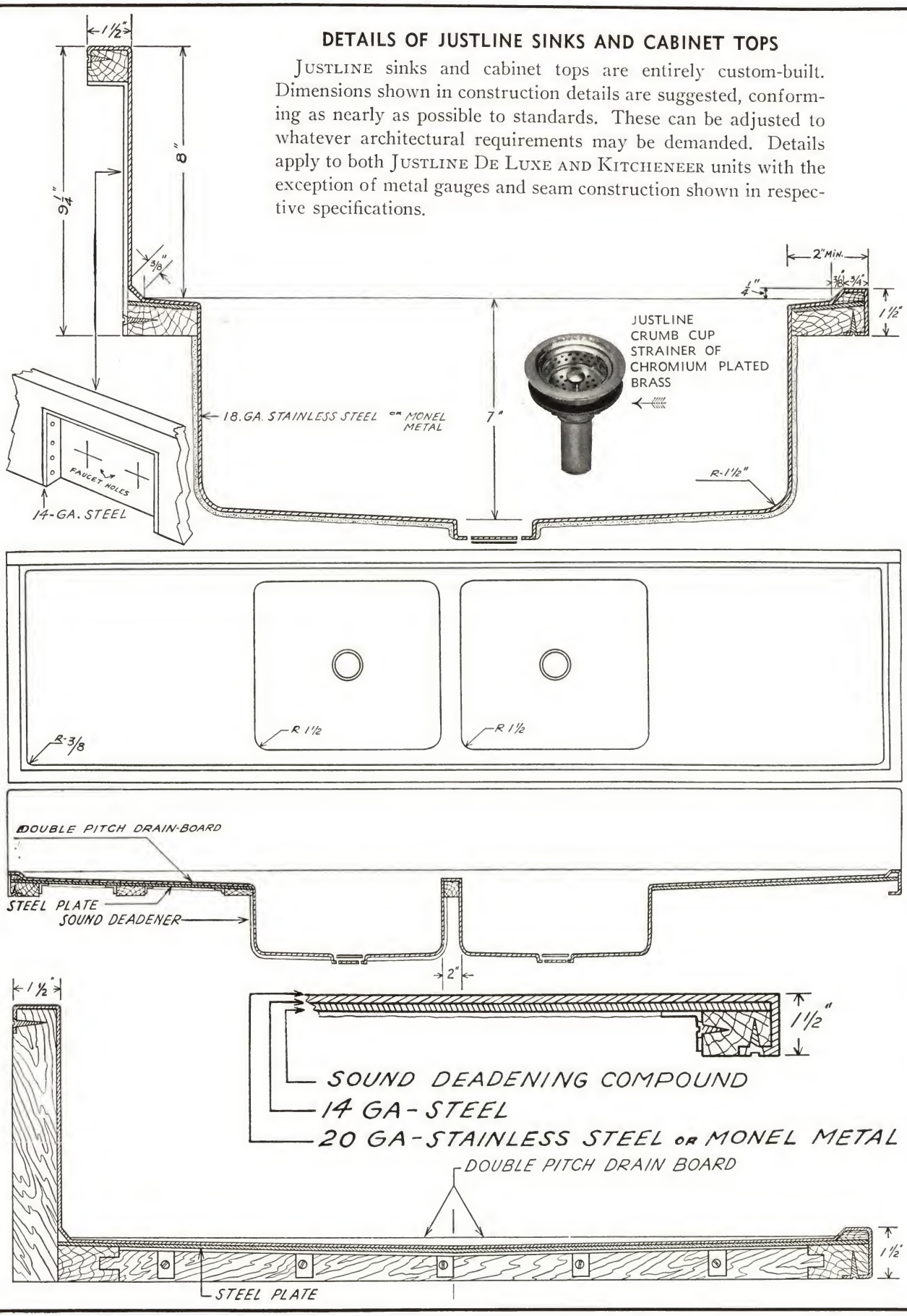
Justline Kitcheneer

All (sinks) (cabinet tops) shall be JUSTLINE KITCHENEER as manufactured by JUST MANUFACTURING COMPANY, Chicago, Illinois, of sizes and dimensiois as shown on plans as follows:

Units shall be fabricated of No. 24 U. S. Standard Gauge (.025) (18-8 Stainless Steel) or (Monel Metal). Drainboards and splashers shall be integral. Drainboards shall be backed with and securely bonded to No. 14 U. S. Standard Gauge (.078) steel plate. Sink bowls shall be No. 20 U. S. Standard Gauge (.0375) (18-8 Stainless Steel) or (Monel Metal) and sweated to drainboards. Drainboards are to be two way pitched for drainage without fluting, channelling or grooving. Entire unit shall be solidly reinforced with spot welded steel channels and kiln dried white pine frame protected by moisture-proof paint. Entire metal undersurface shall be sound deadened. The entire unit shall be ground and polished to a satin finish.

DETAILS OF JUSTLINE SINKS AND CABINET TOPS

JUSTLINE sinks and cabinet tops are entirely custom-built. Dimensions shown in construction details are suggested, conforming as nearly as possible to standards. These can be adjusted to whatever architectural requirements may be demanded. Details apply to both JUSTLINE DE LUXE AND KITCHENEER units with the exception of metal gauges and seam construction shown in respective specifications.



tracy

CABINET SINKS AND CABINET TOPS

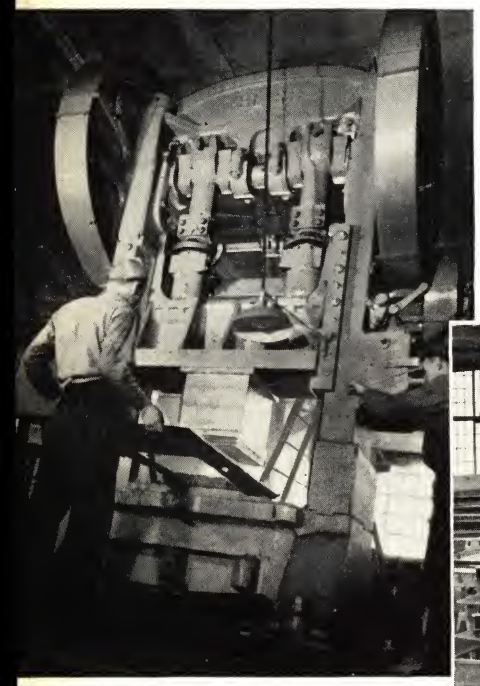
FOR MODERN KITCHENS

Tracy Manufacturing Co.

PITTSBURGH . . PENNSYLVANIA

THIS *Plant* AND THESE *Workmen* GIVE YOU MODERN CABINET SINKS AND TOPS

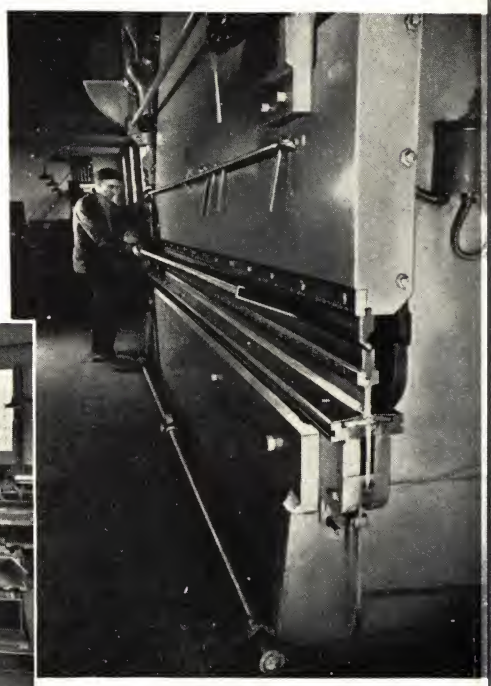
MORE CONVENIENT
MORE PRACTICAL
MORE BEAUTIFUL



Above: One of Tracy's heavy presses used in die fabrication of SilviSheen

Below: Interior view showing PermaSheen finishing department and a section of Tracy's modern plant





Above: Heavy power press brake used in fabrication of Tracy Cabinet Sinks and Tops

THE TRACY MANUFACTURING COMPANY is engaged *exclusively* in the design and fabrication of the famous "SILVISHEEN" and "PERMASHEEN" lines of cabinet sinks and tops custom built to fit modern kitchens. Intensive research and experimentation with materials and design—close contact with architects, builders, and kitchen cabinet manufacturers over a period of years on cabinet sinks alone—have enabled Tracy to attain its present leadership in the field of custom built cabinet sinks and tops. Using materials best suited to the purpose—in all price ranges to meet any requirement, Tracy enjoys a widespread reputation for fine quality, modern design, and excellent workmanship.

FACILITIES

Tracy pioneered in the machine and die fabrication of cabinet sinks and tops built to *dimensional specifications.* Stainless steel bowls are drawn in one piece from one sheet of metal on our own dies; heavy power operated brake press forms flanges and splashers; the latest acetylene and electric welding equipment is used to afford seamless joints; and specially designed jigs to fabricate tops to any length with marvelous accuracy are employed. Regardless of your sink problem—Tracy equipment and workmen can fulfill your requirements. Where specific problems on the use of Tracy cabinet sinks and tops involving intricate details arise, you are invited to send in your plans for suggestions —no obligation entailed.

SPECIFY IN ONE CONTRACT

Tracy cabinet sinks (drainboards, splashers, and bowls) are furnished *complete* as a unit ready for installation. Consequently —Tracy drainboards and Tracy sink bowls *must be specified together* in one contract—either in the kitchen cabinet contract, or in the plumbing contract when cabinets are also included in the plumbing contract.

DISTRIBUTION

Tracy custom built cabinet sinks and tops are being sold and installed in every state in this country and in many foreign countries. They are obtainable through kitchen cabinet manufacturers and their agents, plumbing contractors, and woodworking establishments building kitchen cabinets to architects' details. This permits the architect to place the responsibility for the kitchen unit—cabinets, cabinet sinks, and tops—with one source—assuring custom built tops that will fit not only the kitchen, but also the cabinets for which they are designed and fabricated.

"The kitchen sink is used and abused more than any other equipment in the home . . . . select it carefully"

TRACY MANUFACTURING COMPANY

3125 PREBLE AVENUE, N. S. **PITTSBURGH, PA.**

Tracy cabinet sinks are on display in the showrooms of many cabinet distributors throughout the country, and in Architects Samples Corp., 101 Park Avenue, New York City

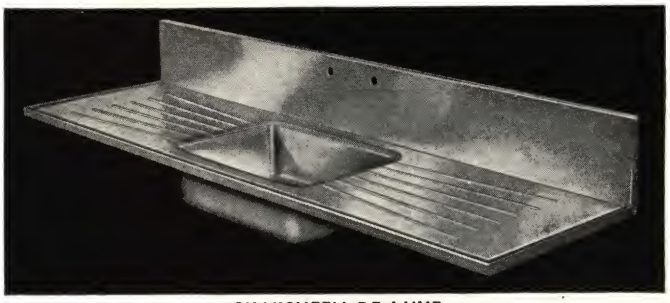
Five Lines OF TRACY SINKS AND CABINET TOPS

TRACY custom built cabinet sinks and tops, in five lines and five price classes, are designed to dimensional specifications for low cost homes — mansions — apartments — diet kitchens in hotels and hospitals—and similar applications. Furnished in any length with splashers of any height or without splashers, with any number of bowls located as required. Cutouts are made as specified to fit wall conditions (see page 14) and tops can be cut out for dishwashers (see page 14). Each of the five lines shown below and described in detail on pages noted are designed and fabricated for *permanent* use, affording lasting satisfaction, through economy, by eliminating costly replacement.

Five Lines - - - *Five Price* CLASSES TO CHOOSE FROM . . .

1. *SilviSheen* DE LUXE (Stainless Steel or Monel)

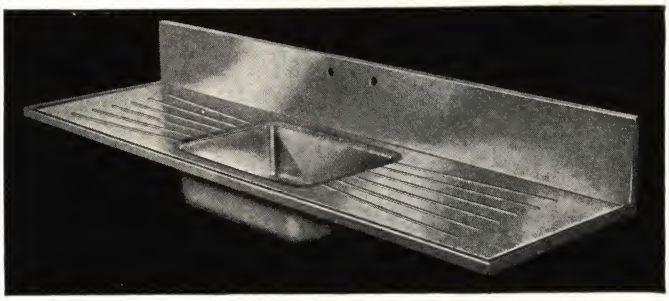
The finest cabinet sink made. Cannot be surpassed for homes $20,000 and up, for diet kitchens, and for Home Economics Departments in Colleges. Is also often selected for homes $10,000 to $20,000 by discriminating owners who want the best. (Page 4, 5, bowl details page 7.)



SILVISHEEN DE LUXE

2. *SilviSheen* LIFETIME (Stainless Steel or Monel)

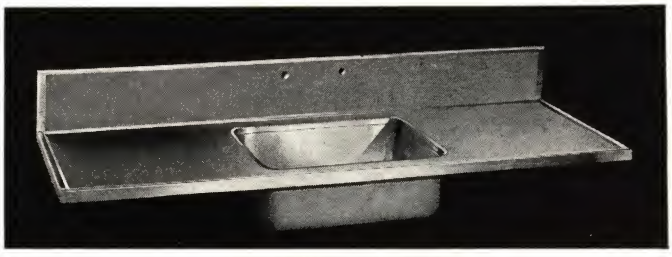
Lower in price than SilviSheen DeLuxe—with a brighter finish. Recommended for homes from $10,000 to $20,000 and for apartments. (Page 5, 6, bowl details page 7.)



SILVISHEEN LIFETIME

3. *PermaSheen* DE LUXE (Linoleum Covered Top)

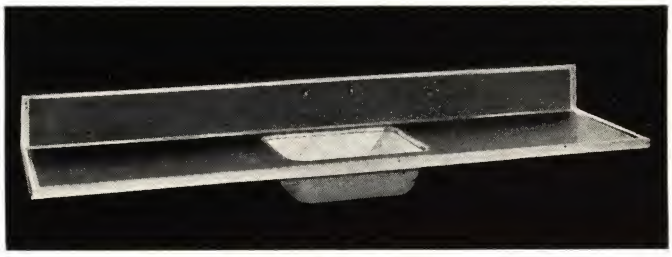
Especially adapted for handling fine china and glassware. Recommended for butler's pantries and serving pantries and also for homes $7,500 and up with only one sink top where fine china and glassware must be handled. (Page 8, 9, bowl details page 7.)



PERMASHEEN DE LUXE

4. *PermaSheen* IMPERIAL (Linoleum Covered Top)

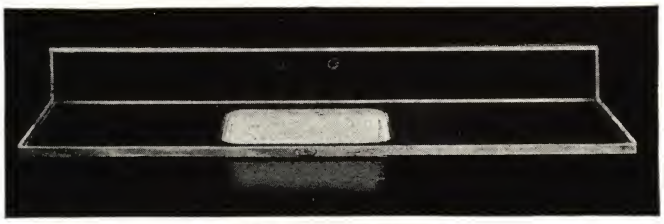
Lower in price than PermaSheen DeLuxe—with different bowls. Recommended for homes from $7,500 to $10,000, for pantries, hospital diet kitchens, and school and college Home Economics Departments. (Page 9, 10, bowl details page 11.)



PERMASHEEN IMPERIAL

5. *PermaSheen* ZEPHYR (Linoleum Covered Top)

The best designed and constructed cabinet sink in the low price field. Recommended for homes from $4,000 to $7,500, for large scale building projects, and for low rental apartments. (Page 12, 13, bowl details page 11.)



PERMASHEEN ZEPHYR

Figures allow 4% to 6% of total cost of home to be spent for kitchen cabinets, sinks, and tops.

SilviSheen DE LUXE

ENDURO STAINLESS STEEL (18-8)

(ALTERNATE MONEL METAL IF DESIRED)

Stainless steel, noted for its rust resisting and acid resisting qualities, achieves one of its most beautiful applications in Tracy SilviSheen DeLuxe cabinet sinks and tops. The stainless steel drainboards and splashers are power machine and die fabricated to any specified length as required in fractional inch increments. The stainless steel bowls are shrunk and sweated to the overhanging lip of the drainboards, affording a watertight and sanitary connection with no buckling or distortion. This application of the bowl provides a double thickness of metal (20 gauge and 18 gauge) at a point in the sink top where most severe wear occurs. When the top has been completely fabricated, 14 gauge steel plates are securely and efficiently bonded to the 20 gauge stainless steel. Splashers are also backed in this manner, eliminating the possibility of denting in ordinary usage.

SILVISHEEN DE LUXE MATERIALS AND CONSTRUCTION

MATERIAL

Drainboards and Splashers: Enduro stainless steel (18% Chromium, 8% Nickel) level stretched, 20 USS gauge (.037 in.) flat polished at mill to No. 6 Tampico Satin Finish.

Steel base 14 USS gauge (.078 in.) steel, level stretched.

Bowls: Seamless die drawn from one sheet of stainless steel (18% Chromium, 8% Nickel) 18 USS gauge (.050 in). Bowls have straight sides with all corners having a radius of not less than 1¼ in. Polished inside to Tampico Satin finish, and coated on outside with sound deadening material. Bowl sizes are 15x17½x7¼ in., 16x23½x7½ in., all inside dimensions. Bowls 16x29½x7¾ in. and bowls of the same top opening dimensions as shown above, but in any depth, can be furnished in seamless welded construction.

CONSTRUCTION

Drainboards and splashers are machine and die fabricated from one continuous sheet of stainless steel without seams or joints. Both drainboards and splashers are bonded to 14 USS gauge steel plates stretcher leveled. Drainboards have raised edges ⅜ in. high to prevent overflow of water. All corners are welded, ground, and finished to Tampico Satin Finish. Drainboards, splashers, and sink bowls are coated with sound deadening material. Drainboards are furnished with a skeleton wood underframe to permit anchoring tops to base cabinets. Drainboards are pitched and grooved approximately 23¼ in. on either side of bowl with grooves depressed below plane of top; with grooves increasing in depth approaching bowl. Drainboards slope approximately ¼ in. in 23¼ in. Around edge of bowl drainboards are sloped at an angle of 15 degrees for a distance of 1¼ in.



Section Showing Design and Construction

Bowls: One piece die drawn from one sheet of stainless steel; have straight sides with all corners having not less than 1¼ in. radius. Bowls are finished inside to Tampico Satin Finish, 3½ in. opening in center for crumb cup strainer. Bowls are attached to drainboards with a shrunk and sweated fit to an overhanging lip of drainboard, affording a watertight sanitary joint with no distortion of metal. This construction affords a double thickness of metal (20 gauge of drainboard and 18 gauge of bowl) at a point in the drainboard that receives most wear. (Alternate construction: Bowls can be welded to drainboard if desired.)

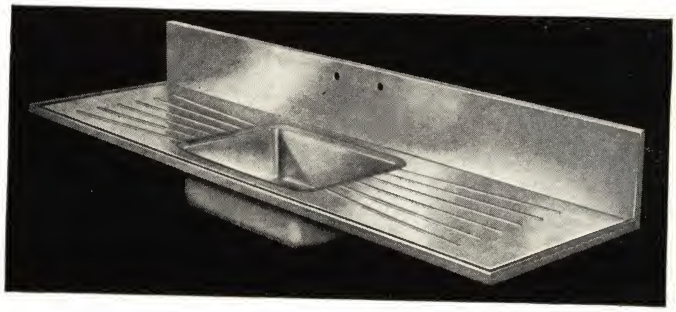
ARCHITECT'S SPECIFICATIONS FOR SILVISHEEN DE LUXE

Cabinet sinks and cabinet tops shall be SilviSheen DeLuxe as manufactured by TRACY MANUFACTURING COMPANY, Pittsburgh. Drainboards and splashers shall be 20 USS gauge (.037 in.) 18-8 stainless steel stretcher leveled and flat polished at mill with No. 6 Tampico Satin Finish. Drainboards shall be pitched and grooved, with 15 degree slope around edge of bowl. Splashers and flanges shall be integral with drainboards and all corners shall be welded, ground, and finished to No. 6 finish. Outside edges of drainboards shall be ⅜ in. high to prevent overflow of water. Underbase for drainboards and splashers shall be 14 USS gauge (.078 in.) steel stretcher leveled and securely bonded to the stainless steel.

Bowls shall be seamless one piece die drawn of 18 USS gauge (.050 in.) 18-8 stainless steel polished inside to satin finish and coated on underside with sound-deadening material. All corners shall have a radius of not less than 1¼ ins. Bowl size shall be *..... as manufactured by TRACY MANUFACTURING COMPANY. Sink bowls shall be drilled in center with 3½ in. opening for crumb cup strainer, and shall be coated on underside with sound deadening material. All tops shall be furnished with a skeleton wood underframe to facilitate fastening to base cabinets.

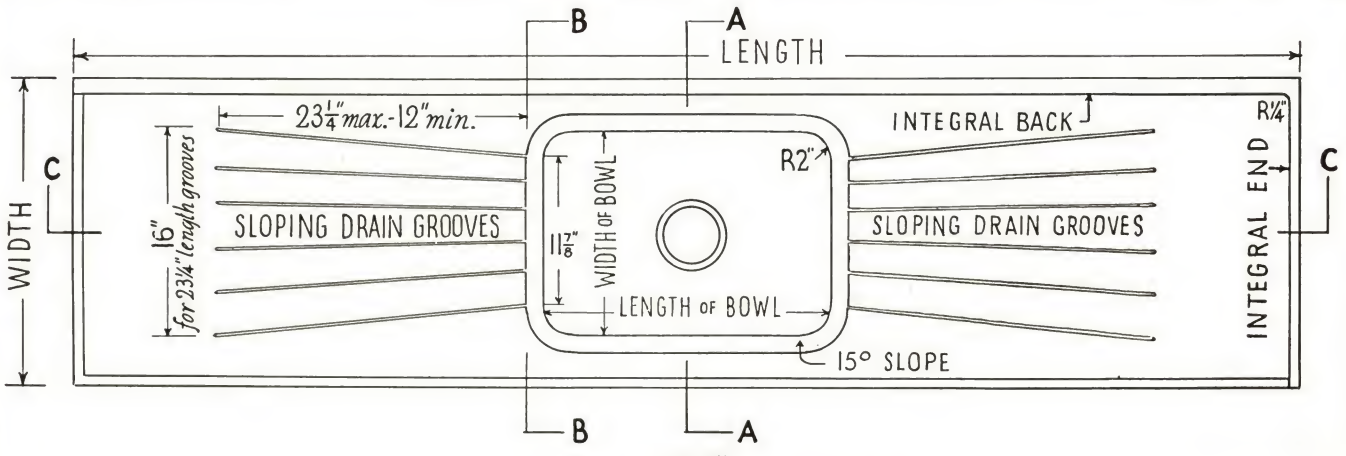
**15x17½x7¼ in., 16x23½x7½ in.*

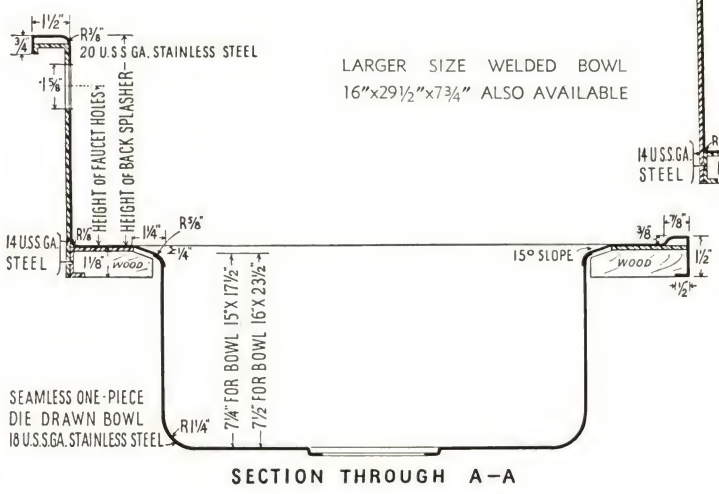
Alternate bowl 16x29½x7¾ in. not die drawn but welded in the usual manner.



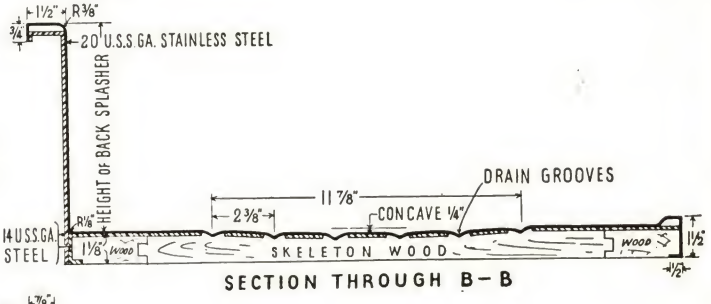


CONSTRUCTION DETAILS *of* SILVISHEEN DE LUXE AND SILVISHEEN LIFETIME SINKS

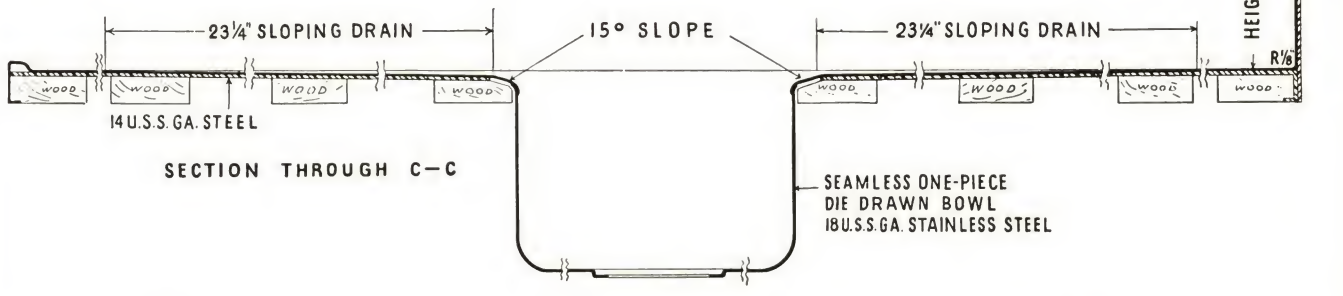




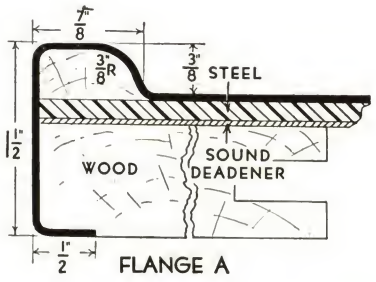
SECTION THROUGH A–A



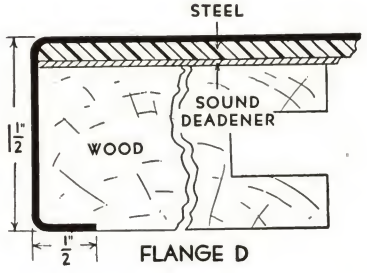
SECTION THROUGH B–B



SECTION THROUGH C–C



FLANGE A



FLANGE D

NOTE: *Above details apply also to SilviSheen Lifetime (See following page).*

SilviSheen LIFETIME

ENDURO STAINLESS STEEL (18-8)

(ALTERNATE MONEL METAL IF DESIRED)

Stainless steel, noted for its rust resisting and acid resisting qualities, achieves one of its most beautiful applications in Tracy SilviSheen Lifetime Cabinet Sinks and Tops. The stainless steel drainboards and splashers are power machine and die fabricated to any specified length as required in fractional inch increments. The stainless steel bowls are shrunk and sweated to the overhanging lip of the drainboard affording a watertight and sanitary connection with no buckling or distortion. This application of the bowl provides a double thickness of metal (20 gauge and 18 gauge) at a point in the sink top where most severe wear occurs. When the top has been completely fabricated, 14 gauge steel plates are securely and efficiently bonded to the 20 gauge stainless steel. Splashers are also backed in this manner, eliminating the possibility of denting in ordinary usage.



Section Showing Design and Construction

SILVISHEEN LIFETIME MATERIALS AND CONSTRUCTION

MATERIAL

Drainboards and Splashers: Enduro Stainless Steel (18% Chromium, 8% Nickel) level stretched, 20 USS gauge (.037 in.), flat polished at mill to No. 4 Finish.

Steel base 14 USS gauge (.078 in.) steel, level stretched.

Bowls: Seamless die drawn from one sheet of stainless steel (18% Chromium, 8% Nickel) 18 USS gauge (.050 in.). Bowls have straight sides with all corners having a radius of not less than 1¼ in. Polished inside to Satin Finish, and coated on outside with sound deadening material. Bowl sizes are 15x17½x7¼ in. and 16x23½x7½ in., all inside dimensions. Bowls 16x29½x7¾ in., and bowls of the same top opening dimensions as shown above, but in any depth, can be furnished in seamless welded construction.

CONSTRUCTION

Drainboards and splashers are machine and die fabricated from one continuous sheet of stainless steel without seams or joints. Both drainboards and splashers are bonded to 14 USS gauge steel plates stretcher leveled. Drainboards have raised edges ⅜ in. high to prevent overflow of water. All corners are welded, soldered, ground, and finished to Satin Finish. Drainboards, splashers, and sink bowls are coated with sound deadening material. Drainboards are furnished with a skeleton wood underframe to permit anchoring tops to base cabinets. Drainboards are pitched and grooved approximately 23¼ in. on either side of bowl with grooves depressed below plane of top; with grooves increasing in depth approaching bowl. Drainboards slope approximately ¼ in. in 23¼ in. Around edge of bowl drainboards are sloped at an angle of 15 degrees for a distance of 1¼ in.

Bowls: One piece die drawn from one sheet of stainless steel; have straight sides with all corners having not less than 1¼ in. radius. Bowls are finished inside to Satin Finish, 3½ in. opening in center for crumb cup strainer. Bowls are attached to drainboards with a shrunk and sweated fit to an overhanging lip of drainboard, affording a watertight sanitary joint with no distortion of metal. This construction affords a double thickness of metal (20 gauge of drainboard and 18 gauge of bowl) at a point in the drainboard that receives most wear.

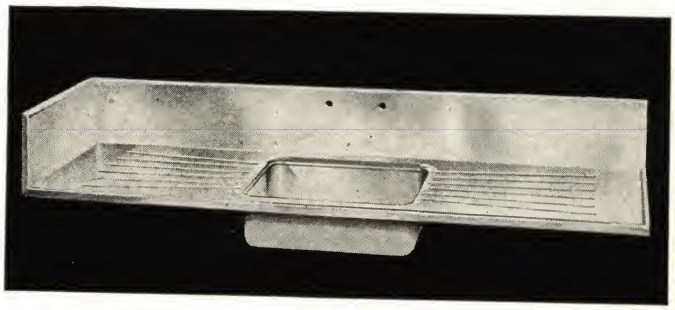
ARCHITECT'S SPECIFICATIONS FOR SILVISHEEN LIFETIME

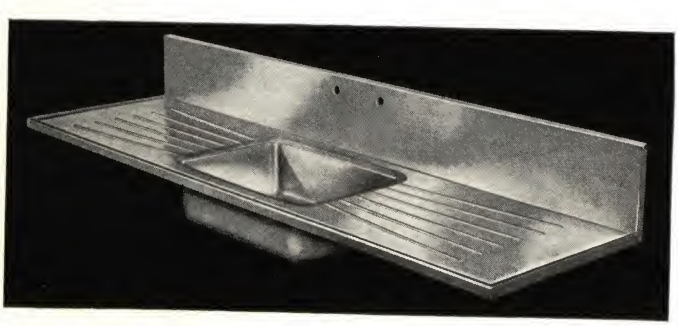
Cabinet sinks and cabinet tops shall be SilviSheen Lifetime as manufactured by TRACY MANUFACTURING COMPANY, Pittsburgh. Drainboards and splashers shall be 20 USS gauge (.037 in.) 18-8 stainless steel stretcher leveled and flat polished at mill with No. 4 Finish. Drainboards shall be pitched and grooved, with 15 degree slope around edge of bowl. Splashers shall be integral with drainboards of one sheet of metal. Outside edges of drainboards shall be ⅜ in. high to prevent overflow of water. Corners shall be welded-sweated. Underbase shall be 14 USS gauge (.078 in.) steel stretcher leveled and securely bonded to the stainless steel.

Bowls shall be seamless one piece die drawn of 18 USS gauge (.050 in.) 18-8 stainless steel polished inside to satin finish and coated on underside with sound-deadening material. All corners shall have a radius of not less than 1¼ ins. Bowl size shall be *..... as manufactured by TRACY MANUFACTURING COMPANY. Bowls shall be drilled in center with 3½ in. opening for crumb cup strainer, and shall be coated on underside with sound deadening material. All tops shall be furnished with a skeleton wood underframe to facilitate fastening to base cabinets.

**15x17½x7¼ in., 16x23½x7½ in.*

Alternate: 16x29½x7¾ in. bowl which is not die drawn but is welded in the usual manner.





TRACY STAINLESS STEEL BOWLS

(ALTERNATE MONEL METAL IF DESIRED)

For SilviSheen DeLuxe, SilviSheen Lifetime and PermaSheen DeLuxe

TRACY stainless steel bowls are seamless die drawn bowls. Tracy bowls are drawn from one sheet of stainless steel on Tracy's own dies. The stainless steel used is Enduro 18-8; 18 USS gauge (.050 in.) is drawn to a depth of 7¼ in. and 7½ in. The sides of the bowl are straight, and all corners have a radius of not less than 1¼ in.

Bowl Sizes: Tracy stainless steel bowls drawn on dies from one sheet of metal are furnished in two sizes: 15x17½x7¼ in. and 16x23½x7½ in.; *these dimensions are inside dimensions.* The sizes were determined and chosen after a long period of experimentation, based on voluminous data gathered from many architects, builders, and home owners. These sizes are recommended as best proportioned and most efficient, and offering the following advantages:

1. Maximum bowl capacity with maximum work surface.
2. Minimum sink front required (based on cabinet manufacturers' standards) with resulting maximum storage space.
3. Unusual depth of bowls increases capacity without decreasing work surface.
4. Efficient capacity for small apartment kitchenettes as well as for large kitchens and pantries of elaborate homes and institutions.
5. Use of two bowl combinations (which is a highly recommended arrangement) with least space taken from work surface.

Various Recommendations: The 15x17½x7¼ in. bowl can be installed with either the 15 in. or the 17½ in. dimension parallel to the front edge; in either case an 18 in. sink front is sufficient affording maximum storage space as well as maximum work surface.

For average kitchens the 16x23½x7½ in. bowl is suggested. Sink front requirements are only 24 in., taking the least possible space away from storage purpose of base cabinets.

Two bowl sink tops are particularly recommended; such an installation offers many advantages. A two bowl installation increases by many times the amount of work that can be done at the sink top and increases many times the ease with which it can be done.

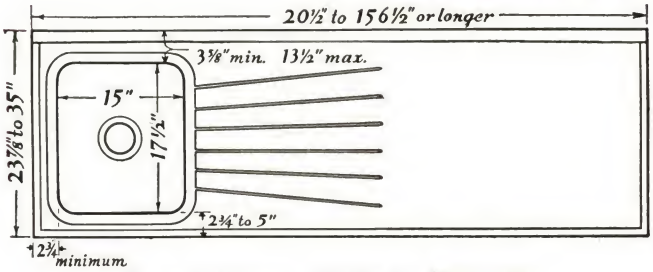
Suggested two bowl arrangements: Two bowls 15x17½x7¼ in. are ample for the average small home kitchen. Sink front need be only 36 in. wide if bowls are installed as suggested, with the 15 in. dimension parallel to the front edge, making a very compact and efficient bowl arrangement.

For large kitchens in large homes two bowls 16x23½x7½ in. are recommended. Such an arrangement requires only 51 in. of sink front. These two bowls installed in one sink top have ample capacity for the greatest residential needs and requirements.

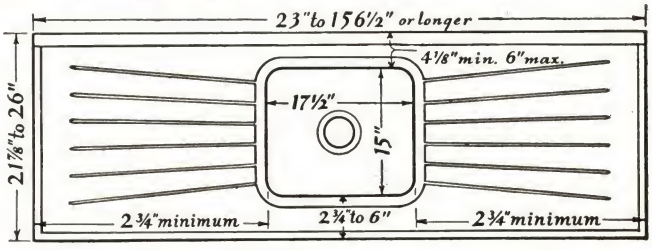
For those who prefer extremely large single bowls, Tracy offers an 18 gauge (.050 in.) stainless steel bowl 16x29½x7¾ in. This bowl is not die drawn in one piece, but is a welded bowl, polished in the usual manner.

The 15x17½ in. bowl is 7¼ in. deep, the 16x23½ in. bowl is 7½ in. deep, and the 16x29½ in. bowl is 7¾ in. deep, all dimensions being inside dimensions. Bowls of the same size in any other depth can be supplied. The bowls of special depth are welded bowls, 18 gauge stainless steel, polished in the usual manner.

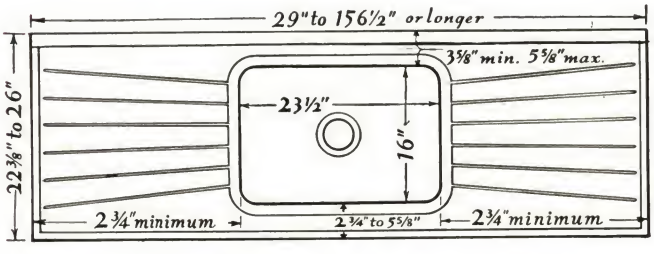
RECOMMENDED ARRANGEMENTS



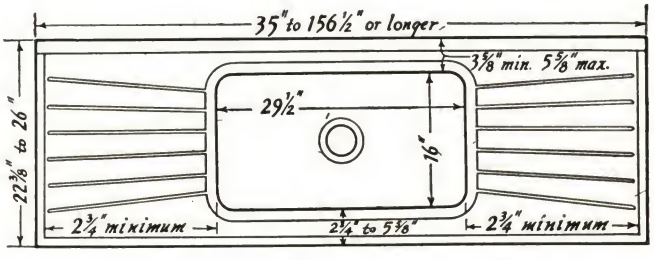
Single Drainboard. Suitable for Kitchenettes



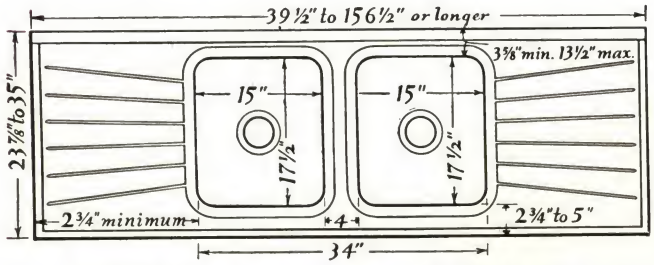
Double Drainboard, Single Bowl for Small Kitchens



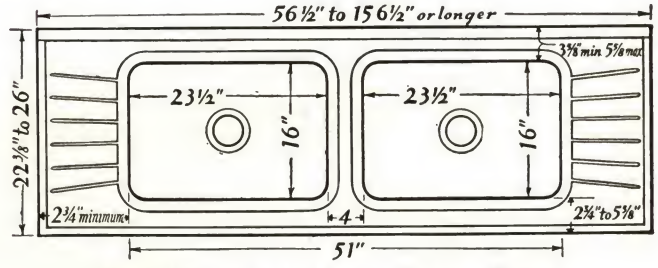
Double Drainboard, Single Bowl for Average Kitchens



Double Drainboard, Single Bowl for Large Kitchens



Efficient Two Bowl Arrangement for Average Kitchens



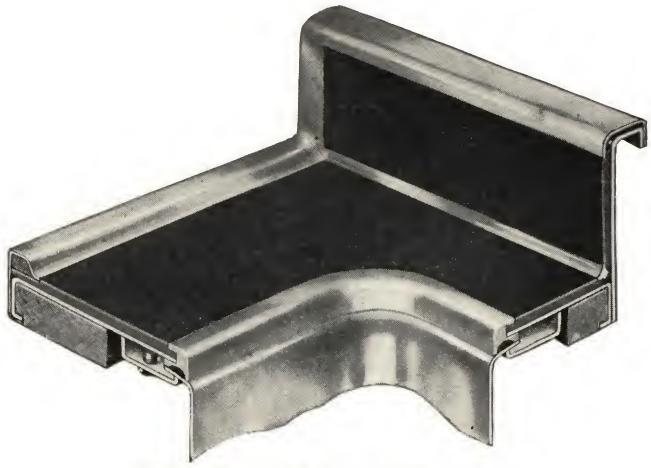
Efficient Two Bowl Arrangement for Large Kitchens

These same bowls and arrangements are used in PermaSheen DeLuxe (see next page)
In two bowl sinks in PermaSheen DeLuxe the minimum distance between bowls is 2¼ in.

PermaSheen DE LUXE (Patent Nos. 2038637, 2038638, 2038668)

LINOLEUM COMPOSITION (3/16 in. thick)

Quiet—resilient—colorful highest grade $\frac{3}{16}$ in. battleship linoleum in PermaSheen DeLuxe construction affords permanent satisfaction and beauty for cabinet sinks and tops. Stretcher leveled, copper coated steel (14 gauge) is bonded to the linoleum eliminating warping, swelling, or twisting as the steel base is unaffected by moisture, heat, or climatic conditions. A watertight joint between bowl and drainboard is assured by a patented attachment of a rubber gasket compressed into a recess of a specially designed extruded metal shape (see detail page 9). This same patented construction insures permanent sanitation and cleanliness with minimum care. Stainless steel edging is standard with Tracy PermaSheen cabinet sinks and tops. PermaSheen cabinet sinks are fabricated to dimensional specifications to fit particular kitchens.



Section Showing Design and Construction

PERMASHEEN DE LUXE MATERIALS AND CONSTRUCTION

MATERIALS

Drainboards and Splashers: $\frac{3}{16}$ in. battleship grade linoleum specially treated for purpose.

14 USS gauge (.078 in.) steel, copper coated and stretcher leveled as base for linoleum.

Edging: 20 USS gauge (.037 in.) 18-8 Enduro stainless steel with Satin Finish.

Bowls: One piece die drawn 18 USS gauge (.050 in.) 18-8 stainless finished inside to Tampico Satin Finish, coated on outside with sound deadening material. Bowls have straight sides with 1¼ in. radius at all inside corners, 3½ in. strainer opening in center for crumb cup strainer. Bowls are 15x17½x7¼ in., 16x23½x7½ in; all inside dimensions. Bowls 16x29½x7½ in, and bowls of the same top dimensions as shown above but in any depth can be furnished in welded construction. The stainless steel bowls furnished in PermaSheen DeLuxe are the same bowls used in the SilviSheen lines of Tracy cabinet sinks and tops. (See page 7.)

CONSTRUCTION

Drainboards: Steel base is fabricated in a channel frame construction for strength and rigidity. Linoleum is bonded to steel base under pressure. Stainless steel trim on outside edges is rabbeted into the linoleum to form a flush joint and affords a pressure joint between the linoleum and the steel base. Trim has ⅜ in. high raised bead to prevent overflow of water. Corners of stainless steel trim are welded seamless. Joints between drainboards and splashers are made watertight by means of a specially designed extruded metal shape. (See page 9.)

Splashers: Construction is identical to construction of drainboards using $\frac{3}{16}$ in. battleship linoleum and a 14 gauge steel base. Stainless steel trim at top of splashers is fabricated with a ⅜ in. radius, which gives a pleasing appearance.

Splashers are furnished in a standard 1½ in. thickness unless ⅞ in. thickness is specified—either thickness is optional, but the 1½ in. thickness allows space for water supply lines. (See page 9.)

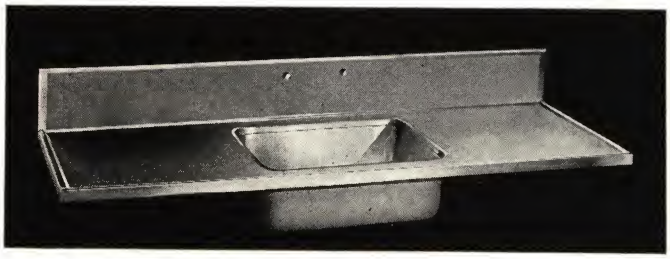
Bowl Construction: Both the linoleum and the steel base around the edge of the bowl are recessed into a specially designed extruded metal shape which binds the linoleum to the base and prevents linoleum from curling loose from the base. The bowl is attached to the drainboards with steel channel, compressing a rubber gasket into another recess of the same extruded shape, affording a watertight and sanitary joint. Use of a mastic is eliminated. Bowls are removable and replaceable. (See page 9.)

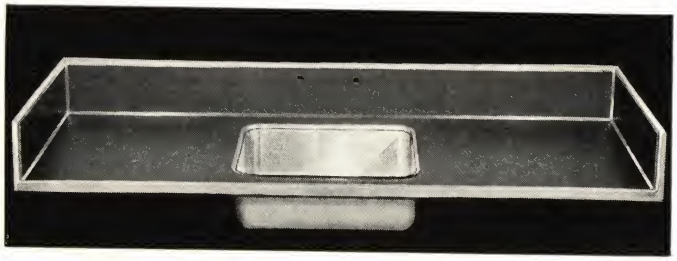
ARCHITECT'S SPECIFICATIONS FOR PERMASHEEN DE LUXE

Cabinet sinks and tops shall be PermaSheen DeLuxe as manufactured by TRACY MANUFACTURING COMPANY, Pittsburgh. Drainboards shall be $\frac{3}{16}$ in. thick linoleum bonded to a 14 USS gauge (.078 in.) copper coated stretcher leveled steel base bent in a channel frame. The outside edges of the linoleum shall be held securely to the steel base with 20 USS gauge (.037 in.) 18-8 stainless steel trim which shall form a pressure joint embracing the linoleum and the base. The stainless steel trim shall have a raised edge ⅜ in. high to prevent overflow of water, and shall be rabbeted into the linoleum to form a flush watertight joint. Edges of splashers shall also be bound with 18-8 stainless steel rabbeted into the linoleum. Joints between splashers and drainboards shall be made watertight by means of an extruded metal shape. Bowl shall be seamless one piece die drawn of 18 USS gauge (.050 in.) 18-8 stainless steel polished inside to Satin Finish, coated on outside with sound deadening material. All corners shall have a radius of not less than 1¼ ins. Bowl shall be drilled in center for 3½ in. crumb cup strainer. Bowl size shall be *———— as manufactured by TRACY MANUFACTURING COMPANY. Bowl shall be fastened to drainboards at factory with a watertight and sanitary joint by means of a rubber gasket compressed into a recess of a specially designed extruded metal shape. Linoleum shall be held securely to steel base around sink bowl opening by extruded metal shape embracing steel base and linoleum in horizontally rabbeted edge of linoleum.

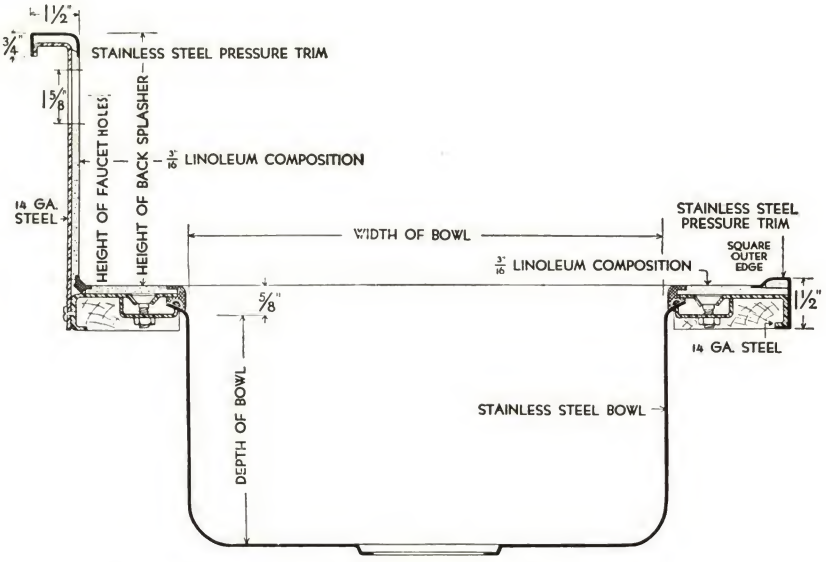
**15x17½x7¼ in., 16x23½x7½ in.*

Alternate: 16x29½x7¾ in. which is not die drawn but is welded in the usual manner.

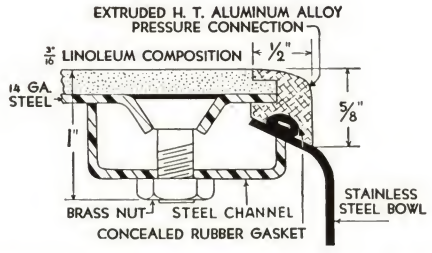




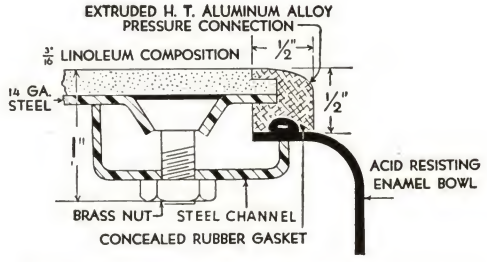
CONSTRUCTION DETAILS *for* PERMASHEEN DE LUXE & IMPERIAL



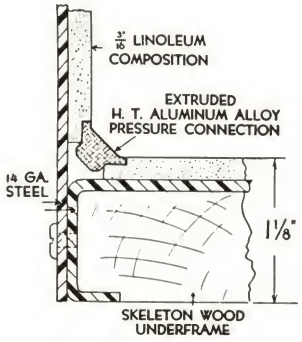
Detail Through Sink Bowl. PermaSheen DeLuxe. Note PermaSheen Imperial Bowl Detail Below



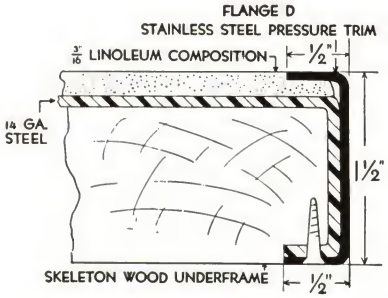
Detail of Bowl Connection. PermaSheen DeLuxe



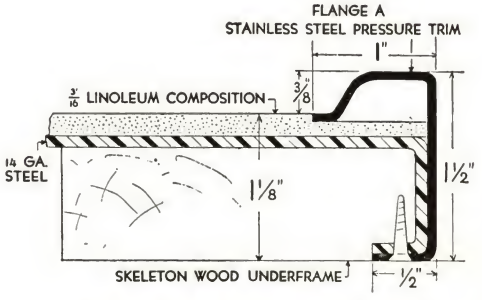
Detail of Bowl Connection. PermaSheen Imperial



Detail of Back Splasher Connection with Drainboard



Flange D—for Cabinet Tops only—
Must be specified if required.



Flange A—for Cabinet Sinks or Tops

Note: Above details apply also to PermaSheen Imperial (See next page)

PermaSheen IMPERIAL (Patent Nos. 2038637, 2038638)

LINOLEUM COMPOSITION (3/16 in. thick)

Quiet—resilient—colorful highest grade $\frac{3}{16}$ in. battleship linoleum in PermaSheen Imperial construction affords permanent satisfaction and beauty for cabinet sinks and tops. Stretcher leveled, copper coated steel (14 gauge), is bonded to the linoleum, eliminating warping, swelling, or twisting as the steel base is unaffected by moisture, heat, or climatic conditions. A watertight joint between bowl and drainboard is assured by a patented attachment of a rubber gasket compressed into a recess of a specially designed extruded metal shape (see detail page 9). This same patented construction insures permanent sanitation and cleanliness with minimum care. Stainless steel edging is standard with Tracy PermaSheen cabinet sinks and tops. PermaSheen cabinet sinks are fabricated to dimensional specifications to fit particular kitchens.



Section Showing Design and Construction

PERMASHEEN IMPERIAL MATERIALS AND CONSTRUCTION

MATERIAL

Drainboard and Splashers: $\frac{3}{16}$ in. battleship grade linoleum specially treated for the purpose.

14 USS gauge (.078 in.) steel, copper coated and stretcher leveled as base for linoleum.

Edging: 20 USS gauge (.037 in.) 18-8 Enduro stainless steel with Satin Finish.

Bowls: Drawn steel bowls enameled with acid-resisting porcelain in white or ivory. Bowls are all 8 in. deep with straight sides with not less than 1¼ in. radius at all corners, 3½ in. opening in center for crumb cup strainer. Bowls are 14x16x8 in., 16x22x8 in., 16x28x8 in., and 18 in. round, 8 in. deep; all these dimensions are inside dimensions. (See page 11.)

CONSTRUCTION

Drainboards: Steel base is fabricated in a channel frame construction for strength and rigidity. Linoleum is bonded to steel base under pressure. Stainless steel trim on outside edges is rabbeted into the linoleum to form a flush joint and affords a pressure joint between the linoleum and the steel base. Edging has ⅜ in. high raised bead to prevent overflow of water. Corners of stainless steel trim are mitered and soldered. Joints between drainboards and splashers are made watertight by means of a specially designed extruded metal shape. (See page 9.)

Splashers: Construction is identical to construction of drainboards using $\frac{3}{16}$ in. battleship linoleum and a 14 gauge steel base. Stainless steel trim at top of splashers is fabricated with a ⅜ in. radius, which gives a pleasing appearance. Splashers are furnished in a standard 1½ in. thickness unless ⅞ in. thickness is specified—either thickness is optional, but the 1½ in. thickness allows space for water supply lines. (See page 9.)

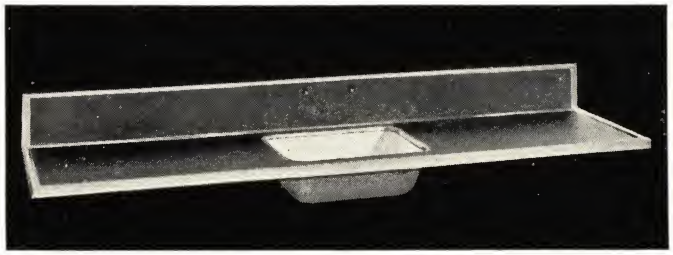
Bowl Construction: Both the linoleum and the steel base around the edge of the bowl are recessed into a specially designed extruded metal shape which binds the linoleum to the base and prevents the linoleum from curling loose from the base. The bowl is attached to the drainboards with steel channel compressing a rubber gasket into another recess of the same extruded shape, affording a watertight and sanitary joint. Use of a mastic is eliminated. Bowls are removable and replaceable. (See page 9.)

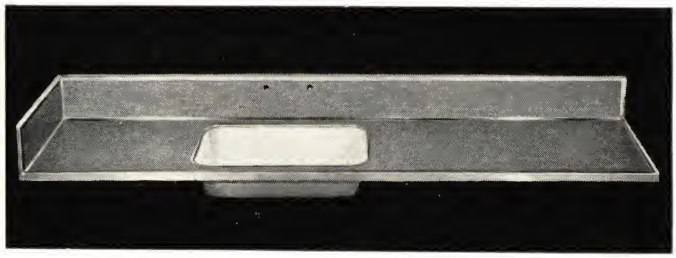
ARCHITECT'S SPECIFICATIONS FOR PERMASHEEN IMPERIAL

Cabinet sink and tops shall be PermaSheen Imperial as manufactured by TRACY MANUFACTURING COMPANY, Pittsburgh. Drainboards shall be $\frac{3}{16}$ in. thick linoleum bonded to a 14 USS gauge (.078 in.) copper coated stretcher leveled steel base bent in a channel frame. The outside edges of the linoleum shall be held securely to the steel base with 20 USS gauge (.037 in.) 18-8 stainless steel trim which shall form a pressure joint embracing the linoleum and the base. The stainless steel trim shall have a raised edge ⅜ in. high to prevent overflow of water, and shall be rabbeted into the linoleum to form a flush watertight joint. Edges of splashers shall also be bound with 18-8 stainless steel trim rabbeted into the linoleum. Joints between splashers and drainboards shall be made watertight by means of an extruded metal shape. Bowl shall be drawn steel, acid-resisting enameled, with opening in center for 3½ in. crumb cup strainer. Bowl shall have straight sides with not less than 1¼ in. radius at all corners. Bowl size shall be *_____ as manufactured by TRACY MANUFACTURING COMPANY. Bowl shall be fastened to drainboards at the factory with a watertight and sanitary joint by means of a rubber gasket compressed into a recess of a specially designed extruded metal shape. Linoleum shall be held securely to steel base around sink bowl opening by extruded metal shape embracing steel base and linoleum in horizontally rabbeted edge of linoleum.

**14x16x8 in. 16x22x8 in., 16x28x8 in., 18 in. round, 8 in. deep.*

Alternate: Bowls in cast iron, acid-resisting enameled, see page 11.





PermaSheen IMPERIAL AND ZEPHYR SINK BOWLS

THESE TRACY BOWLS ARE AVAILABLE IN ACID RESISTING WHITE AND IVORY ENAMEL

The bowls used in PermaSheen Imperial and in PermaSheen Zephyr are enameled steel bowls drawn on Tracy's own dies.

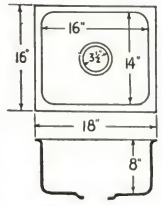
Tracy Enameled Bowls have straight sides: Tracy enameled steel bowls have straight sides affording maximum capacity. Enameled bowls with straight sides are a recent development designed to meet the demand for large capacity.

Tracy Enameled Bowls are 8″ deep: Tracy enameled steel bowls are unusually deep. The 8″ depth of these bowls is another distinctive feature of Tracy porcelain enameled bowls.

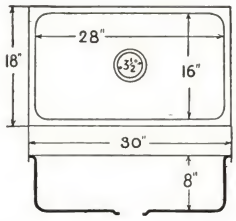
Tracy Enameled Bowls are acid-resisting: These Tracy bowls are 14 gauge die drawn vitreous enameled steel bowls, enameled on inside and outside, with last inside coat being acid-resisting.

Tracy Enameled Steel Bowls are furnished in either White or Ivory acid-resisting colors.

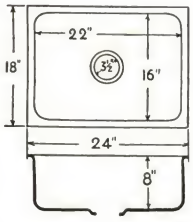
These bowls are drilled in the center for a 3½″ crumb cup strainer. When two of these bowls are used in a single top, the minimum dimension between the bowls is 3″.



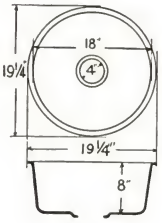
14″x16″x8″—This bowl can be installed with either the 14″ or the 16″ dimension parallel to the front edge of the top.



16″x28″x8″—This bowl can be installed only with the 28″ dimension parallel to front edge of top.

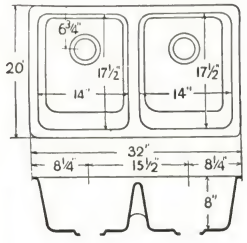


16″x22″x8″—This bowl can be installed only with the 22″ dimension parallel to front edge of top.



18″ Round, 8″ Deep—A special purpose bowl which can be used singly or in combination with any of the rectangular bowls shown here. This bowl is supplied ONLY with 4″ strainer.

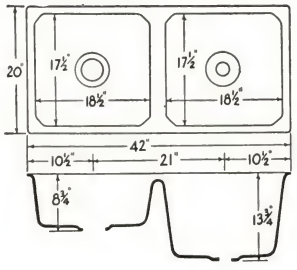
SPECIAL CAST IRON UNITS ALSO AVAILABLE IN ACID RESISTING WHITE AND IVORY ENAMEL



CRANE C19356
20″x32″ and 22″x42″

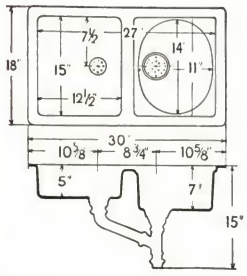
STANDARD SANITARY P7037
20″x32″ and 20″x42″

KOHLER K1798A
20″x32″ and 22″x42″



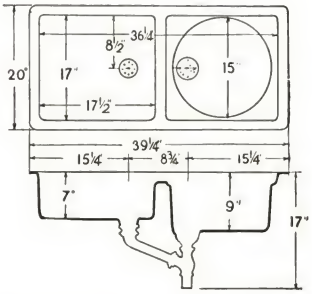
STANDARD SANITARY SINK AND TUB COMBINATION P7415

This unit is reversible; tub can be right or left. Can be furnished with sliding cover.



EBCO LR131 DISHWASHING SINK

Unit includes strainers, rubber plated wire basket, and twin waste combination as shown.



EBCO DISHWASHING SINK LR141

Unit includes strainers, rubber plated wire basket, and twin waste combination as shown.

PermaSheen ZEPHYR (Patent No. 2038638)

LINOLEUM COMPOSITION (1/8" thick)

Quiet—resilient—colorful highest grade ⅛ in. battleship linoleum in PermaSheen Zephyr construction affords permanent satisfaction and beauty for cabinet sinks and tops. Stretcher leveled, copper coated steel (16 gauge), is bonded to the linoleum, eliminating warping, swelling, or twisting as the steel base is unaffected by moisture, heat, or climatic conditions. Watertight joints between bowl and drainboard are assured by a patented attachment of a rubber gasket compressed into a recess of a specially designed extruded metal shape (see detail page 9). This same patented construction insures permanent sanitation and cleanliness with minimum care. Stainless steel edging is standard with Tracy PermaSheen cabinet sinks and tops. PermaSheen cabinet sinks are fabricated to dimensional specifications to fit particular kitchens.



Section Showing Design and Construction

PERMASHEEN ZEPHYR MATERIALS AND CONSTRUCTION

MATERIALS

Drainboards and Splashers: ⅛ in. battleship linoleum specially treated for the purpose.

16 USS gauge (.062 in.) steel copper coated and stretcher leveled as base for the linoleum.

Edging: Specially designed rolled shape of 18-8 stainless steel with satin finish.

Bowls: Drawn steel bowls enameled with acid-resisting porcelain in White or Ivory. Bowls are all 8 in. deep with straight sides with not less than 1¼ in. radius at all corners, 3½ in. opening in center for crumb cup strainer. Bowls are 14x16x8 in., 16x22x8 in., 16x28x8 in., and 18 in. round, 8 in. deep; all these dimensions are inside dimensions. (See page 11.)

CONSTRUCTION

Drainboards: Steel base is fabricated in a channel frame construction for strength and rigidity. Linoleum is bonded to the steel base under pressure. The stainless steel trim is fit into a routed groove in the linoleum forming a pressure joint between the linoleum and the steel base. The stainless steel trim is formed with a ⅜ in. high edge to prevent overflow of water. The corners of the trim are mitered in a watertight joint. (See page 13 for detail drawings.)

Splashers: Construction of the splashers is identical to construction of the drainboards except that trim is raised only 1/16 in. above the linoleum. All splashers are 1½ in. thick. Joints between splashers and drainboards are made watertight by means of a specially designed rolled shape of stainless steel. (See page 13 for detail drawings.)

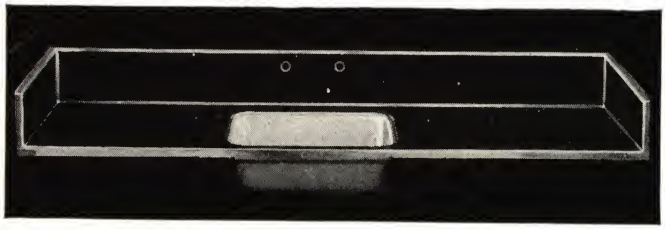
Bowl Construction: Both the linoleum and the steel base of the drainboards around the edge of the bowl are recessed into a specially designed extruded metal shape which binds the linoleum to the base in a watertight and sanitary construction. The bowl is attached to the drainboards with a steel channel compressing a rubber gasket into another recess in the same extruded shape, affording a watertight and sanitary joint. Use of a mastic is eliminated. Bowls are removable and replaceable. (See page 13 for detail drawings.)

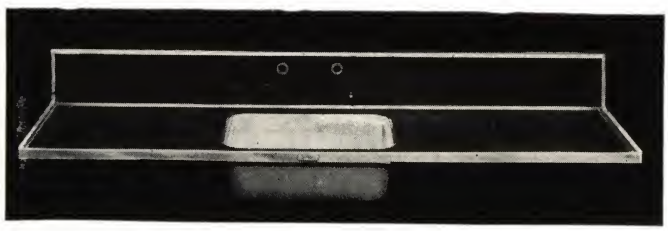
ARCHITECT'S SPECIFICATIONS FOR PERMASHEEN ZEPHYR

Cabinet sink and tops shall be PermaSheen Zephyr as manufactured by Tracy Manufacturing Company, Pittsburgh. Drainboards shall be ⅛ in. thick linoleum bonded to a 16 USS gauge (.062 in.) copper coated stretcher leveled steel base bent in a channel frame. Outside edges of linoleum shall be held securely to steel base with 18-8 stainless steel trim which shall form a pressure joint embracing the linoleum and the base. The stainless steel trim shall have a raised edge ⅜ in. high to prevent overflow of water, and shall be rabbeted into the linoleum to form a watertight joint. Edges of splashers shall also be bound with 18-8 stainless steel trim. Joints between drainboards and splashers shall be made watertight by means of a specially designed shape of 18-8 stainless steel, affording pressure joint. Bowl shall be drawn steel acid-resisting enameled bowl with opening in center for 3½ in. crumb cup strainer. Bowl size shall be *———— as manufactured by Tracy Manufacturing Company. Bowl shall have straight sides with not less than 1¼ in. radius at all corners. Bowl shall be fastened to the drainboards at the factory with a watertight and sanitary joint by means of a rubber gasket compressed into a recess of a specially designed extruded metal shape. Linoleum shall be held securely to steel base around sink bowl opening by extruded metal shape embracing steel base and linoleum in horizontally rabbeted edge of linoleum.

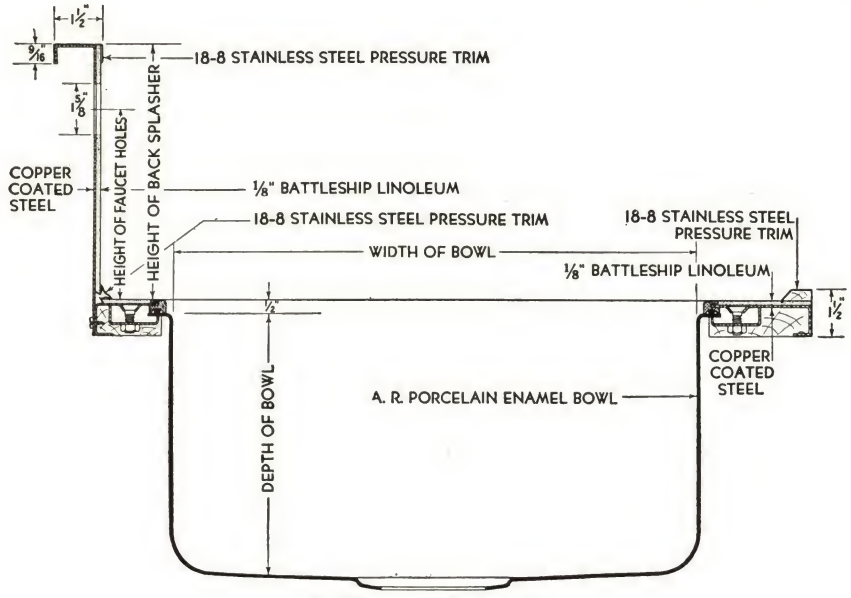
**14x16x8 in., 16x22x8 in., 16x28x8 in., 18 in. round, 8 in. deep.*

Alternate: Bowls in cast iron, acid-resisting enameled, see page 11.

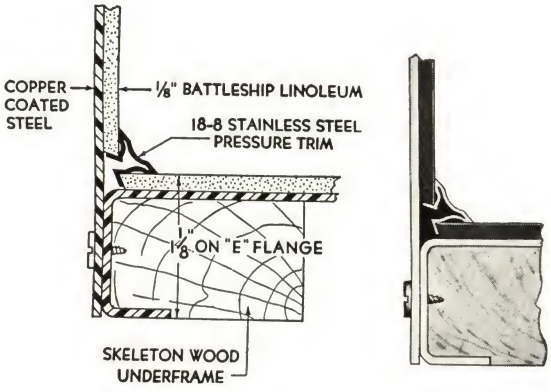




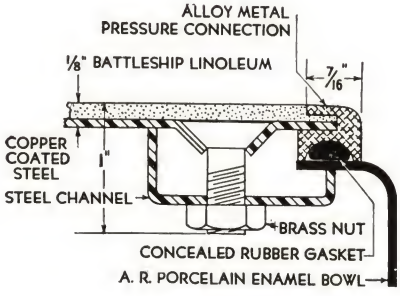
CONSTRUCTION DETAILS *for* PERMASHEEN ZEPHYR



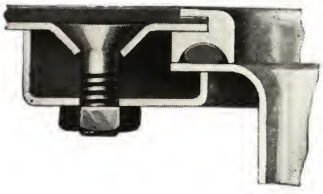
Detail through Sink Bowl

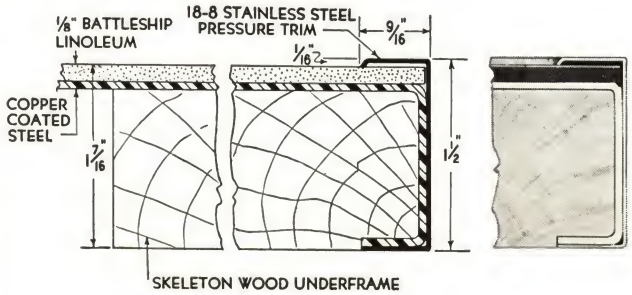


Detail of Back Splasher Connection with Drainboard

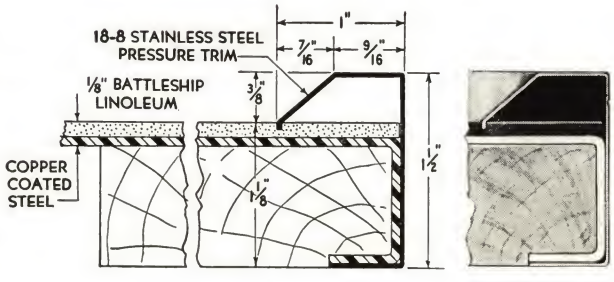


Detail of Bowl Connection





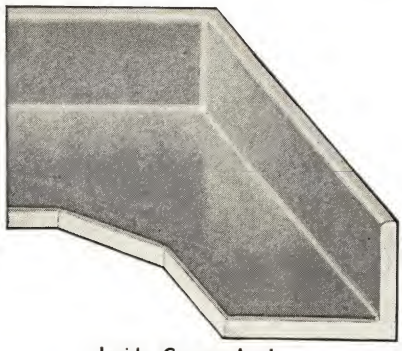
Flange F—for Cabinet Tops only—
Must be specified if required



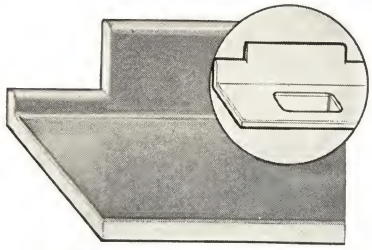
Flange E—for Cabinet Sinks or Tops

TRACY CABINET SINKS AND TOPS

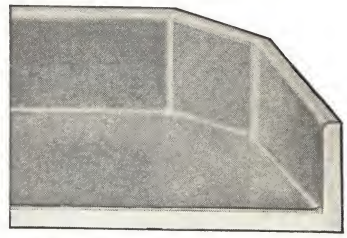
For SilviSheen DE LUXE, SilviSheen LIFETIME, PermaSheen DE LUXE, PermaSheen IMPERIAL and PermaSheen ZEPHYR (Details Shown are SilviSheen DE LUXE)



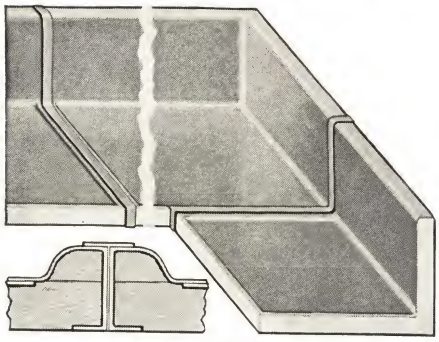
Inside Corner Angle



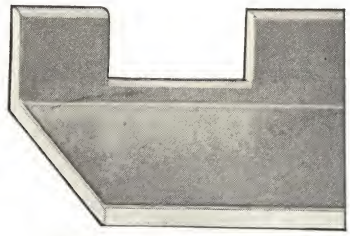
Partial Window Cutout



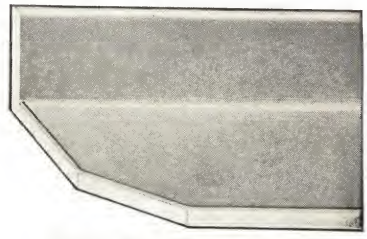
Corner Angle (With Splasher)



Cover Strip



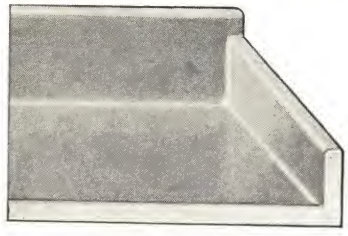
Complete Window Cutout



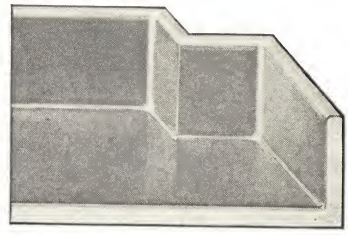
Corner Angle (No Splasher)



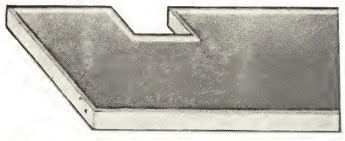
Partial Pipe Chase (No Splasher)



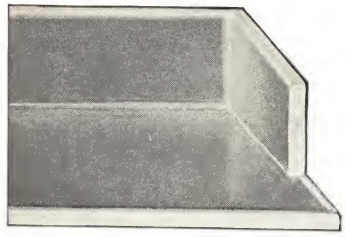
Low End Splasher



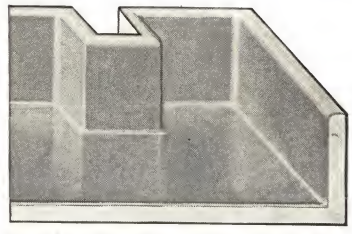
Partial Pipe Chase (With Splasher)



Complete Pipe Chase (No Splasher)



Short End Splasher



Complete Pipe Chase (With Splasher)



Tracy cabinet sinks and tops are fabricated to fit the kitchen. The drawings shown above illustrate some of the special wall conditions to which all Tracy cabinet sinks and tops can be fitted. Splashers can be cut for electric conduits and pass windows. Wall splashers are drilled for any standard type wall faucet fixture with or without spray; tops can be drilled for deck type faucet fixture behind sink bowl.

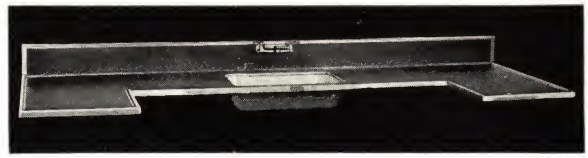
ALL TRACY SINKS CAN BE ADAPTED FOR ANY STANDARD DISHWASHER AND DISPOSAL UNIT

Tracy cabinet sinks can be fabricated for installation of General Electric, Westinghouse, Conover, or Hobart dishwashers. Provision can also be made for installation of General Electric or Hotpoint Disposal units. If these features are to be an integral part of the construction, specifications should so state, giving name of manufacturer whose item is to be used.

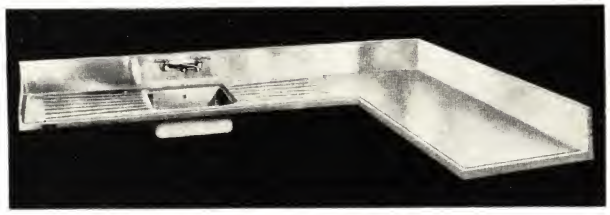
CUSTOM BUILT TO FIT YOUR REQUIREMENTS

L AND U SHAPED CABINET SINKS AND TOPS

Tracy cabinet sinks and tops can be fabricated in shapes to meet existing requirements. Tops may be in one piece, or where unusual conditions occur, two pieces joined by a "cover strip" (see page 14) may be employed. The popular L and U shapes—common in modern construction—with one, two, or more bowls, are available in any of the Tracy lines. Regardless of the length of one or all sides, Tracy can supply cabinet sinks and tops to fit your dimensional or space requirements.



A popular U-shaped PermaSheen Imperial.



A SilviSheen DeLuxe L-shaped Cabinet Sink.

SPECIAL SINKS FOR SPECIAL CONDITIONS

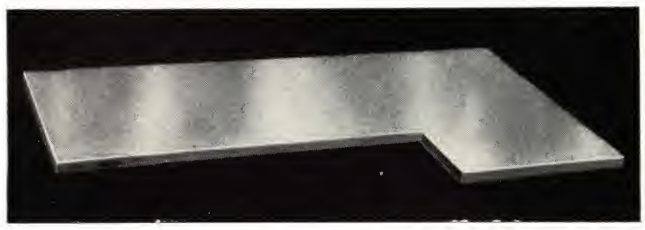
Long sinks—short sinks—apron sinks—bar sinks, are all available to fit space limitations. Odd shaped kitchens can be fitted with Tracy cabinet sinks and tops. In fact, any kitchen—any pantry can be efficiently fitted by Tracy. Because all Tracy cabinet sinks and tops are custom built to dimensional specifications (bowl sizes, see pages 7 and 11, cannot be varied) your dimension requirements will be followed to the letter.



An unusual arrangement of a PermaSheen Zephyr—showing the possibilities for fitting unusual conditions.



SilviSheen DeLuxe very special U-shaped Cabinet Sink with two bowls, special splashers, and pipe chase construction to take care of unusual room conditions.



A Silvi-Sheen Lifetime L-shaped Cabinet Top.

TRACY STAINLESS STEEL SINK BOWLS

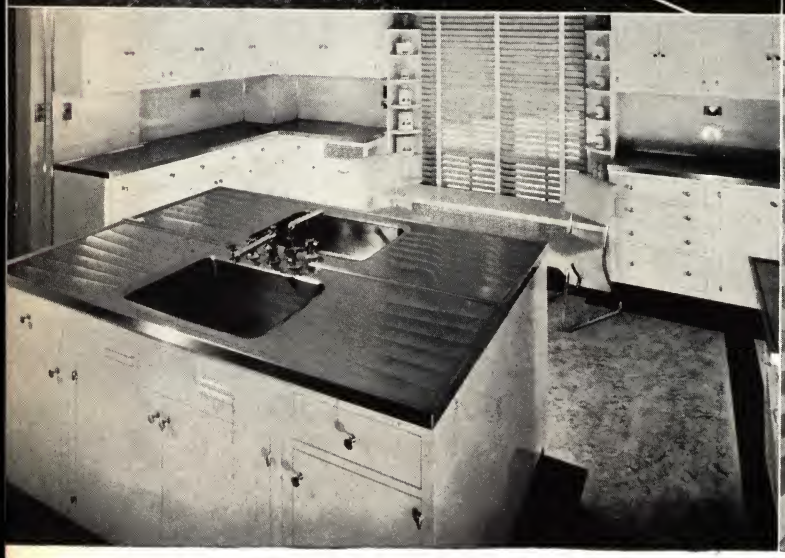
Picture at right shows a stack of one piece, seamless, die drawn, Tracy stainless steel sink bowls 15″x17½″x 7¼″, just as they have come from the heavy presses on which they are drawn.



TRACY CABINET SINKS AND TOPS FOR MODERN KITCHENS









TRACY MANUFACTURING CO.

PITTSBURGH . . . . . PENNSYLVANIA

28
27

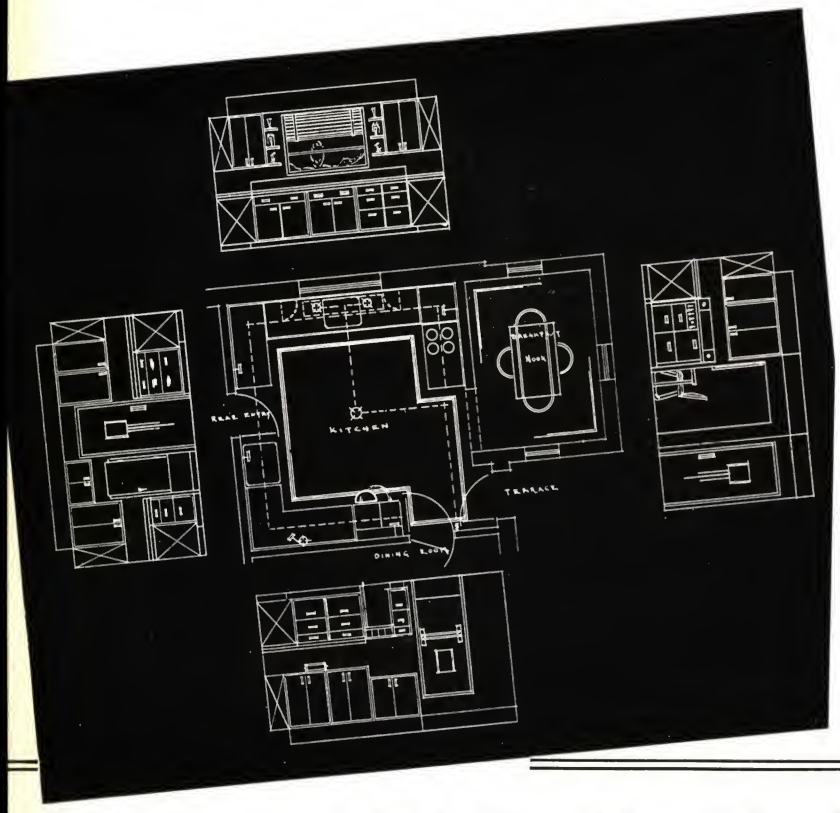
WHITEHEAD

Work-Saving Kitchens



WHITEHEAD METAL PRODUCTS COMPANY, INC.

. . Take Advantage of the WHITEHEAD KITCHEN PLANNING SERVICE . .



The Building Trades are invited to make full use of our Kitchen Planning Service. Send us rough sketches of any kitchens you are creating, with some indication as to budget limitations. Our Kitchen Planning Staff will study them and submit finished drawings to you similar to the one at the left, complete with bills of material and every detail worked out for construction. There is no charge for this service.

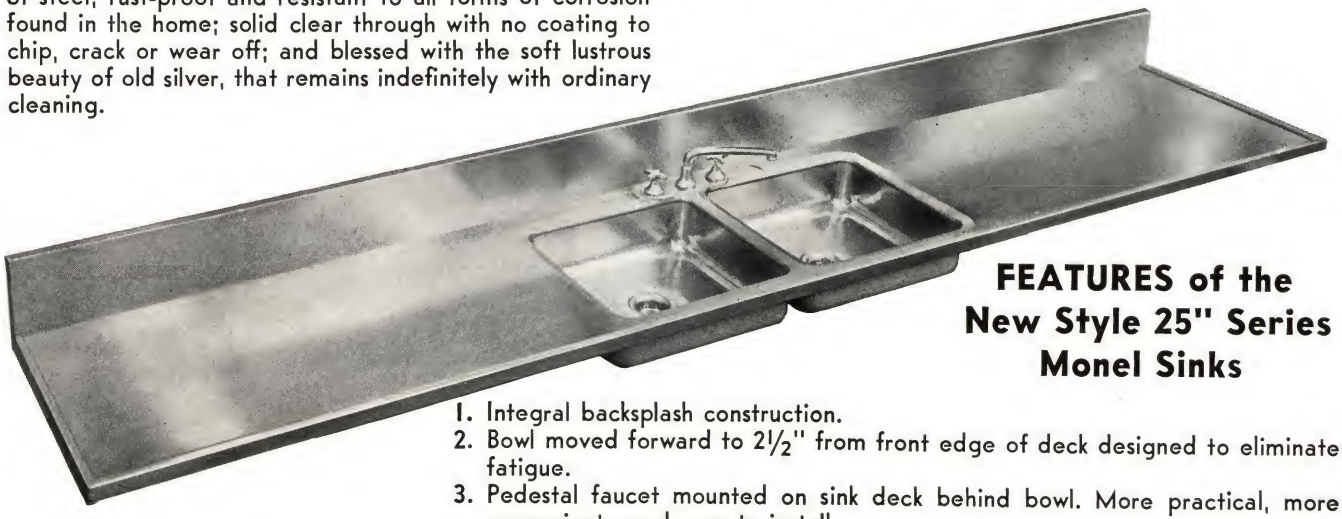
MONEL—The Ideal Kitchen Metal

Whitehead kitchens are "Work-Saving" kitchens first of all because of Monel, a natural alloy of two-thirds Nickel and one-third Copper. Monel is especially suited to sink and work surface construction, and as such is the natural material for the reduction and prevention of unnecessary kitchen labor.

It is extremely durable, with the strength and toughness of steel; rust-proof and resistant to all forms of corrosion found in the home; solid clear through with no coating to chip, crack or wear off; and blessed with the soft lustrous beauty of old silver, that remains indefinitely with ordinary cleaning.

Monel sinks are resilient enough to soften impacts and thus reduce dish breakage. Moreover, dish clatter is reduced to a minimum.

Monel stands the ravages of exposure and abuse and needs no careful treatment. The usual household cleansers will keep Monel bright and clean with the care ordinarily given to kitchen equipment.



FEATURES of the New Style 25" Series Monel Sinks

1. Integral backsplash construction.
2. Bowl moved forward to 2½" from front edge of deck designed to eliminate fatigue.
3. Pedestal faucet mounted on sink deck behind bowl. More practical, more convenient—and easy to install.
4. Soap dish, glass holder and faucet platform pressed right in sink deck.
5. Flare around bowl insures against water collecting around top edge of sink.

Whitehead Metal Products Company, Inc.

25" SERIES SINGLE BOWL

Monel Sink and Steel Base Cabinet Combinations



Combination shown with 7⅝" Sink Back.



Top view of Sink only, shown with 1⅛" Sink Back.

Sinks Are Available Without Base Cabinets. To Order, Omit Prefix "PK"

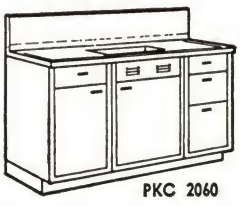
Sizes and Dimensions

Model Number	Actual Overall			Length of Sink Bowl B	Length of Drainboards C
	Width	Length A	Height		
PKC 2048L†	25	48	36	20	26¼
PKC 2048R†	25	48	36	20	26¼
PKC 2060	25	60	36	20	20
PKC 2072	25	72	36	20	26
PKC 2584	25	84	36	25	29½
PKC 2596	25	96	36	25	35½
PKC 25108	25	108	36	25	41½
PKC 25120	25	120	36	25	47½
PKC 25132	25	132	36	25	53½
PKC 25144	25	144	36	25	59½
PKC 25156	25	156	36	25	65½
PKC 25168	25	168	36	25	71½

†Suffix L or R following 2048 Series signifies Left or Right drainboard.
Sinks available with 7⅝" or 1⅛" backs. Please specify.
Sinks available with one or two end splashers if desired.
Crumb cup strainer with Monel basket, and pedestal type faucet standard equipment.
Intermediate sizes of above Sinks and Combinations available at slight extra cost.



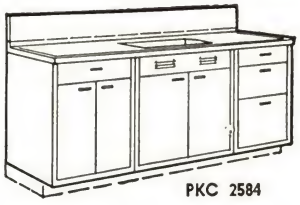
PKC 2048R



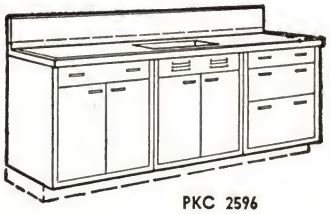
PKC 2060



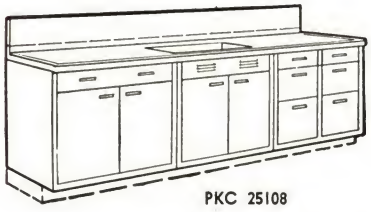
PKC 2072



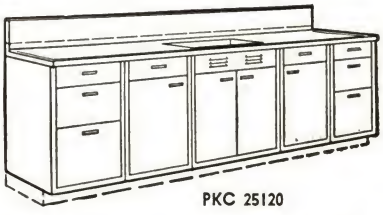
PKC 2584



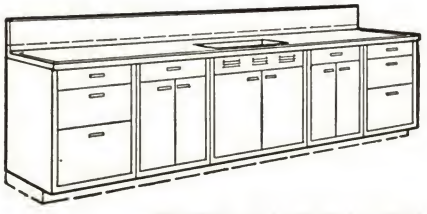
PKC 2596



PKC 25108



PKC 25120



PKC 25132, 25144, 25156 and 25168

ARCHITECT'S SPECIFICATIONS—SINGLE AND DOUBLE BOWL 25" SERIES

Gauge—Shall be Monel: 19 ga. USS (043") for bowls and 20 ga. USS (037") for drainboards (reinforced with steel) and back splashers.

Assembly—One piece (single or double, specify which) bowl shall be welded to adjacent drainboards and sealed with matching solder on inside flange. Welds shall be invisible, solid and finished to perfect smoothness. Back splashers shall be integral with deck (specify either 1⅛" or 7⅝" high). Bead or front and side rims shall be $\frac{5}{16}$" high.

Reinforcing—Decks shall be backed up with 16 ga. USS (.062") steel channels running full length of sink in front and rear of bowl(s) and from either side of bowl to ends. No wood construction.

Sound-Deadening—Entire underbody shall be thoroughly coated with special compound to seal and sound-proof all surfaces.

Design—Drainboards shall afford maximum work surfaces. Drillings through deck to accommodate pedestal faucet. Raised faucet platform, soap dish and glass holder depressions shall be stamped in deck. Flare 1" wide, ¼" deep around bowl shall be provided.

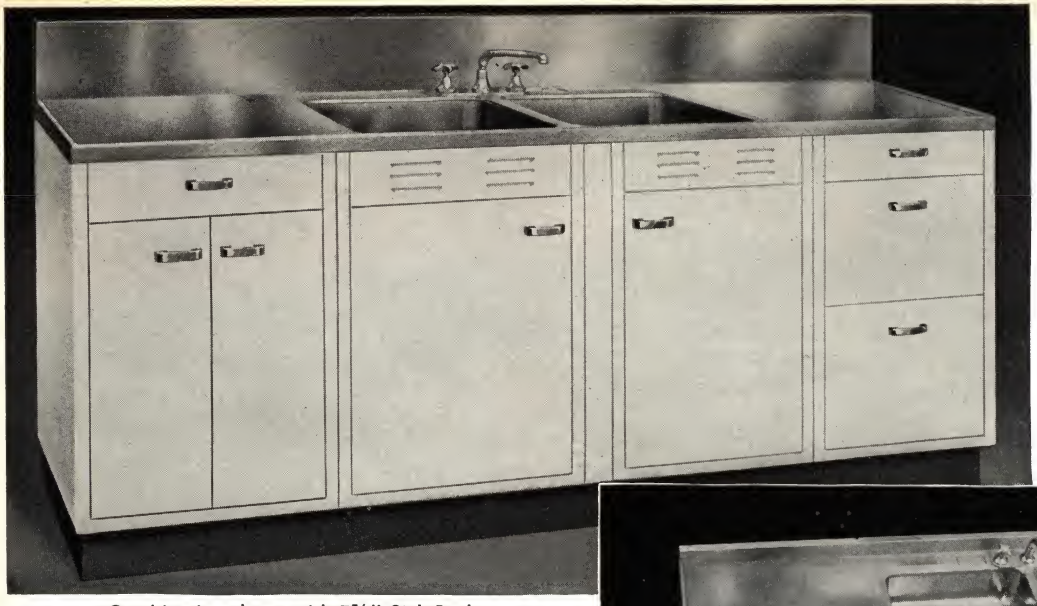
Finish—All visible surfaces of sinks shall have special satin finish.

Strainer—Crumb cup strainer and basket of Monel shall be supplied (see page 5).

Faucet—Pedestal type faucet shall be supplied (see page 5).

For Base Cabinet Specifications, see page 8. For faucet and faucet roughing-in measurements, see page 5.

For Roughing-in Measurements for Single and Double Bowl Models—25" Series—See page 4.



Combination shown with 7⅝" Sink Back.

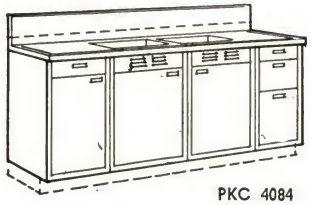
25" SERIES DOUBLE BOWL

Monel Sink and Steel Base Cabinet Combinations

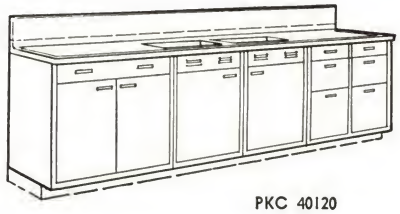


Top view of Sink only, shown with 1⅛" Sink Back.

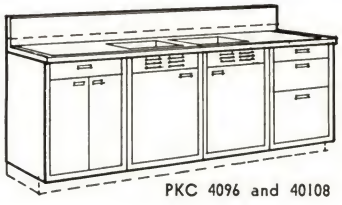
Sinks Are Available Without Base Cabinets. To Order, Omit Prefix "PK"



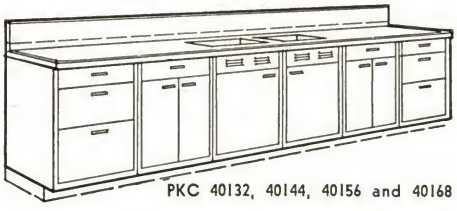
PKC 4084



PKC 40120

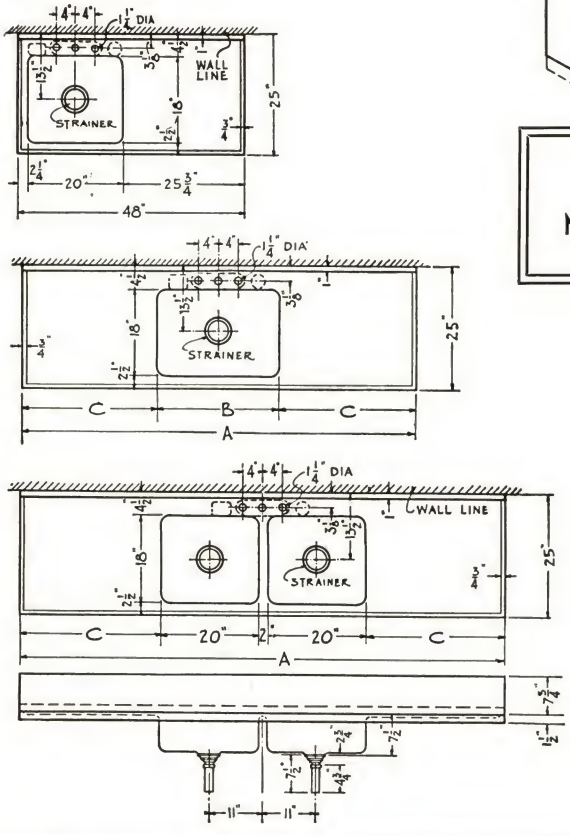


PKC 4096 and 40108



PKC 40132, 40144, 40156 and 40168

Roughing-In Measurements Single and Double Bowl Models— 25" Series



For Architect's Specifications Single and Double Bowl Models — 25" Series — See preceding page.

Sizes and Dimensions

Model Number	Actual Overall Width	Actual Overall Length A	Actual Overall Height	Length of Sink Bowls B	Length of Drainboards C
PKC 4084	25	84	36	20 each	21
PKC 4096	25	96	36	20 "	27
PKC 40108	25	108	36	20 "	33
PKC 40120	25	120	36	20 "	39
PKC 40132	25	132	36	20 "	45
PKC 40144	25	144	36	20 "	51
PKC 40156	25	156	36	20 "	57
PKC 40168	25	168	36	20 "	63

Sinks available with 7⅝" or 1⅛" backs. Please specify.
Sinks available with one or two end splashers if desired.
Crumb cup strainers with Monel baskets, and pedestal type faucet standard equipment.
Intermediate sizes of above Sinks and Combinations available at slight extra cost.

For Base Cabinet Specifications, see page 8. For faucet and faucet roughing-in measurements, see page 5.

25" SERIES
Monel Sink and Steel Base Cabinet Combinations







Adapted for General Electric Dishwasher and Disposall
(Single Bowl Only)

Whitehead has adapted its line of 25" Monel Sinks and Steel Base Cabinets to accommodate General Electric Dishwasher and Disposall Units. Standard Sinks and Sink and Cabinet Combinations are available in the following lengths — 48, 63, 72, 84, 96, 108, 120, 132, 144, 156 and 168 inches. Sinks are ordered as GEC units and Combinations as GEPKC units.

Sinks are furnished with opening for dishwasher unit and cover and large drain opening for connection with Disposall unit. If Disposall is not desired, crumb cup strainer should be ordered from General Electric. The 48" sink has no drainboard, the 63" and 72" sinks have one drainboard to right of bowl, and all other sinks have equal double drainboards. In cabinet combinations, the 20" sink bowl and the dishwasher opening take a special 48" sink front unit (GEDWC48) (see top picture) which forms the basis of all cabinet combinations.

Adapted for Westinghouse Dishwasher
(Single and Double Bowl)

Whitehead has also adapted its line of 25" Monel Sinks and Steel Base Cabinets to accommodate the Westinghouse Dishwasher. These sinks, both single and double bowl, are the same as the regular Monel sinks shown on pages 3 and 4 with the exception that Westinghouse Sinks are not furnished with raised faucet platform and indented soap depression and flare around bowl. Sink decks are drilled for Westinghouse Dishwasher water inlet. Sinks should be ordered as WC units and Combinations as WPKC units. They are available in all sizes as shown on pages 3 and 4 and all dimensions are the same with the exception of the 60" single bowl and the 84" double bowl models which have left hand drainboards shorter than the right hand.

Arrangement of cabinets in combinations are different than standard combinations as a 24" Dishwasher is placed to the right of sink bowl and cabinets are combined to form a symmetrical arrangement.

Adapted for Hotpoint Dishwasher
(Single and Double Bowl)

Whitehead has also adapted its line of 25" Monel Sinks and Steel Base Cabinets to accommodate the Hotpoint Dishwasher. These sinks are exactly the same as the standard single and double bowl sinks shown on pages 3 and 4, and are, therefore, available in the same sizes and have the same dimensions with the exception of the 60" single bowl and the 84" double bowl models where the left hand drainboard is shorter than the right hand. However, Hotpoint Sinks should be ordered as HC units and combinations as HPKC units.

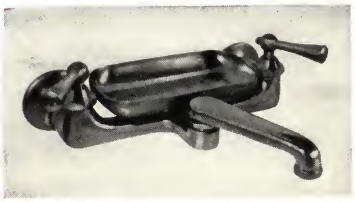
Cabinet arrangements of combinations are the same as Westinghouse combinations, as a symmetrical cabinet arrangement is formed with 24" Hotpoint Dishwasher to the right of the bowl.

In all dishwasher sinks standard backsplasher heights are 1⅛" and 7⅝". Intermediate back heights are also available. Intermediate sizes of these sinks and combinations available at slight extra cost.

SINK ACCESSORIES



Crumb Cup Strainer with Monel Basket is standard equipment with all Whitehead Monel Sinks.



Specially designed for the 21" series Monel Cabinet Sinks and Straitline Apron Sinks, the Graceline faucet is constructed of 20% solid nickel silver with satin finish.

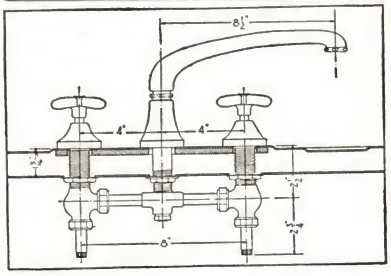


The Pedestal Faucet is standard equipment with all 25" wide series Monel Sinks, its beautiful satin chromium finish blending harmoniously with the Monel.

Pedestal Faucet with Hose Spray Connection is available. Plunger on faucet diverts water to spray as needed.

Roughing-in measurements of pedestal type faucet are indicated at right. Installation of hose spray connection is essentially the same with extra drilling at right of faucet for hose.







Duocrat with 24" Range shown with 7⅝" Back

THE DUOCRAT

A Combination of the 25" Series Monel Sink and Steel Cabinet Ensemble with Magic Chef Gas Range

Whitehead has adopted its line of 25 in. Series Monel Sinks and Steel Base Cabinets to accommodate two full-sized Magic Chef Gas Ranges as an integral part of cabinet combinations and with Monel work surface extending over the entire unit. These ensembles, known as the Duocrat, are available in standard lengths from 48 to 168 in. with any intermediate sizes also available.

Models from 48 to 84 in. take a 24 in. Magic Chef Range (No. 3001-0), while models above 96 in. take a 39 in. Range (No. 3401-0). Both ranges have four surface burners and full size ovens. (16 in. wide x 18 in. deep x 12 in. high in 24 in. Range and 16 in. wide x 20 in. deep x 14 in. high in 39 in. Range.)

Monel Cabinet Tops in all standard sizes and intermediate sizes can also be secured to form an extended unbroken range top over either of these ranges.



DPKC 2048R



DPKC 2072R



DPKC 2084

*Suffix L and R signifies range on left or right side. DPKC 2084 to 20168 have right-hand range.

Sinks are available with 7⅝" or 1⅛" backsplashers. Please specify back height when ordering.

Sinks are available with one or two end splashers, if desired.

Intermediate sizes of these sinks and combinations available at slight extra cost.

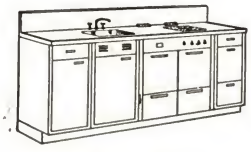
Sinks are available without base cabinets. To order, omit prefix "PK."

THE DUOCRAT with 24" Range

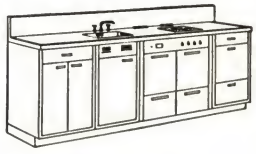
Standard Ensembles	ACTUAL OVERALL			Length of Sink Bowl	Range Top Opening	Space Between Sink Bowl and Range Opening	Length of Drainboard
	Width	Length	Height				
DPKC 2048L*	25	48	36	20	17	5¼	2¼
DPKC 2048R*	25	48	36	20	17	5¼	2¼
DPKC 2072L*	25	72	36	20	17	5½	26
DPKC 2072R*	25	72	36	20	17	5½	26
DPKC 2084	25	84	36	20	17	11½	32

THE DUOCRAT with 39" Range

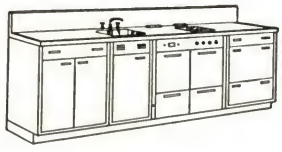
Standard Ensembles	ACTUAL OVERALL			Length of Sink Bowl	Range Top Opening	Space Between Sink Bowl and Range Opening	Length of Drainboard (Left of Sink Bowl)	Length of Work Top (Right of Range Opening)
	Width	Length	Height					
DPKC 2096	25	96	36	20	17	20½	18½	20
DPKC 20108	25	108	36	20	17	20½	24½	26
DPKC 20120	25	120	36	20	17	20½	30½	32
DPKC 20132	25	132	36	20	17	20½	36½	38
DPKC 20144	25	144	36	20	17	20½	42½	44
DPKC 20156	25	156	36	20	17	20½	48½	50
DPKC 20168	25	168	36	20	17	20½	54½	56



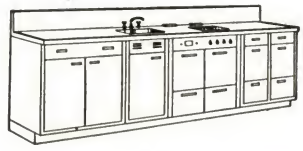
DPKC 2096



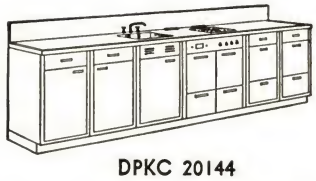
DPKC 20108



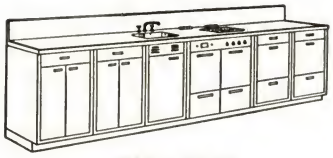
DPKC 20120



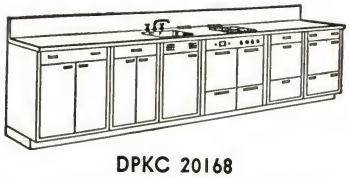
DPKC 20132



DPKC 20144



DPKC 20156



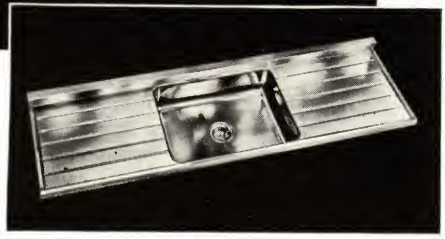
DPKC 20168



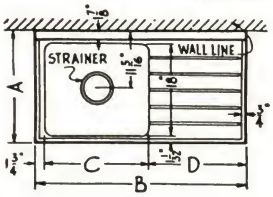
Duocrat with 39" Range shown with 7⅝" Back



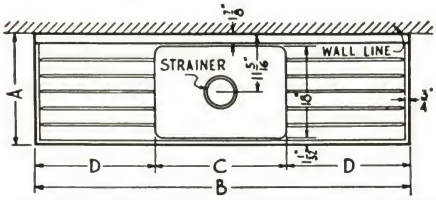
Combination shown with 7⅝" Back

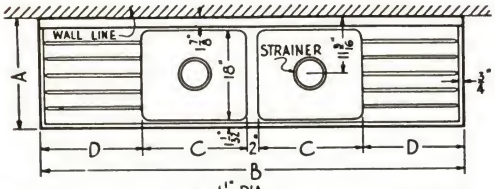


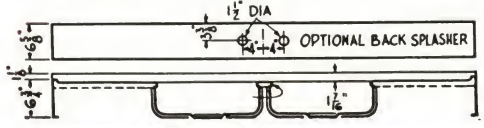
Top view of Sink only, shown with 1⅛" Back



Roughing-in measurements—entire 21" Series







21" SERIES

Single and Double Bowl Monel Sink and Steel Base Cabinet Combinations

Sizes and Dimensions

Model Number	Actual Overall			Length of Sink Bowl	Length of Drainboards
	Width A	Length B	Height	C	D
PKWA 1041L†	21	41	36	20	19¼
PKWA 1041R†	21	41	36	20	19¼
PKWA 1050L†	21	49½	36	25	22¾
PKWA 1050R†	21	49½	36	25	22¾
PKWA 1060	21	60	36	20	20
PKWA 1072	21	72	36	25	23½
PKWA 1082*	21	82	36	20 ea.	20

†Suffix L or R signifies Left or Right drainboard.
*Double bowl model.
Sinks available with 7⅝" or 1⅛" backs. Please specify.
Sinks available with one or two end splashers if desired.
Crumb-cup strainers with Monel baskets standard equipment.
Intermediate sizes of above Sinks or Combinations NOT AVAILABLE.

CABINET ARRANGEMENTS OF STANDARD COMBINATIONS

PKWA 1041 and 1050 L & R illustrated by PKC 2048R as to Base Cabinet. (Page 3.)
PKWA 1060 and 1072 illustrated by PKC 2060 and 2072 as to Base Cabinet. (Page 3.)
PKWA 1082 illustrated by PKC 4084 as to Base Cabinet. (Page 4.)
Sinks are available without base cabinets. To order, omit prefix "PK."

ARCHITECT'S SPECIFICATIONS—Entire 21" Series

Gauge—Shall be Monel; 19 ga. USS (043") for bowls and 20 ga. USS (037") for drainboards (reinforced with steel) and back splashers.

Assembly—One piece (single or double, specify which) bowl shall be welded to adjacent drainboards and sealed with matching solder on inside flange. Welds shall be invisible, solid and finished to perfect smoothness. (1½" back splasher shall be integral.) Additional height to make 8" shall be a separate back splash bolted to integral back splash.

Reinforcing—Entire length of sink is reinforced with steel Z bar. Drainboards are backed up with 16 gauge (062") steel bonded to underside of Monel.

Sound-Deadening—Entire underbody shall be thoroughly coated with special compound to seal and sound-proof all surfaces.

Design—Drainboards shall be grooved and faucet drilling through back splash to accommodate any standard 8" center faucet.

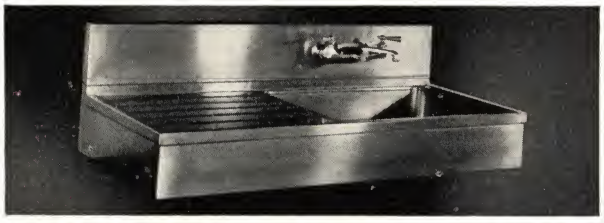
Finish—All visible surfaces of sinks shall have special satin finish.

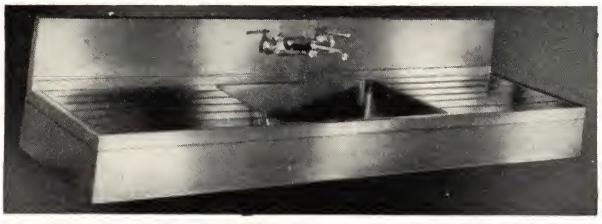
Strainer—Crumb cup strainer and basket of Monel shall be supplied. (See page 7.)

For Base Cabinet Specifications, see page 8. For faucet, see page 5.

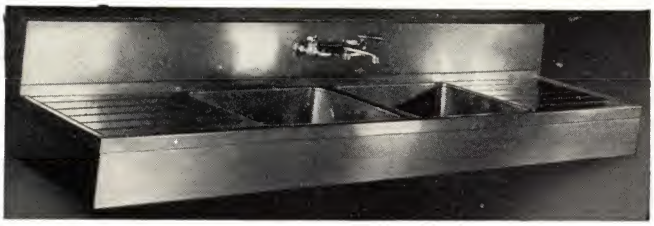
MONEL APRON SINKS

Straitline Models





Model Number	Nominal Size	Actual Over-all		Length of Sink Bowl	Length of Drainboard
		Width A	Length B	C	D
Whitehead 1060	21"x60"	21"	60"	20"	20"
Whitehead 1072	21"x72"	21"	72"	25"	23½"

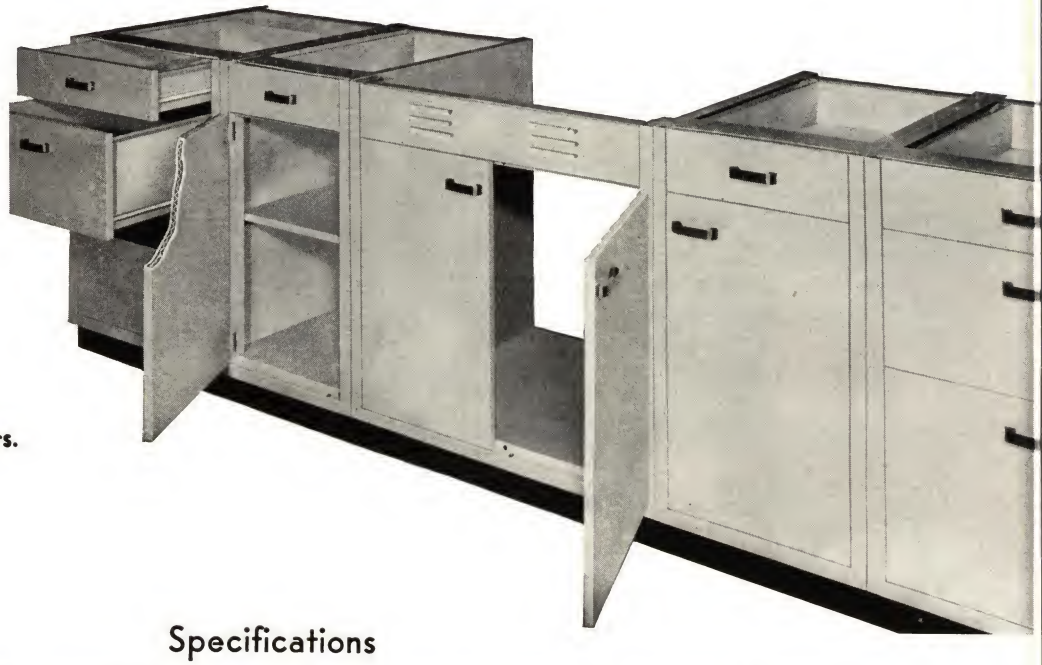


Model Number	Nominal Size	Actual Over-all		Length of Sink Bowl	Length of Drainboard
		Width A	Length B	C	D
Whitehead 1041 L	21"x41"	21"	41"	20"	19¼"
Whitehead 1041 R	21"x41"	21"	41"	20"	19¼"
Whitehead 1050 L	21"x50"	21"	49½"	25"	22¾"
Whitehead 1050 R	21"x50"	21"	49½"	25"	22¾"
Whitehead 1082	21"x82"	21"	82"	20"	20"

WHITEHEAD STEEL CABINETS

Features

1. Anti-friction drawer slides.
2. Fully insulated door and drawer fronts.
3. Recessed toe space.
4. Concealed hinges.
5. Bullet catches.
6. Rubber bumper.
7. Welded door and drawer corners.
8. All frame corners welded.
9. Modernistic hardware.



Specifications

Material—All kitchen cabinets shall be manufactured of highest grade, cold rolled furniture steel, free from rust and defects, 20 gauge throughout.

Construction—Cabinets shall be flush type with doors and drawer heads recessed between supporting stile members, 1¼" wide, giving an entirely smooth front. All parts of cabinets shall be spot welded. Front corners mitered, reinforced, with continuous welded joints. Top and bottom of wall cabinets to be constructed flush with lap joint.

Backs shall be recessed 13/16" on wall and base cabinets, allowing wood grounds (furnished) for anchoring.

Shelves shall be of one-piece steel, flanged, removable and adjustable on ½" centers. Brackets for supporting shelves shall be nickel plated, and have ¾" bearing surface.

Doors and drawer heads shall be 11/16" thick of double wall construction, flush both sides and filled with sound-absorbing material.

Drawers in base cabinets shall be equipped with anti-friction, EZ slides, with suspensions of 16 gauge hardened steel.

Drawers in base cabinets shall be constructed to accommodate such accessories as bread boxes, flour bins, etc. All drawers equipped with positive stop and both doors and drawers with rubber bumpers.

Optional—Wall cabinets may be furnished with glass doors set in rubber, in place of flush doors, at slight additional cost.

Finish—After cabinets are fabricated, all joints and welds shall be sanded and cabinets efficiently de-greased, assuring an entirely clean and rust-free base metal.

All cabinets shall be sanded before prime finish coats are applied. Highest grade synthetic enamels shall be used and baked on at 300°F. producing a glossy and extremely durable wearing surface.

Hardware—Hinges shall be of concealed type with fixed stops. Pulls shall be of modernistic design, constructed of Monel. Bullet catches shall be supplied at both top and bottom of all doors. Locks are available at slight extra cost.

The Sub-base may be of wood, tile, etc., or we can furnish a metal base — black finish 4" high set back 3".

MONEL CABINET TOPS

Monel Cabinet Tops are designed to give a continuous working surface from range or refrigerator to Sink Center.



Base Cabinets for use under Cabinet Tops CT-15 to CT-36 shown on page 9. Base Cabinets for CT-42 to CT-114 are composed of any desired possible combination of cabinets shown on page 9. All Cabinet Tops are furnished with flat surface, unless specified to have a bead.

Sizes and Dimensions

Model Number	Actual Size	
	Width	Depth
CT 15	15	25
CT 18	18	25
CT 21	21	25
CT 24	24	25
CT 30	30	25
CT 36	36	25
CT 42	42	25
CT 48	48	25
CT 60	60	25
CT 72	72	25
CT 84	84	25
CT 96	96	25
CT 108	108	25
CT 114	114	25

Intermediate sizes of cabinet tops available at slight extra cost.
Height of apron, 1½ inches.
Furnished with 1¼" or 7¾" backsplashers, or without backsplasher. Specify which.

..STEEL BASE CABINETS..



Whitehead Steel Base Cabinets are ideal for storing bulk staples and every type of kitchen utensil.

Furnished individually in six different widths in both "All Drawer" and "Drawer Cupboard" style, these Units "team-up"—in appearance and in utility—with whatever make of modern range and refrigerator you possess. Standard colors are Light Ivory, White, Light Green and Dark Ivory.

Drawers are so constructed that accessories such as flour and meal bins, etc., may be inserted.

All Base Cabinets are 30½ inches high so that, when assembled with recessed sub-base and Monel Cabinet Top, their working surface shall be the ideal working height—36 inches—same as the Monel Sink and Cabinet Units which they also match in depth.

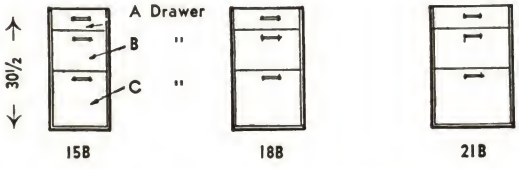
Available With or Without Cabinet Tops. (See page 8).

Specify whether with or without sub-base; with or without Monel Cabinet top; or whether left, or right hinge on single door units.



"ALL DRAWER STYLE"—24" Depth

Model Number	Dimensions of Cabinet Alone		
	Width	Depth	Height
15B	15	24	30½
18B	18	24	30½
21B	21	24	30½
24B	24	24	30½
30B	30	24	30½
36B	36	24	30½



15B 18B 21B

Drawer Cabinets available with varied combinations at slight additional cost.
i.e., Two "A" Drawers substituting One "B" Drawer.
Three "A" Drawers substituting One "C" Drawer.



24B 30B 36B

"DRAWER CUPBOARD STYLE"—24" Depth

Model Number	Dimensions of Cabinet Alone		
	Width	Depth	Height
15BC	15	24	30½
18BC	18	24	30½
21BC	21	24	30½
24BC	24	24	30½
30BC	30	24	30½
36BC	36	24	30½



15BC 18BC 21BC

Furnished With One Adjustable Shelf



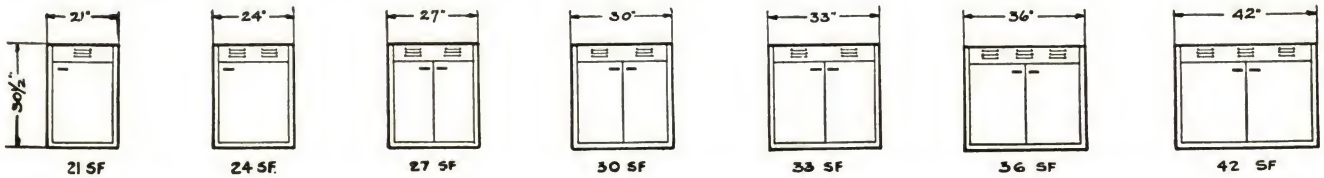
24BC 30BC 36BC

Steel Sink Fronts

Arrangements of undersink cabinets for all standard size cabinet sink combinations are illustrated on pages 3, 4 and 7. In any assemblage of undersink cabinets for odd size standardized sinks (25" wide series), or special size and shape custom-built sinks, the size of Sink Front is determined by the overall length of bowl or bowls.

The illustrated range of sizes if properly combined with base cabinets and fillers will meet any undersink cabinet requirements.

Sink Fronts are not cabinets but fronts only and are used to conceal plumbing and to complete sink base cabinet assembly. Bottom plates, however, are available. For Sink Front Cabinet, see page 11.



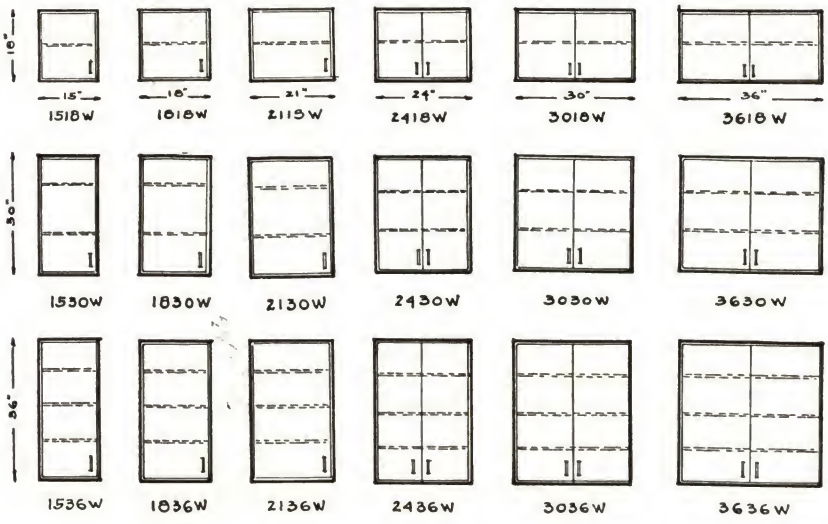
21 SF 24 SF 27 SF 30 SF 33 SF 36 SF 42 SF



. . STEEL WALL CABINETS . .

Whitehead Steel Wall Cabinets form an integral and necessary part of all kitchen work-centers. Adaptable as they are to all sizes of canned goods and staples, glasses and dishware (for shelves are adjustable at 1/2" intervals), these light, but strong cabinets form convenient storage space directly above range, refrigerator, and sink and intermediate working-surface.

Construction is of finest grade furniture steel, fully finished on all sizes in either Light Ivory, White, Light Green or Dark Ivory, Hinges are concealed. Handles are of modern design and attached at just the right and most convenient height desired.



Sizes and Dimensions

Number	Width	Height	Number	Width	Height
1518 W	15	18	2430 W	24	30
1818 W	18	18	3030 W	30	30
2118 W	21	18	3630 W	36	30
2418 W	24	18	1536 W	15	36
3018 W	30	18	1836 W	18	36
3618 W	36	18	2136 W	21	36
1530 W	15	30	2436 W	24	36
1830 W	18	30	3036 W	30	36
2130 W	21	30	3636 W	36	36

All Wall Cabinets 13 inches in depth.
Specify Left or Right Hinge on Single Door Cabinets.



CORNER WALL CABINETS (Left)

To make use of what is usually waste space. Available in two heights—30" and 36". Also available without door and with Chinese Red interior for use as a corner niche for ornaments.



24" HIGH WALL CABINETS (Right)

For use over the 13" deep and 24" deep, 62" high Implement and Linen Cabinets pictured on opposite page, 24" high wall cabinets are available. They are furnished in three widths—15", 18" and 24"; and in two depths—13" and 24".

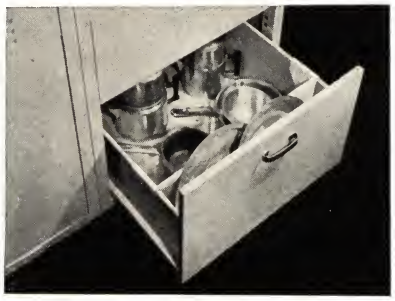
. . CABINET ACCESSORIES . .



Tray Rack



Cutlery Tray

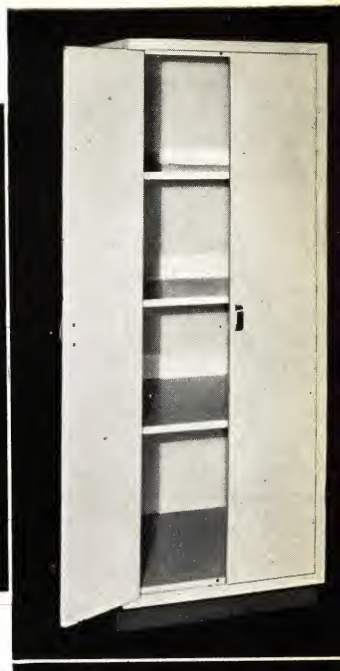


Lid Rack

. . STEEL UTILITY CABINETS . .







Above: VEGETABLE STORAGE CABINET. 21" and 24" wide with three vegetable bins louvered for air circulation. Used under Monel surface.

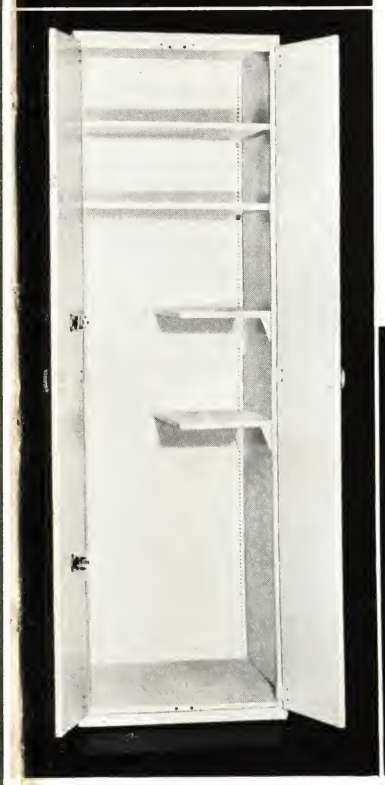
Left Panel: IMPLEMENT CABINETS in two heights. The 62" model (66" high with sub-base) is available in two depths, 13" and 24", and three widths, 15" and 18" single door, and 24", double door. Wall cabinets are available to fill out 90" ceiling. THE 80" IMPLEMENT CABINET (with 4" sub-base) on 84" ceiling for 15" and 24" widths, though only in 24" depth.

Below: DEAD CORNER CABINET. For storage space in the dead base corner. A three-sided cabinet, 20" deep and 24" wide, fastened to an opened side of BC cabinet, as shown.

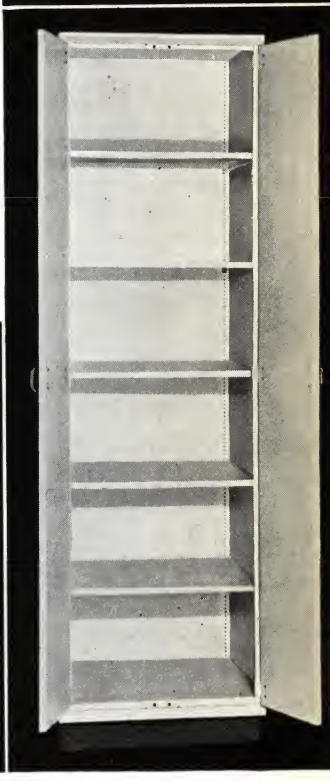
Above: SOILED LINEN CABINET. Available in 21" and 24" widths. Like all base cabinets, 24" deep. Height (with sub-base and Monel top) is 36".

Right Panel: LINEN CABINETS, in two heights. The 62" model (66" high with sub-base) is available in six sizes, 15" and 18" wide with single door and 24" wide with double door —each in 13" and 24" depths. Adjustable shelves. Wall cabinets can be used over all six sizes. THE 80" LINEN CABINET (84" with sub-base) is used when a single cabinet is desired to extend to the ceiling. Available in 24" depth only, and in 15" and 24" widths.

Below: SINK FRONT CABINET. A one-piece unit for use when the bowl is at the end of the sink combination. Two sizes only, 24" and 36" wide.









Step Shelf



Bread Bin



Bulk Storage Bin

28
27

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"Wear-Ever" Aluminum Steam Jacketed Kettles and Urns; Range Utensils, Service and Special Equipment.

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The Company and Its Products

For nearly 40 years The Aluminum Cooking Utensil Co. has manufactured and distributed "Wear-Ever" aluminum cooking utensils for use in homes, hospitals, hotels, on shipboard—everywhere that cooking is done.

Constant use during these years has brought a recognition of the value of aluminum from housekeepers, chefs and stewards.

Advantages

The high heat conductivity and specific heat of aluminum make possible an even cooking temperature.

Never any Tinning—Aluminum never forms a poisonous compound with any food, thus it is unnecessary to tin the surface of a "Wear-Ever" utensil.

Lightness—Aluminum is only one-third the weight of other commonly used metals.

Economy—Low in first cost, "Wear-Ever" utensils are good for years of continuous service. There is no tinning expense and they save substantially on fuel.

Surface Characteristics—"Wear-Ever" Aluminum Equipment is made of dense, hard, wrought plate aluminum. It is easy to clean and, being non-porous, food will not penetrate the metal.

Types of Equipment

Steam Jacketed Kettles* may be had in several styles, many capacities.

Shallow Type—Jacketed to top, insuring maximum cooking results. 5 to 150 gals.

Deep Type—Jacketed two-thirds of the way up; gives maximum capacity for floor space occupied. Sizes from 5 to 300 gals.

*Electrically and gas-heated kettles are also available.



Shallow Type Kettle Showing New Tubular Leg Construction

Trunnion Kettles—Where foods need to be emptied easily; sizes from 10 to 100 gals.

Range Utensils—Made in the regular "heavy duty" line for large institutions and in the "semi-heavy" weight for smaller institutions.

"Service" Equipment—Trays, pitchers, basins, griddle cake covers, thermo service rings, etc.

References

Following is a partial list of hotels and hospitals in which "Wear-Ever" Equipment is installed:

Hotels

Baltimore Hotel, Baltimore, Md.
Washington Hotel, Washington, D. C.
Hotel Taft, New Haven, Conn.
Palmer House, Chicago, Ill.
Hotel Sherman, Chicago, Ill.
Pittsburgher Hotel, Pittsburgh, Pa.
Lennox Hotel, St. Louis, Mo.
Phillips Hotel, Kansas City, Mo.
Nicollet Hotel, Minneapolis, Minn.
Hotel New Yorker, New York, N. Y.
Hotel Park Central, New York, N. Y.
Marlborough-Blenheim Hotel, Atlantic City, N. J.
Biltmore Hotel, Los Angeles, Calif.
St. Francis Hotel, San Francisco, Calif.

Hospitals

Boston City Hospital, Boston, Mass.
Palmer Memorial Hospital, Boston, Mass.
New Haven Hospital, New Haven, Conn.
Columbia Presbyterian Medical Center, New York, N. Y.
Philadelphia General Hospital, Philadelphia, Pa.
Johns Hopkins Hospital, Baltimore, Md.
Walter Reed Hospital (U.S.A.), Washington, D. C.
Mercy Hospital, Pittsburgh, Pa.
Lakeside Hospital, Milwaukee, Wis.
Firmin Desloge Hospital, St. Louis, Mo.
Barnes Hospital Groups, St. Louis, Mo.
Minneapolis General Hospital, Minneapolis, Minn.
Los Angeles General Hospital, Los Angeles, Calif.
Seattle General Hospital, Seattle, Wash.
Cook County Hospital, Chicago, Ill.

Special Consultation Service

At each of the branch offices listed above, there is a man who, through years of training and experience, is able to render valuable assistance to an architect in laying out kitchen equipments and in writing specifications.

Catalogue

A 42-page catalogue showing the complete line of "Wear-Ever" utensils will be sent promptly on request.



Foell Packing Company, Chicago, Ill.



Westboro State Hospital, Westboro, Mass.

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MUSKOGEE, OKLA. NEW YORK, N. Y. ROCHESTER, N. Y. WASHINGTON, D. C. MEXICO CITY, MEXICO

The Company

THE JOHN VAN RANGE CO.'s position of leadership in the kitchen equipment industry extends back through almost a century of competent performance and honorable dealing. Its lines of products are the result of sound and progressive manufacturing policy. Its service organization combines technical expertness with generations of practical experience. Thousands of the most representative establishments and institutions of this country and in foreign fields are John Van-equipped, and we are pleased to refer you to any or all of them for testimony as to our reliability, responsibility and competence.

Manufacturing Facilities

More important even than modern machinery is the skill of John Van craftsmen, many of whom came to Van as boys. Today, their artisanship is mirrored in every piece of John Van equipment.

Projecting their skill, labor-saving appliances, high powered machinery, experimental laboratories and all the advanced instruments of a scientific manufacturer combine in the production of John Van kitchen equipment.

Its reputation for excellence, durability and economy of operation is worldwide.

JOHN VAN ENGINEERING SERVICE

When THE JOHN VAN RANGE CO. equips a kitchen, it is not acting simply as a manufacturer but as a trained service organization. Our corps of food service specialists, engineers and technical experts constitute a service staff which is in position to handle the *complete planning and installation* of everything necessary to transform the bare room into a food service establishment ready for operation.

Throughout our connection with the project *and particularly in the early planning stages,* the experienced counsel of our executives and specialists is available in connection with matters such as organization, operation, space requirements, proportioning of facilities, preparation of preliminary plans, etc. We have acted in this capacity in connection with many of the country's largest installations.

In undertaking the outfitting of a kitchen we begin by a careful study: of the kind of service, as, for instance, the number of patients of hospital or institution; of variety of food served; of the architectural plans; and an analysis of the type, size and location of the restaurant space, the kind of facilities and type of equipment desired, and all other factors upon which a successful outfitting scheme depends. With this study as a foundation and with the experience of hundreds of such installations as a background, our engineers will prepare complete plans, layouts and specifications for the restaurant, kitchen, refrigerators, storerooms and all other food service departments, providing the architect with the necessary data concerning plumbing, wiring and steamfitting connections, and for lighting, sanitation, ventilating and other matters of this kind.

Special Technical Literature

Each class of establishment has problems peculiar to itself. Equipment and layout suitable for a cafeteria or schoolhouse may be ill-adapted to the requirements of a hotel. Hospitals require special food equipment, both for the staff and for floor service and diet kitchen.

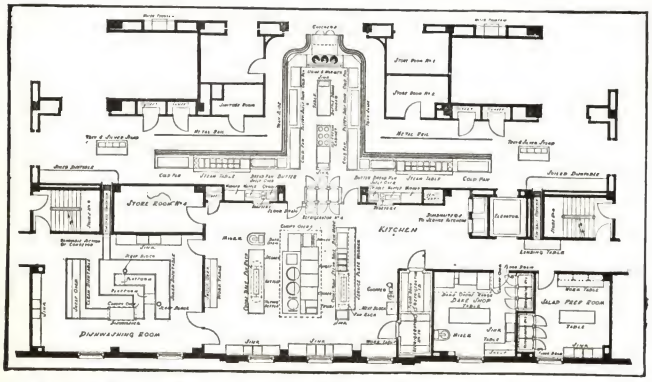
Counsel for Architects

In planning the equipment and arrangement of the kitchen, dining and banquet rooms of the new Student Union Building, University of Cincinnati, the architects, Harry Hake and Harry Hake, Jr., Cincinnati, availed themselves of the assistance of The John Van Range Kitchen Engineering Service. The section plan of the kitchen, shown at left, gives evidence of this combined effort. The John Van organization assisted Messrs. Hake in detailing the plans for the equipment; manufactured and installed same. In one semester alone 205,000 meals were served.

The photograph below shows a section of the kitchen of the Boston City Hospital, serving 12,000 meals daily, on which the architects, James H. Ritchie and Associates, were assisted by John Van.

Whether the job is large or small, feel sure that the John Van organization welcomes the opportunity to co-operate. Architects generally, even if they only face the problem of food service floors occasionally, make full use of John Van's ninety years' experience.

As soon as they draw the plans for the food service floors they commonly call into consultation our kitchen engineers. There is no obligation entailed. Waste of space can be avoided without crowding. Economy of food preparation and service can be worked out provided the kitchen engineer is summoned before planning is too far advanced. John Van engineers are accustomed to working with the architects and can furnish authentic data and sketches on the job.

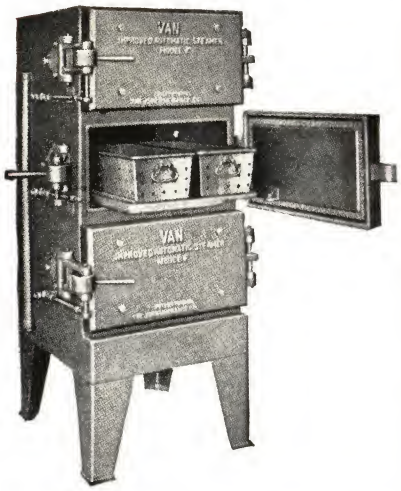


Main Kitchen Section Student Union, University of Cincinnati
HARRY HAKE AND HARRY HAKE, JR., Architects, Cincinnati, Ohio



Sectional View, Kitchen, Boston City Hospital
JAMES H. RITCHIE and ASSOCIATES, Architects

Standard Kitchen Items



This new standard improved John Van Steamer is designed for cooking at atmospheric pressure using steam reduced to 10 lbs. line pressure. Can also be furnished with necessary valves, traps, safety valves and gauges for cooking under pressure of 15 lbs. if so desired.

Four bolts make adjustment easy. Extra heavy gasket (¾ x ¾ in.) gives extra protection. Gaskets easily replaced.

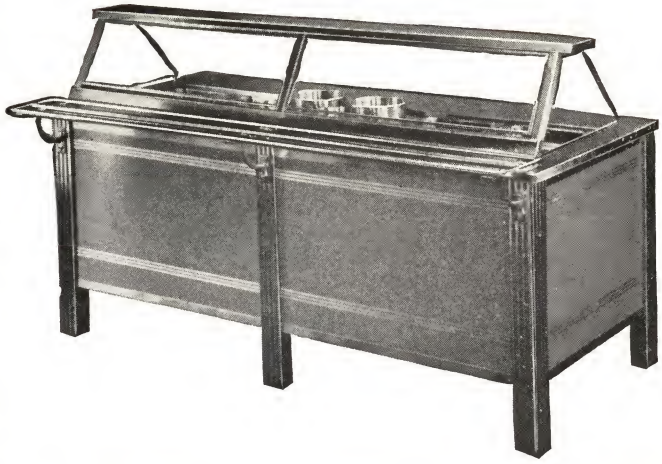
Exclusive John Van Safety Lock makes it impossible to open door while steam is on.

Stainless Steel Architectural Specialties



Illustration shows stainless elements made by John Van for a modern steel structure. We gladly consult with architects on design of stainless metal louvers, spandrels, pilasters, columns, structural sign letters, cornices, mouldings, ceilings, and the like. The long experience of this company in fabrication of stainless metal kitchen equipment assures our ability to co-operate on design and manufacture of such structural specialties.

Items of Moderne Design



The illustration shows a cafeteria counter with stainless metal trim and inset equipment. Custom-built for the specific requirements of the installation. Note that the panels are appropriate in design to the fluted legs, all in keeping with the balance of the installation. This piece is typical of the John Van abilities of design and craftsmanship. High manufacturing standards parallel good taste in design.

Residential as Well as Commercial

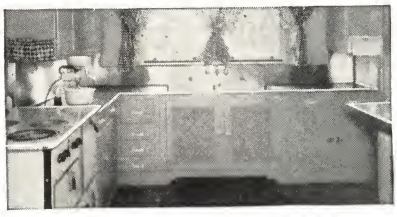


Illustration shows stainless metal sinks and counter tops, custom-made and installed by John Van. This is an example of the conditions which architects planning large residences, frequently meet when they come to the kitchen. Special situations make stock stainless kitchen equipment, sinks, counter tops, work tables, etc., scarcely usable without compromising on the plan for the kitchen. John Van welcomes the opportunity to assist in custom design and manufacture of custom-made equipment of this character.

CHARACTER OF JOHN VAN INSTALLATIONS BELOW INSPIRES CONFIDENCE

We will be pleased to furnish any architect with a list of John Van installations in his district if none of those shown below are convenient. Visit and examine carefully the kitchens and dining rooms of these buildings for evidence of the high standards of kitchen engineering, design, manufacturing and installation, set by this company.

Building and Location	Architect
Northeast	
U. S. Coast Guard Academy, New London, Conn.	James A. Wetmore
Boston City Hospital, Boston, Mass.	Jas. H. Ritchie & Assoc.
Malden Hospital, Malden, Mass.	Kendall, Taylor & Co.
Westfield State Sanatorium, Westfield, Mass.	John M. Gray Co.
Springfield Hospital, Springfield, Mass.	Stevens & Lee and Consultant Chas. F. Neegaard
East	
Lord Baltimore Hotel, Baltimore, Md.	W. L. Stoddart
Ewarts Cafeteria, Philadelphia, Pa.	Max Bernhardt
Brooklyn Technical High School, Brooklyn, N. Y.	Walter C. Martin
Cloud Club, Inc., New York, N. Y.	William Van Alen
First National Bank, New York, N. Y.	Walker & Gillette
Hotel New Yorker, New York, N. Y.	Sugarman & Berger
Lincoln Hospital, New York, N. Y.	Charles B. Meyers
Seabury Hall, General Theological Seminary, New York, N. Y.	E. L. Tilton and A. M. Githens
Pennsylvania State College, State College, Pa.	Chas. Z. Klauder
Pittsburgh Bell Telephone Co., Pittsburgh, Pa.	John T. Windrim
Southeast	
Surf Club, Miami Beach, Fla.	Russell T. Pancoast
Atlanta University, Atlanta, Ga.	James Gamble Rogers
Duke University, Durham, N. C.	Horace Trumbauer and Paul Cret
Chesapeake & Potomac Telephone Bldg., Charlestown, W. Va.	Meanor & Handloser
St. Josephs Hospital, Parkersburg, W. Va.	Fox, Duthie & Foose
West Virginia University Dormitory, Morgantown, W. Va.	Warne, Tucker & Silling
Southwest	
Skirvin Hotel, Oklahoma City, Okla.	Layton, Hicks & Forsyth
University of Texas, Austin, Tex.	Robert Leon White
Oklahoma Agricultural & Mechanical College, Stillwater, Okla.	Philip A. Wilbur

Building and Location	Architect
South	
Flint Goodridge Hospital, New Orleans, La.	Moise H. Goldstein
National Hotel, Havana, Cuba	McKim, Meade & White
Central	
Chicago Union Station, Chicago, Ill.	Graham, Anderson, Probst & White
St. Vincent Orphanage, Chicago, Ill.	Holabird & Root
The Wm. H. Block Co., Indianapolis, Ind.	Vonnegut, Bohn & Mueller
Lincoln Hotel, Indianapolis, Ind.	Rubush & Hunter
Eli Lilly & Co., Indianapolis, Ind.	Robert Frost Daggett
St. Meinrad Abbey, St. Meinrad, Ind.	Crowe & Schulte
Eloise Infirmary, Eloise, Mich.: Infirmary Building Hospital Building	Nathaniel O. Gould Maul & Lentz
Henry Ford Hospital, Detroit, Mich.	Albert Kahn, Inc.
General Motors Corp. (Numerous), Detroit, Mich.	Albert Kahn, Inc.
Polsky Department Store, Akron, Ohio	Starrett & Van Vleck
Indianapolis City Hospital, Indianapolis, Ind.	J. Edwin Kopf
Middletown Hospital, Middletown, Ohio	Harold Goetz
Frigidaire Division, General Motors Corp., Plant No. 2, Moraine City, Ohio	Schenk & Williams
National Town and Country Club, Cleveland, Ohio	Geo. B. Post & Sons
University of Cincinnati, Students Service Bldg., Cincinnati, Ohio	Harry Hake & Harry Hake, Jr.
Netherland Plaza, Cincinnati, Ohio	Walter W. Ahlschlager
Union Gas & Electric Co., Cincinnati, Ohio	Geo. B. Post & Sons and Harry Hake
The John Shillito Co., Cincinnati, Ohio	Potter, Tyler & Martin
Western & Southern Life Insurance Co., Cincinnati, Ohio	Samuel Hannaford & Sons
Foreign	
Morris Schinasi International Hospital, Manisa, Turkey	Thompson & Churchill and Morris B. Sanders, Jr.

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HOBART MACHINES ARE SOLD THROUGH LEADING KITCHEN OUTFITTERS

Illustrations show representative models only; each line of Hobart Machines comprises a range of sizes to fit any application, from the smallest to the largest kitchen or bakery.

Hobart Mixers

Built in 3, 5, 10, 12, 15, 20, 30, 40, 60, 80 and 110-quart bowl capacities. They mix, beat, whip, blend, mash. With attachments they chop, grind, slice, shred, grate, crumb, sieve, strain, etc.

Hobart Air Whip Attachment (for Hobart Mixers only) supplies advantages in regular mixing bowl operations, by better aeration; improves cake quality tremendously; reduces mixing time as much as 30% to 40%.

Hobart Glass and Dish Washers

Automatic and semi-automatic models. They wash all tableware *clean,* with a high degree of sterilization, in the shortest possible time. They carry such exclusive features as Revolving Wash Arms and the patented Dual-Drive Conveyor.

Hobart Slicing Machines

The Hobart Electric Ball Bearing Slicing Machine combines the latest features in one machine. Ideal for all boneless meats, hot or cold, cooked or uncooked, bread, cheese, vegetables, fruits, etc. Convenient to operate, speedy, quiet, and easy to clean. Maximum safety. New model in black and white Dulux, with Hobart Staysharp Stainless Steel Knife.

Hobart Air Whip Unit

Introduces a superior method of whipping cream. In a few seconds it produces 3 or more quarts of whipped cream from 1 quart of liquid cream. It whips by *air,* keeping all the freshness and sweetness of the cream. More and better whipped cream dishes can be made at less cost.

Hobart Potato Peelers

Bring new savings in time and food costs. There are four sizes, with capacities of from 8 to 45 lbs. peeled in "no time" with negligible peel loss. Quiet, speedy and watertight, they can also be used for sweet potatoes, carrots, parsnips, turnips, etc.

Hobart Food Cutters

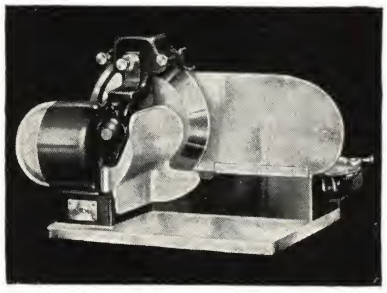
Embody distinct advances in speed, thoroughness, safety, ease of cleaning, and economy of space. They cut up meats, vegetables, firm fruits, cocoanuts, citron, nuts, boiled eggs, beets—practically anything in the food line, uniformly in a few seconds' time.

Guarantee and Service

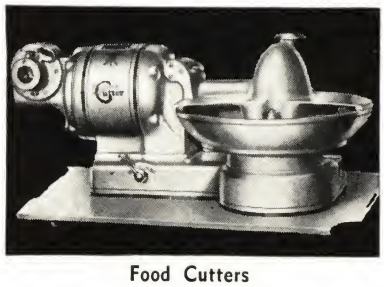
All Hobart Machines are fully guaranteed and serviced by *one* nation-wide organization. This avoids uncertainty, confusion and money-losing delays. The Hobart Engineering and Research Departments are always ready to cooperate with architects. The Architect's Data Book, A. I. A., File No. 31H2, which contains weights, dimensions, capacities and technical details of Hobart Machines, is furnished on request. Telephone your local Hobart office, or write us direct to Troy.



Peelers Air Whips



Food Slicers



Food Cutters

Dishwashers

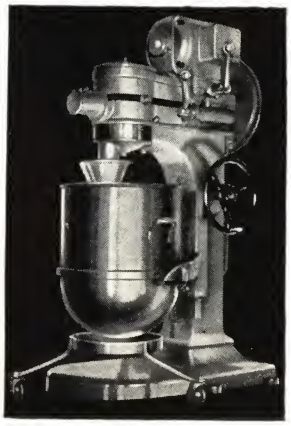
Left: compact, low-priced heavy-duty unit, "LM"
Center: "AM-5" de luxe. *Right:* "XM-2," fully automatic



Mixers

Left: A-200, "two mixers in one"—20 and 12-qt. bowls
Right: M 80 Super Mixer





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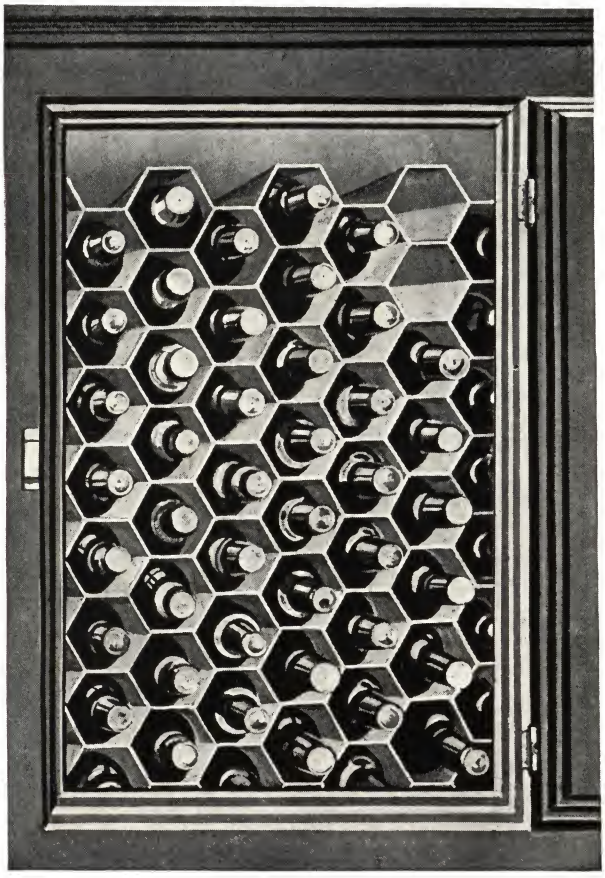
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Corks are kept wet and tight, thus retaining gas-pressure and quality of contents.

Save 40% of wall space. More economical than wooden shelving.

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Twenty-one years' faultless record for local, long distance and export service attested to by architects from coast to coast.

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Your inquiries will receive our prompt attention.

Price

$20.00, approximately, per 100 cells, f. o. b. New York City; weight, packed, 40 lbs.



Re-assembling (Setting In) Hexagonal Shelving

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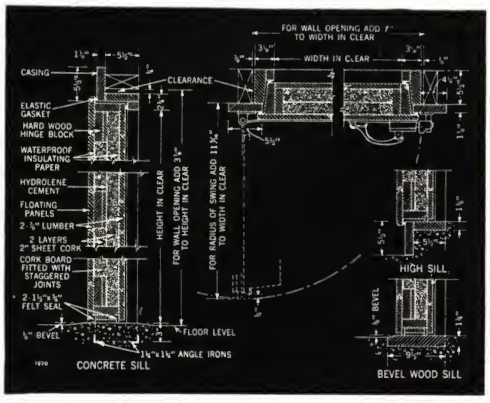
Track Doors
Auto-Close Doors
Double Doors
Metal Clad Doors

Service Doors, solid or with Windows
Brewery Windows
Can and Crate-passing Doors

Overlapping Super-Freezer Doors
Complete Refrigerator Fronts (metal or wood)
Mortuary Fronts



Standard Finish



Standard Construction with 4" Insulation



DeLuxe Finish



Entrance Door, with Vestibule

Standard Door Sizes

When ordering specify whether hinges are to be on right or left, as seen from front.

Inside Dimensions of Frame of Door in clear Width x Height (P) Indicates Popular Sizes	Approx. Shipping Weight* 4" insulated doors	Inside Dimensions of Frame of Door in clear Width x Height (P) Indicates Popular Sizes	Approx. Shipping Weight* 4" insulated doors
1'6" x 1'6"	125 lbs.	2'6" x 6'6"	365 lbs.
(P) 2'6" x 2'0"	155 lbs.	(P) 3'0" x 6'0"	375 lbs.
2'0" x 3'0"	200 lbs.	3'0" x 6'6"	410 lbs.
2'6" x 3'0"	235 lbs.	†3'6" x 6'6"	440 lbs.
2'6" x 3'6"	260 lbs.	(P)†4'0" x 6'6"	475 lbs.
2'0" x 6'0"	305 lbs.	†4'6" x 6'6"	550 lbs.
(P) 2'6" x 6'0"	340 lbs.	‡5'0" x 6'6"	590 lbs.

* Add to weights shown—20% for Sharp Freezer Doors—25% for Metal Clad Doors.

† These doors have three (3) hinges.

‡ These doors have four (4) hinges and double fasteners.

Superior Construction and Performance

Hill Cold Storage Doors are offered as the best cold storage doors that can be built for commercial purposes, and are unconditionally guaranteed to render complete satisfaction. Their construction makes them strong, durable, heat-resistant and trouble-free. Many exclusive features contribute to their superior performance. For instance:

The *famous Hill Floating Panel Front* allows free expansion and contraction of the panels without danger of warping, cracking or buckling.

All lumber is thoroughly kiln dried in our own kilns to prevent warping and cracking in use.

The inside framework is rigid, substantial and securely braced.

The hardware is of special design, heavy and durable, and attached with long screws which seat in either a hardwood backing or a special metal retainer.

All insulation is thoroughly waterproofed.

Air-tight door seals are provided by waterproof, grease-proof elastic gaskets.

Choice of Two Finishes

All Hill Doors can be furnished in either the Hill Standard or the Hill DeLuxe Finish.

Standard Finish includes: Floating Panel Front of selected No. 1 Yellow Pine; casing to match; rear backing of No. 1 Yellow Pine, Fir or Spruce; heavy, Cadmium-plated hardware. (Cadmium is more rust and corrosion resistant than ordinary galvanizing.)

Hill DeLuxe Finish, is so attractive that it distinguishes the entire cold storage installation. The regular DeLuxe Front is furnished with Floating Panel construction in Oak or Ash, the front and casing receiving four coats of finish before shipment. Stainless steel, porcelain, or fine woods also available. The DeLuxe hardware is cast bronze specially designed, modernistic in style, and Chromium-plated.

Insulation

In-fitting Doors can be furnished with the following types of insulation:

Cooler Door construction with 4" granulated cork, encased in waterproof paper.

Freezer Door construction with 4" sheet corkboard, protected with extra heavy waterproof insulating paper and waterproofed with hydrolene, applied cold.

Sharp-Freezer Door construction with 6" highest grade corkboard, protected by extra heavy waterproof insulating paper and waterproofed with hydrolene, applied cold.

Super-Freezer, over-lapping type Doors are furnished with 4", 6" or 8" of sheet corkboard, protected with waterproof paper and sealed dry with hydrolene, applied cold.



Super-Freezer Door—Over-lapping Type



Standard Track Door



Dutch Door

Send for Complete Catalog describing the entire line of Hill Doors and including illustrations, detailed drawings, specifications and all other information needed to specify or sell Hill Doors.

JAMISON COLD STORAGE DOOR CO.

Oldest and Largest Manufacturers of Cold Storage Doors in the World

Manufacturers and Distributors—Jamison, Stevenson and Victor Doors

HAGERSTOWN, MD.

SALES BRANCHES AND DISTRIBUTORS (*Carry local stock)

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CHICAGO, ILL., Stanley Baldwin, Builders Building
CINCINNATI, OHIO, A. F. Dreyer, 3119 Beaver Ave.
CLEVELAND, OHIO, Fielding-Wales Co., 520 Union Building
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NEW YORK, N. Y., Ira E. McFarland, 274 Madison Ave.
*OMAHA, NEB., Central Ice Machine Co., 5134 So. 24th St.
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*SAN FRANCISCO, CALIF., Phillips Refrig. Products, Inc., 141 Eleventh St.
*SEATTLE, WASH., Asbestos Supply Co., First Ave. So. and Jackson St.
SPOKANE, WASH., Asbestos Supply Co., 10 So. Bernard St.

LICENSED MANUFACTURERS AND DISTRIBUTORS IN CANADA, *Sherer-Gillett Co., Ltd., 116 Adelaide St., W., TORONTO, ONT.

Products

Jamison—Stevenson—Victor Types:

INSULATED DOORS for all purposes of temperature control—three types, with double or single seals of contact, and Extra Heavy Hardware: STANDARD COOLER, FREEZER and SHARP FREEZER DOORS.

VESTIBULE DOORS ("Door that Cannot Stand Open").

AUTO CLOSE DOORS. VERTICAL SLIDING DOORS.

SUPER-FREEZER DOORS (overlap type).

TRACK DOORS for overhead rails.

AUTOMATIC ICE CHUTES.

CAN and CRATE PASSING VESTIBULES.

REFRIGERATOR FRONTS (wood or metal for built-in refrigerators), DISPLAY WINDOWS.

BREWERY DOORS and WINDOWS.

DUTCH DOORS, KEG-PASSING DOORS.

Any of the above doors can be furnished metal clad for fireproof purposes.

Special Bulletins on any of above products, giving full details, sent on request.

Standard Cooler, Freezer and Sharp Freezer Doors

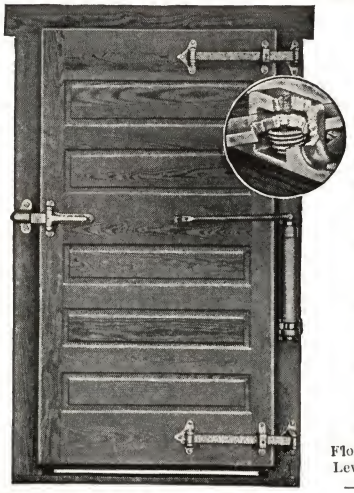


Fig. 1. Jamison Standard Cooler Door—Right Hand, Equipped with Jamison Improved Door Closer

Wall opening for Jamison and Victor Doors must be 7 in. wider and 5 in. higher than door in the clear; for Stevenson Door, 3½ in. wider and higher than door in clear

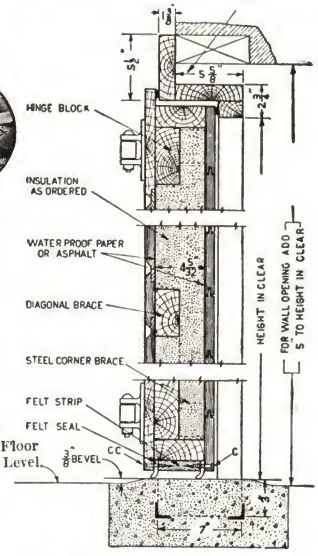


Fig. 2. Vertical Section of Jamison Door

Same for Victor Door, except for hardware. Stevenson Door, single seal and with Stevenson type hardware

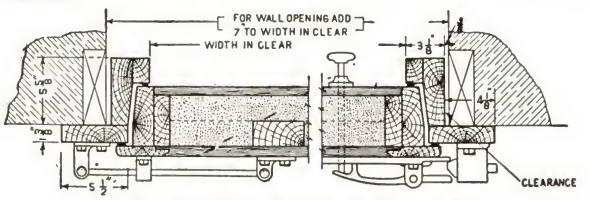


Fig. 3. Horizontal Section of Jamison Door

Victor Door same, except for hardware. Stevenson Door, single seal and with Stevenson type hardware

Standard Door Specifications

We furnish the insulated door hung in the frame, complete with all necessary hardware (galvanized) ready to set in place.

Front—No. 1 yellow pine, raised panel construction.

Back—Best grades of fir or pine, at manufacturer's option, with extra long tongue and groove to allow for contraction.

Construction—Side stiffeners built up of two timbers securely fastened together. Diagonal brace laid flat against front panel supplemented by steel angle corner braces. The whole securely lagged and screwed together forming a solid operating unit.

Insulation—Cooler, 4-in. granulated cork encased in waterproof insulating paper. Freezer and Sharp Freezer, 4, 6 or 8 in. corkboard laid in hot asphalt. Other insulation as ordered.

Sills—Three standard types—see Figs. 4, 5 and 6.

Seal—On Jamison and Victor types, two. On Stevenson, one. Special Jamison resilient pure rubber gasket. See next page.

Fittings—The primary difference between Jamison, Stevenson and Victor Doors (with exception of single seal on Stevenson Door) is in the hardware furnished:

For Jamison Doors—Jamison Wedgetight (patented) Fastener and Jamison Improved Adjustable Spring Hinge, with conical spring.

For Stevenson Doors—Improved No. 31 Roller Fastener and Stevenson Flexible Hinge and Hinge Guard.

For Victor Doors—Victor No. 200 Fastener and Victor Hinge.

Sills

Three standard types of sills are applicable to all Jamison, Stevenson or Victor Doors. These three types meet practically every need.

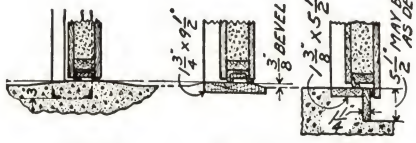


Fig. 4 Arrangement of angles for concrete sill

Fig. 5 Beveled wood sill

Fig. 6 High sill

Standard Sizes; Cooler, Freezer and Sharp Freezer Doors

We usually have in stock the following sizes for immediate shipment. In ordering or specifying be sure to state whether Stevenson, Jamison or Victor is wanted, and whether Cooler, Freezer or Sharp Freezer (see Insulation above). Be sure to state which sill is wanted and whether right or left-hand door. Fig. 1 illustrates a right-hand door—the standard designation in the cold storage industry. Left-hand door would have hinges on left-hand side. We are prepared to furnish doors of any size, design or specification required.

Stock No.	Dimensions inside of frame		*Ship. wt. crated, lbs.	Size of wall opening			
				Jamison and Victor		Stevenson	
	Width ft. in.	Height ft. in.		Width ft. in.	Height ft. in.	Width ft. in.	Height ft. in.
000	1 6	1 6	125	2 1	1 11	1 9½	1 9½
00	2 6	2 0	155	3 1	2 5	2 9½	2 3½
0	2 0	3 0	200	2 7	3 5	2 3½	3 3½
03	2 6	3 0	235	3 1	3 5	2 9½	3 3½
02	2 6	3 6	260	3 1	3 11	2 9½	3 9½
1	2 0	6 0	305	2 7	6 5	2 3½	6 3½
2	2 6	6 0	340	3 1	6 5	2 9½	6 3½
3	2 6	6 6	365	3 1	6 11	2 9½	6 9½
4	3 0	6 0	375	3 7	6 5	3 3½	6 3½
5	3 0	6 6	410	3 7	6 11	3 3½	6 9½
7	3 6	6 6	440	4 1	6 11	†3 9½	6 9½
11	4 0	6 6	475	4 7	6 11	†4 3½	6 9½
13	4 6	6 6	550	†5 1	6 11	†4 9½	6 9½
16	5 0	6 6	590	†5 7	6 11	†5 3½	6 9½

*Shipping weight shown for 4-in. insulation. For 6-in. insulation add 20% to these figures. †These doors have extra hinges.

Any of the above can be furnished metal clad for fireproofing. Adds 25% to shipping weight.



Fig. 7. Showing Jamison Automatic Trap Lift Device

Track Doors

All Jamison, Stevenson and Victor Doors can be furnished with track ports and the automatic port-operating devices. Fig. 7 shows the Jamison Automatic Trap Lift Device. Track port opens and closes with positive motion simultaneously with insulated door through a simple system of levers. No springs or delicate mechanism. Wall opening must be 8 in. higher than top of rail.

Refrigerator Fronts—Wood or Metal-Covered

For temperature control at openings, combined with unusually high standards of appearance and sanitation—as in kitchens and laboratories of hospitals, refrigerator fronts in stores and institutions, battery fronts for morgues, etc. Paneled wood fronts, or insulated metal-covered fronts and doors of galvanized, Monel Metal, chrome nickel steel, or with porcelain fronts and backs. Operating convenience, efficiency and long life characterize this equipment. Hardware is of fitting character—bronze, nickel or chromium to match.

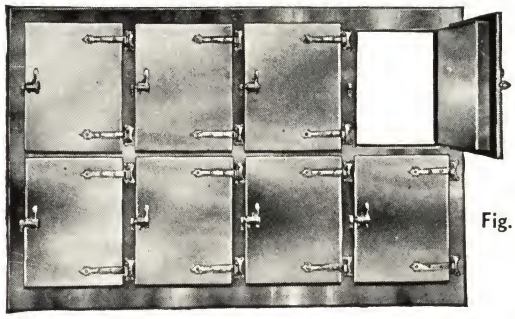


Fig. 8

All of this special equipment is built specifically to meet the temperature requirements of its particular job. We invite your inquiries.

Stevenson Super-Freezer Door (Overlap Type)

For near-zero and sub-zero temperatures—in ice cream hardening rooms, holding chambers for quick frozen foods, etc. Flat fitting against the casing and sealed by Jamison "SF" gasket, a wide, resilient, pure rubber pad.

Door is furnished with casing but without jambs, complete with all necessary hardware, and is designed to be fitted to the insulated side of the wall, swinging into the cold room. Back of door is metal covered. Insulated with 4, 6 or 8 in. of corkboard laid in hot asphalt.

Special Roller Fastener and Spring Hinge assure tight sealing at all points.



Fig. 9. Stevenson Super-Freezer Door

Standard Sizes of Stevenson Super-Freezer Doors

Be sure to state type of sill, thickness of insulation, and whether right or left-hand door is wanted. While the doors below are standard sizes, we are prepared to furnish doors of any size, design or specification required.

Stock No.	Size of door in clear		Wall opening	*Ship. wt. (crated) 4-in. insulation, lbs.	Notes
	Width ft. in.	Height ft. in.			
78	1 6	1 6	Same as door in clear	230	Unless otherwise instructed, we furnish 20-gauge galvanized sheets on back of door.
80	2 0	3 0		335	
81	2 0	6 0		500	
82	2 6	6 0		555	
83	3 0	6 0		610	
†79	3 6	6 6		720	
†86	4 0	6 6		790	

*Add to weights shown—15% for 6-in. insulation—30% for 8-in. insulation—10% for metal-clad doors.
†These doors have three hinges.

Jamison "CD" Gasket



Resilient, live-rubber of cellular construction remains pliable ten times longer than old types. Gives an airtight, conforming seal. No "pinching up" needed. Type CD (illustrated) for infitting cooler doors. SF for Super-Freezer doors.

Standard Vestibule Door

Familiarly known as the Stevenson "Door that Cannot Stand Open," is now a consolidation, in one unit, of the best features of former Jamison, Stevenson and Victor types. A necessity at every busy doorway. The Auto Close Doors, operating in the Jamison gravity cam mechanism at the top of each swinging door, remain in closed position, except when the opening is actually being used for passage by men or trucks, and return by gravity quickly to closed position. This instant closing effectively retards escape of refrigeration and prevents in-currents of warm, moist air. By bumping against the unlatching bar attached to the large cold storage door, the Auto Close Doors act to automatically throw open the outer door, speeding up traffic. The large cold storage door is built with double seals. Equipped with standard Stevenson hardware.

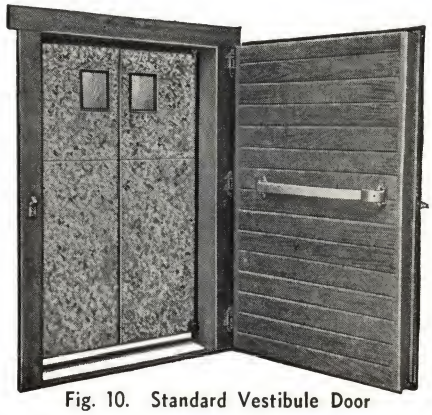


Fig. 10. Standard Vestibule Door

The Auto Close Doors are completely metal clad, being armored to a height of 48 in. with 16-gauge galvanized steel to withstand hard knocks by trucks. All Auto Close Doors have peep holes for traffic observation.

Super-Freezer Doors and Track Doors can be furnished with these Auto Close Doors forming Vestibule units.

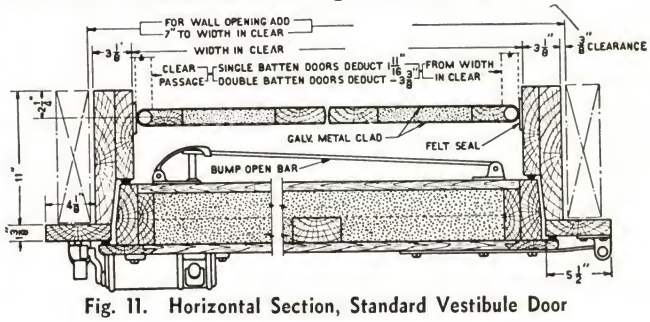


Fig. 11. Horizontal Section, Standard Vestibule Door

Standard Vestibule Door Sizes

Be sure to specify thickness of insulation, kind of sill and whether door is to be right or left hand. We are prepared to furnish cold storage doors of any size, design or specification in connection with the Auto Close Doors to form vestibule units. Jamison or Victor Hardware furnished on main cold storage door, when specified, to match existing installations.

Stock No.	Size of door in clear		Wall opening		†Ship. wt. (crated) 4-in. insulation, lbs.	Number of hinges
	Width ft. in.	Height ft. in.	Width ft. in.	Height ft. in.		
56	3 6	3 0	4 1	3 5	490	2
*64	2 6	6 0	3 1	6 5	550	2
66	3 0	6 0	3 7	6 5	660	2
69	3 6	6 6	4 1	6 11	760	3
71	4 0	6 6	4 7	6 11	830	3
72	4 6	6 6	5 1	6 11	930	3
73	5 0	6 6	5 7	6 11	1020	4

*Single Auto Close Door—all other sizes listed have Double Auto Close Doors.
All Auto Close Doors provided with peep holes; when opened at right angles, each Auto Close Door reduces clear opening 1 11/16 in.
†Add 10% to weights shown for 6-in. insulation; 20% for metal-clad doors.
Doors for Brewery use. Write for Bulletin 112.

1888

D. A. MATOT

1938

Manufacturers of Refrigerators, Cold Storage Doors and Fronts, Galvanized Steel Shelving and Meat Rails

1544 West Montana Street, CHICAGO, ILL.

For Matot Dumb Waiters, see File Index

Standard Type Cold Storage Door

Insulation—Granulated cork, Palco wool, or corkboard in any thickness from 3 to 8 in.

Exterior—Five raised panel type constructed of pine, manufactured to allow for expansion and contraction of lumber. 1¼-in. overlapping type.

Interior—V-joint tongued and grooved, kiln-dried fir lumber.

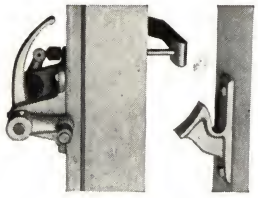
Frames and Jambs—Clear kiln-dried high grade Oregon spruce.

General Construction—Door rigidly cross braced and reinforced with galvanized corner angles.

Hardware—Heavy ½ x 2-in. steel bar strap hinges, hot galvanized. Extremely heavy self-sealing spring latch with inside releaser and outside handle at extreme edge of door, giving operator greatest possible leverage. Springs made of phosphor bronze spring wire, highly resistant to corrosion and wear. Spring has adjusting collar to adjust tension without use of tools. All hardware fastened with galvanized bolts and lag screws.

All Matot Doors, whether Standard Type or Special, are equipped with two gaskets to form a seal at two points.





Hardware

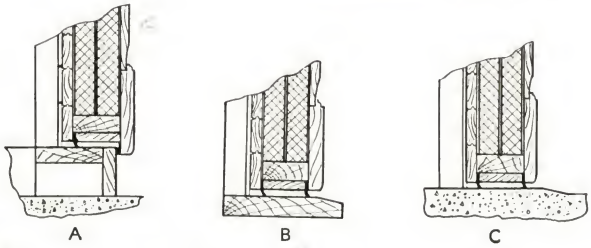


Standard Type Door

Special Doors and Fronts



We make a specialty of manufacturing special doors and fronts, constructed according to specifications, of any special lumber, i. e.: birch, oak, ash, mahogany, walnut, etc., or metal, either on front or back, or completely clad doors and frames of stainless steel, monel, porcelain, galvanized, etc. Special fronts can be made in any combination of doors, drawers and display windows desired. Inner gasket strip is adjustable to allow for proper contact after door has been set. Gasket used is special greaseproof synthetic rubber coated. Any entrance door can be furnished with either type sill as shown in illustration A, B or C. All doors and fronts are made and completely hung in factory and shipped ready to be set in buck opening. All doors made in standard or special sizes.



Types of Sills

For width of buck opening add 7 in. to clear door opening desired. Doors made in three sill types: Type A where refrigerator floor is higher than building floor; Type B beveled hardwood sill; Type C where building floor is the same level as refrigerator floor. For height of buck opening add to clear door opening desired 11 in. for Type A; 6 in. for Type B; 4 in. for Type C.



Special Front and Door



Stainless Steel Door

Matot Galvanized Steel Slatted Shelving

Shelving is made up of heavy 1-in. steel bands riveted to 1½ x 1½-in. angle frame, all hot galvanized after fabrication. Standard widths range from 16 to 18 in. but can be made in any width specified.

Shelves are supported on 1⅝-in. o.d. high carbon steel tubing, having a wall thickness of .102. Shelf brackets are adjustable, are of very simple construction, and rigidly hold the entire assembly together. Brackets are heavy malleable castings, also hot galvanized. Our method of simple and rigid construction of shelf does not require the use of corner brackets, which also helps to reduce the weight of each shelf. Shelf standards are equipped with malleable iron foot flange and acorn top.



Steel Slatted Shelves

Meat Rails

Meat Rails are of ⅜ x 2-in. band iron, hot galvanized. Brackets are of galvanized malleable iron, in lengths of 1, 4, 6 and 10 in., all adjustable. Pipe supports are of 1⅜-in. o.d., with galvanized malleable foot and ceiling flange, and equipped with adjustable coupling for variation in height.

YORK REFRIGERATION ACCESSORIES DIVISION

YORK ICE MACHINERY CORPORATION
GENERAL OFFICES
YORK, PA.
DIRECT FACTORY BRANCHES IN PRINCIPAL UNITED STATES CITIES
For Refrigeration and Air Conditioning, see File Index

All Types of Cold Storage Doors, Windows and Refrigerator Fronts

The satisfaction obtained in the operation of any Cold Storage Room is dependent, in a large measure, upon the efficiency and service of its doors. A Cold Storage Door must incorporate features and balance that offer a quick and easy means of access to rooms. It must be ruggedly built to withstand the wearing effect of operation—insulated efficiently and thoroughly to prevent infiltration of warm air.

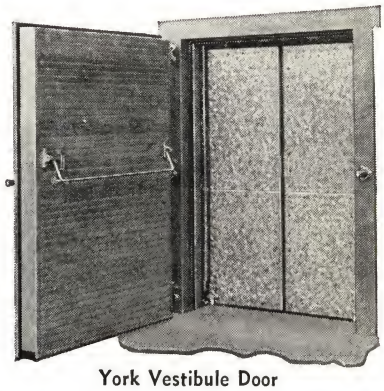
Cold Storage Doors should be selected for the service they will give over a period of years. The internal construction, strength and insulation are points of first consideration.



York Standard Cooler, Freezer, or Sharp Freezer Door



York Track Door



York Vestibule Door

York Standard Door Specifications

Lumber — Kiln dried and air seasoned old growth Douglas Fir throughout.

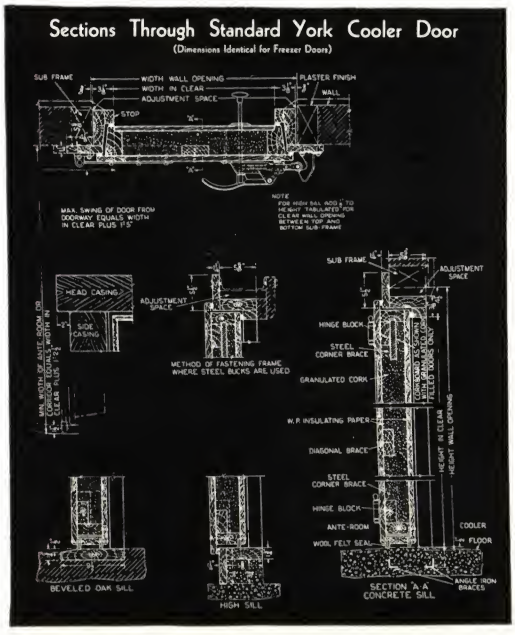
Braces—Steel angle braces in all four (4) corners. 2x4-in. wood wedged between diagonally opposite corners.

Insulation — Regranulated cork or corkboard laid in hot asphalt (other approved insulating materials available on specification).

Gaskets — Resilient sponge rubber core with wear and grease resisting cover. Sill gasket on concrete and oak sill type doors, rubber-shod felt.

Hardware—Self-adjusting type. Malleable iron castings, sandblasted and cadmium plated.

To harmonize with the general surroundings or to fulfill a specific condition, specifications may be revised to suit requirements—special woods may be substituted for the standard fir—doors may be covered with sheet metal (galvanized steel, stainless steel, etc.). For installations requiring hardware of an attractive and lasting finish YORK STAINLESS hardware is especially recommended.



The castings in this hardware are copper nickel alloy—other parts are of stainless steel. The finish is a natural soft satin. There is no plating to peel or wear through.

While all of them cannot be illustrated here, the York line of doors also includes—

Double Doors
Dutch Doors
Auto-close Doors
Can and Crate Passing Doors
Ice Cream Can Passing Vestibules
Conveyor Doors
Ice Passing Doors
Ice Chutes
Vestibule Track Doors
Super Freezer Vestibule Doors

York Standard Door Sizes Clear Width and Height

1'6" x 1'6"	2'6" x 2'0"	2'6" x 6'6"	4'0" x 6'6"
2'0" x 2'6"	2'6" x 3'0"	3'0" x 6'0"	4'6" x 6'6"
2'0" x 3'0"	2'6" x 3'6"	3'0" x 6'6"	5'0" x 6'6"
2'0" x 6'0"	2'6" x 6'0"	3'6" x 6'6"	

To determine wall openings for cooler or freezer doors add to clear opening:

Height from floor line to top buck on concrete or oak sill doors.....5"

Height between bottom and top buck on high sill doors .....5½"

Width between bucks, concrete, oak or high sill doors .....7"

If Your Files Do Not Contain a Copy of The York Cold Storage Door Manual for Architects and Engineers, please write for a copy.



York Superseal Low Temperature Door



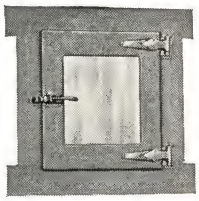
York Bunker or Reach-in Door

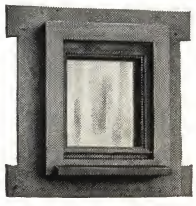


York Super-Freezer Door



York Vertical Sliding Door





York Cold Storage Windows Showing Front and Rear Construction.

KOCH REFRIGERATORS

A DIVISION OF KOCH BUTCHERS' SUPPLY COMPANY

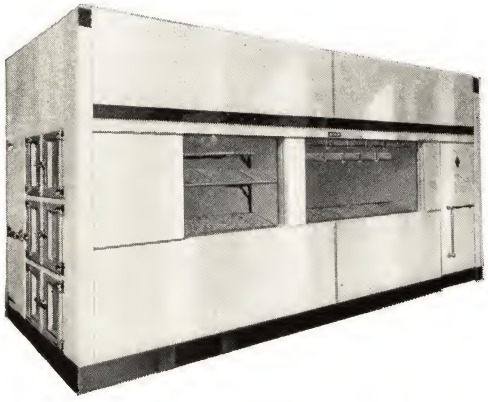
Manufacturers of General Refrigerator Equipment for Institutional, Large Residential, and Commercial Use

NORTH KANSAS CITY, MISSOURI

THE COMPANY—Koch was established in Kansas City nearly sixty years ago. Originating as a small business catering to nearby trade, it has grown until today it is one of the oldest and largest manufacturers of commercial, institutional, and large residential refrigerators in the world. It is completely equipped for economical manufacture with the most modern machinery, skilled craftsmen, and excellent shipping facilities.

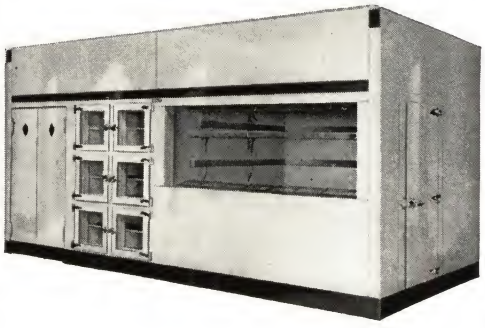
THE PRODUCTS—All types of institutions, large residences, food markets, restaurants, stores, hotels, and clubs are served by Koch refrigerator equipment. The range of products includes walk-in coolers, reach-in refrigerators, refrigerated display cases, cold storage doors, bottle beverage coolers, refrigerators for florists, bakers, hospitals, and refrigerators of special design for all purposes.

KOCH WALK-IN COOLERS

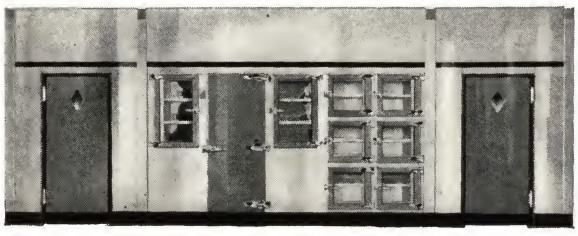


COMPARTMENT COOLERS

Koch compartment coolers are several refrigerators grouped in one assembly and separated by partitions to permit storage of various products at different temperatures. Special coolers can contain as many compartments as desired, built to conform to any practical arrangement. All compartment coolers are made to special order.



Koch coolers can be furnished with any part of the exterior finished in porcelain or Dulux, plain or paneled oak, stainless steel, or any other special finish. There is no limit to the rich colors and designs that are available.



Koch coolers are built with either corkboard or Zeropak insulation in walls of any desired thickness. All four walls, top, bottom, solid doors, and partitions are insulated, as specified. Insulation is forced into every hollow part of the frame, and sealed with asphaltic cement.

KOCH WALK-IN COOLERS are built in sections to pass through ordinary doorways and are shipped knocked down. Before shipment, however, every Koch cooler is completely set up at the factory, inspected, and marked so that installation is easy. All sections fit together with double tongue-and-groove joints. There is no chance for air leakage when such joints are drawn up tightly. Sections are fastened together by full length tie rods.

FRAMES OF KOCH COOLERS are built for utmost strength and permanence. They are of seasoned, kiln-dried fir, odorless and moisture resisting. The frame is reinforced by steel tubes. Swinging doors and windows are gasketed and offset. Entrance door sills are regularly covered with heavy galvanized iron. Service windows are glazed with three panes of glass; stationary windows are triple-glazed and set airtight in live rubber.



PLAIN STORAGE COOLERS

Storage coolers for use in back rooms, kitchens, etc., are heavily insulated, of sturdy construction, and built to withstand severe outside temperatures. All plain storage coolers are built to special order in any required size. Exterior may be of wood, or any other desired finish. Construction conforms to any practical requirements.



KOCH REACH-IN REFRIGERATORS—SERIES 7500

WHERE TEMPERATURES ARE HIGH—Back in the kitchen about the only heat relief is the exhaust fan. It helps; but the temperature is always high and the refrigerator is always blanketed with heat over the entire surface. The demands on a refrigerator are great. It must be perfectly built to operate at the minimum of expense.

The new Koch Series 7500 Commercial Refrigerators are ideally suited to the requirements of residential, hotel, restaurant, and institutional kitchens where the temperatures are always high. Series 7500 Commercial Refrigerators are equipped with solid, heavily-insulated doors to withstand the penetration of heat.

OUTSTANDING IN DESIGN—The Koch Series 7500 Refrigerators are built to the same high standards as other fine Koch products. They are outstanding both in design and construction. Insulation throughout is Armstrong Type LK Corkboard, three inches thick, thoroughly sealed with asphaltic cement against penetration of moisture and air.

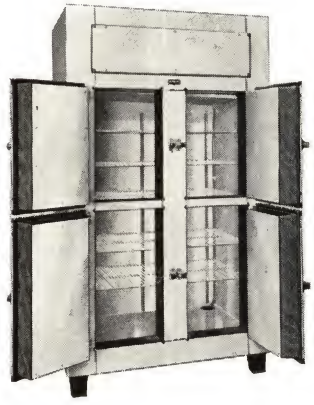
Fronts and ends are of triple-coated white porcelain, baked on to 18 gauge enameling iron. Interior of food compartments, including floors, are porcelain lined. Gasketed doors have rugged, trouble-free hardware that will give years of service. Door fasteners may be padlocked to give protection against pilfering.

PERFECT TEMPERATURE AND HUMIDITY CONTROL—Series 7500 Koch Commercial Refrigerators are equipped with coils, drip pans, and baffles. These refrigerators are equipped with fin coils suspended at the extreme top, behind an access panel, giving peak refrigeration efficiency and air circulation as well as uniformity of temperature and correct humidity. Coils are furnished for all commonly used refrigerants. Coil compartments are lined with heavy rust-resisting steel.

ACCURATE CONSTRUCTION—The experience of more than half a century of refrigerator manufacture goes into every Koch Series 7500 Refrigerator. Frames are absolutely true, both vertically and horizontally. Insulation is thoroughly installed.

EQUIPMENT—Food compartments are equipped with heavy, electro-welded, retinned, bar-type shelves. Shelves may be adjusted on ½-in. centers to any height so that no space need be wasted. An ample number of shelves is provided for complete flexibility of use. Drains in all standard models are in bottom rear.

MODEL 7504—(Shown below.) A sturdy refrigerator built for complete flexibility of use. It has four service doors to food compartments.





MODEL 7514—Shown above.) Similar to Model 7504, with four service doors to food compartments. It is, however, slightly larger in interior and exterior dimensions.

MODEL 7526—(At right.) The largest stock size Series 7500, with six service doors. This model can, however, be built to special order in longer lengths with additional compartments and doors.





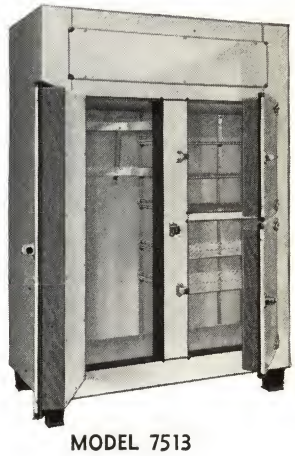
MODEL 7525

MODEL 7525, 7513—These models have meat compartments behind full height solid doors. Meat compartment is equipped with steel meat rails and hooks.

SPECIFICATIONS

Model No.	7504	7513-7514	7525-7526
Exterior width	50½"	58½"	84½"
Exterior height, inc. legs	86¾"	86¾"	86¾"
Exterior depth	32¾"	32¾"	32¾"
Depth over hardware	36¼"	36¼"	36¼"
Depth over open door	53 "	57¼"	57¼"
Food chamber width	43½"	51½"	77½"
Food chamber depth	24 "	24 "	24 "
Food chamber height	58 "	58 "	58 "
Sq. ft. exterior surface	115	128	169
Sq. ft. shelf area	42½	23¾—50½	76—52¾
Cu. ft. capacity	43½	52½	79
Height top doors	25 "	25 "	25 "
Height bottom doors	30 "	30 "	30 "
Height large doors	....	57 "	57 "
Width doors	14½"	18½"	18½"
B.t.u. rating*	27,000	30,000	40,000
Crated shipping weight, lbs.	1,325	1,465	1,850

*Figures are for a 24-hour day and include conduction and average service losses. They are based on a 90° room temperature and normal refrigerator temperature. Figures will vary depending on service.

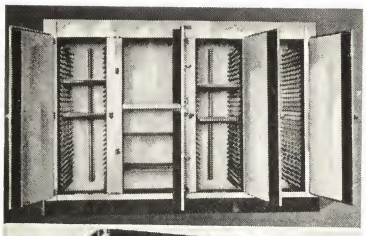


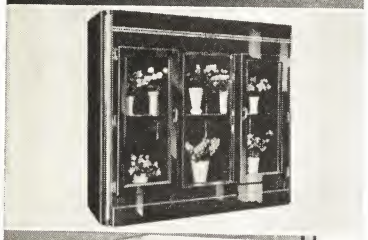
MODEL 7513

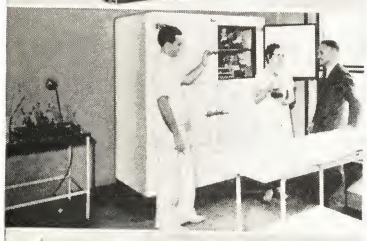
STANDARD AND SPECIAL BUILT REFRIGERATOR EQUIPMENT

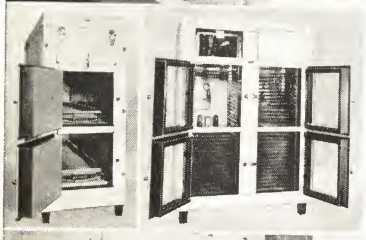
To Meet Every Refrigerator Requirement

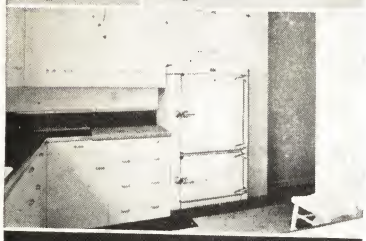
Although there are hundreds of different models of fixtures in the standard Koch line, there are countless situations which call for specially built, made to measure equipment. Koch maintains a complete staff of designers, technicians, and layout men for such problems. Sketches and layouts are available to you at any time. Merely send a rough sketch and dimensions. There is no obligation, of course.













REFRIGERATORS FOR BAKERS

Dough retarding refrigerators for bakers, in three, four, and five-door models. Insulation is thorough and heavy. There is ample space for storage of perishables used by bakers, such as milk, lard, eggs, etc., as well as large compartments for dough trays. Larger sizes can be built to order.

REFRIGERATORS FOR FLORISTS

Standard florists' refrigerators are made in two and three-door models with black Dulux exterior and dull satin black interior. There is hardly any limit, however, to the sizes, designs, and finishes that can be combined in manufacturing refrigerators for display and preservation of cut flowers.

HOSPITAL REFRIGERATORS

Koch manufactures refrigerators for all uses in hospitals and institutions. The illustration shows a blood bank in a Tennessee hospital, a refrigerator that must always maintain a constant temperature and humidity so that human blood is kept in perfect condition for transfusions.

SPECIAL TYPE REFRIGERATORS

There is a special type Koch refrigerator for every purpose. Mortuary refrigerators, as shown on the left, are made in many sizes and styles, to order. The cabinet on the right is for germination of seeds. The Koch technical department is glad to help you solve any special refrigerator problem.

LARGE RESIDENTIAL REFRIGERATORS

Large domestic refrigerators are made to order to fit into modern kitchens. These can be manufactured in a variety of styles, as desired. The refrigerator shown has a 14-cu. ft. capacity, yet it occupies only 6 sq. ft. of floor space and fits snugly in the line-up of cabinets and fixtures.

DRY STORAGE BOTTLE BEVERAGE COOLER

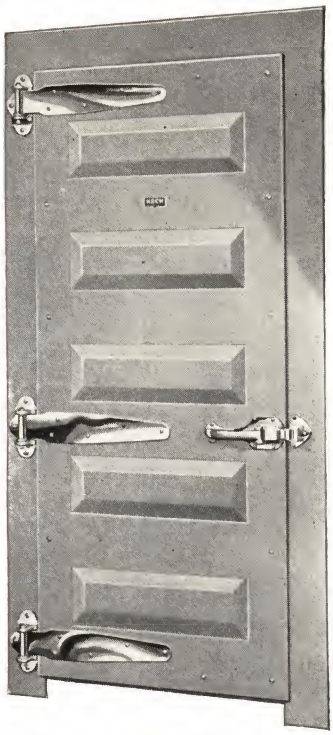
The Koch Zerostream is an entirely new type of dry storage cooler for bottled beverages. Made in 18 and 36-case capacities, this new type fixture with chill bottled goods to temperatures below freezing in super-quick time. There is no muss, no wiping of bottles, no soaked-off labels.

REFRIGERATED DISPLAY CASES

Koch manufactures more than one hundred different stock sizes and styles of refrigerated display cases for markets, groceries, and food stores. Standard finishes are porcelain or Dupont Dulux. Insulation can be corkboard or Zeropak. There is a Koch display case for every need.

For complete information, call the Koch distributor in your city or write to Koch Refrigerators, North Kansas City, Mo.

KOCH COLD STORAGE DOORS



Above is a Standard Door. Below is a Track Door. Track Doors can be built in any size for abbatoirs, packing plants, produce houses, etc.



ALL TYPES AND SIZES—Koch Cold Storage Doors are built in all types and sizes for every cold storage room requirement. Koch doors are the result of nearly sixty years of refrigerator construction experience. Special design and rigid bracing prevent sagging. All doors are regularly built and shipped with frame and hardware complete.

STANDARD SIZES
(Openings in the Clear)
(Any special size to your order)

Width	Height	Type of Door
2′ 6″	2′	Bunker
2′	6′	Cold Storage
2′ 6″	6′	Cold Storage
2′ 6″	6′ 6″	Cold Storage
3′	6′	Cold Storage
3′	6′ 6″	Cold Storage
3′ 6″	6′ 6″	Cold Storage
3′ 6″	7′ 2″	Track
3′ 6″	9′ 2″	Track
3′	10′ 2″	Track
3′ 6″	10′ 2″	Track

GENERAL SPECIFICATIONS KOCH COLD STORAGE DOORS

MATERIALS — CONSTRUCTION—Unless otherwise specified, all doors and frames are constructed of odorless, select, kiln-dried fir. All doors are of the offset and overlapping type with two points of contact each, sealed with cushion gasket.

FINISH—All doors are regularly finished with natural prime coat only. Other finishes are furnished to special order only.

HARDWARE—Unless otherwise specified, all hardware is cadmium. All Standard and Sharp Freezer Doors (except the smaller sizes) are hung with three hinges. All fasteners are automatic, easily operated, and installed with push rods for opening from the inside. Fasteners have special strikes which may be adjusted to compensate for the natural compression of the cushion gasket.

DRAG SEAL—The bottoms of all Koch cold storage doors have a renewable drag-seal which contacts the room floor when door is closed. This prevents loss of refrigeration beneath door.

TYPES OF SILLS—Sills are of three types, each suited to a special condition.

(1) A high wood sill is used when there is no trucking through the door, and the level of the cooler floor is higher than the level of the outside room floor.

(2) A beveled oak sill can be used when the floor of the cooler and the outside floor are identical in height, or where there is no more than ½-in. variation in the height of the floors. Trucks can be run over this type sill.

(3) Angle iron sills (two 1½-in. angle irons) are used with cement floors when there is trucking through the doors. On this type sill, cement covers the angle irons. Cement must be ½-in. higher over the threshold than the floor level of the outside room. Angle irons are buried 2½ in. below the cooler floor level. This is necessary to reduce the wear on the drag seal under the door. The slight gentle elevation of the sill makes it easy for trucks to pass through the door.

INSULATION—Doors are insulated with either granulated cork or Armstrong LK corkboard as specified. When granulated cork is used, it is tightly packed and supported to prevent settling, and both sides are sealed with waterproof insulating sheathing. Corkboard is set in layers with offset joints, then sealed with asphaltic cement.

DOOR TYPES—Koch Cold Storage Doors are made in four types to fulfill all cold storage requirements.

Standard Doors—Insulated with either 4 in. of granulated cork or corkboard, as specified.

Sharp Freezer Doors—For use where very low temperatures are maintained. Insulated with 6 in. of corkboard.

Track Doors—Insulated with either 4 in. of granulated cork or corkboard as specified. In general, they are the same as Standard Doors except that a trap door is provided for the track. The track trap door is automatically operated with the opening and closing of the main door by a simple, trouble-free mechanism.

Special Cold Storage Doors—Koch builds cold storage doors of any desired size, finish, or thickness of insulation, on order.

SPECIAL EQUIPMENT—Koch can furnish complete insulated insulated cooler fronts with doors, service windows, or full display windows. Complete specifications, sketches, and quotations on problems of this nature will be furnished on request, without obligation.

HOW TO DETERMINE WALL OPENINGS

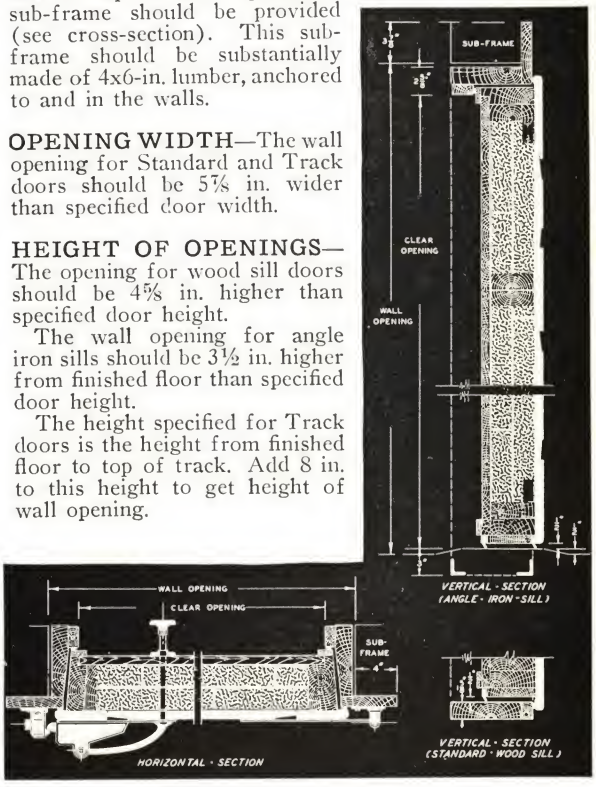
SUB-FRAMES—On each side and at top of wall opening a sub-frame should be provided (see cross-section). This sub-frame should be substantially made of 4x6-in. lumber, anchored to and in the walls.

OPENING WIDTH—The wall opening for Standard and Track doors should be 5⅞ in. wider than specified door width.

HEIGHT OF OPENINGS—The opening for wood sill doors should be 4⅝ in. higher than specified door height.

The wall opening for angle iron sills should be 3½ in. higher from finished floor than specified door height.

The height specified for Track doors is the height from finished floor to top of track. Add 8 in. to this height to get height of wall opening.



McCRAY REFRIGERATOR COMPANY

Manufacturer of Refrigerators for All Purposes

855 Lake Street
KENDALLVILLE, IND.

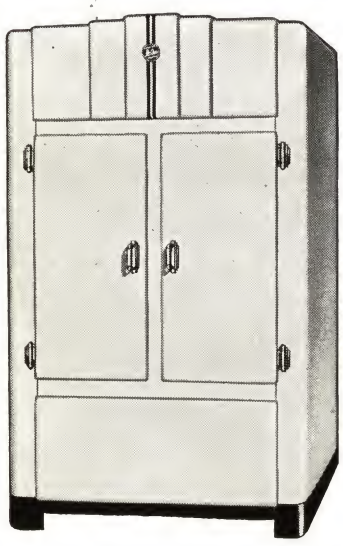
SALESROOMS IN ALL PRINCIPAL CITIES—SEE TELEPHONE DIRECTORY

Products

REFRIGERATORS, DISPLAY CASES, COOLERS and COMPRESSORS for all purposes.

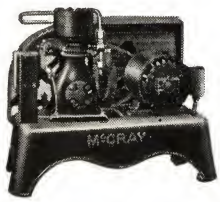
Custom Built Refrigerators Plus Exact Refrigeration by McCray

The smart town house or fine country home can now be equipped with both refrigerators and refrigeration especially designed by McCray. Custom built refrigerators have long been an outstanding product of the McCray organization. Now McCray refrigeration is available as well—refrigeration the chief characteristic of which is exact engineering. For each custom built refrigerator McCray Engineers specify the precise mechanical requirements. This procedure, which in itself is so vastly different from the methods of mass production, marks a distinct advance in the making of complete made-to-measure refrigerating equipment. For years the finer homes of America have been equipped with McCray refrigerators. The outstanding early success of the McCray factory was, perhaps, in this particular field—that of specially designed refrigerators. The reputation gained in those years has continued to distinguish McCray craftsmanship. Today the McCray nameplate is an instantly recognized mark of quality.



McCray Model RF-418

Complete with McCray compressor, coils and valves, Model No. RF-418 assures efficient, economical refrigeration. Compressor is installed in base of cabinet. Exterior front and both ends, as well as entire interior, of white Duralite. Walls approximately 4 in. thick, insulated with 3 in. of pure corkboard sealed with hydrolene. Metal bar shelves electrically welded. Chrome plated bronze hardware, self-closing fasteners. Available with ice maker. Dimensions 3 ft. 10¼ in. wide; 2 ft. 4 in. deep; 6 ft. 6 in. high.



McCray Compressor
Specially engineered for use with McCray cabinets. Model 13 illustrated.

Individually Designed Refrigerators and Made-to-Measure Refrigeration

The McCray staff counts among its members, engineers who are masters of design and leaders in the field of refrigeration engineering. In this department the meeting of exact specifications is of paramount importance. The record in designing refrigerators for fine homes and producing refrigeration of precise requirements is already an impressive one. This staff of engineers is ready to give its best to building and modernizing programs.

With the McCray set-up, the machine equipment for any installation is neither over-specified nor under-specified. Every installation has that particular machine designated that will give highest efficiency. With the same purpose in mind—to secure perfect refrigeration—McCray units not only produce certain temperatures but also definite conditions of relative humidity, for proper preservation of foods. This is the supreme objective of all McCray craftsmanship.

Custom Built Refrigeration for Hotels, Clubs and Institutions

McCray builds to order to meet every refrigeration need. Special engineering service, covering both machine and cabinet requirements, is offered to architects, without obligation. McCray's nearly 50 years' experience is at your command in meeting all refrigerator needs whether commercial or residential. This service is available direct from the factory or through McCray branch offices located in all principal cities.

McCray Model RE-664-S

Equipped with McCray coils and ready for use with any type of electric refrigeration. A McCray compressor, specially engineered for use with this model, and the combination of McCray case, coils and compressor, gives triple insurance of efficient, economical operation. Both interior and exterior, front and ends of cabinet are of white porcelain. 3 in. of pure corkboard sealed with hydrolene insulates the walls. Size of model is 6 ft. 5⅛ in. wide; 2 ft. 11⅜ in. deep; 6 ft. 10¼ in. high.

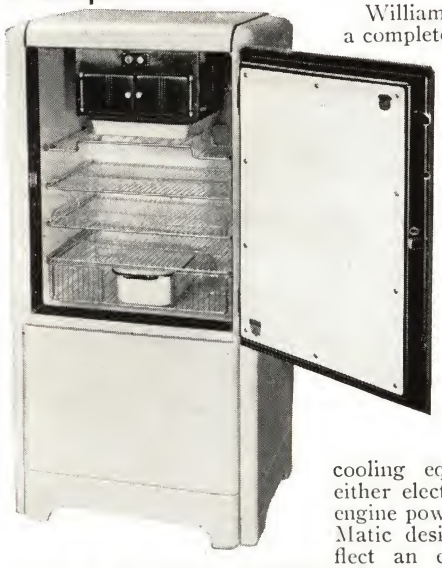


WILLIAMS OIL-O-MATIC HEATING CORPORATION

Manufacturers of Ice-O-Matic Household and Commercial Refrigeration, Electric and Gasoline-Powered Compressors, and Milk Cooling Equipment

BLOOMINGTON, ILL.

A Complete Line



Williams Ice-O-Matic offers a complete line of refrigeration equipment for household, commercial, and milk cooling use. Domestic electric models, in both a popular priced standard line and a de luxe, range from 4 to 19 cu. ft. in size; heavy-duty cabinets up to 66 cu. ft. capacity. A full line of compressors and 250 types of cooling coils, both flooded and dry; and forced draft unit coolers. Ice-O-Matic milk cooling equipment is available either electric motor or gasoline engine powered. Williams Ice-O-Matic design and operation reflect an experience of twenty years in designing and building devices for temperature regulation and control.

OVERALL DIMENSIONS							
	Model 4 cu. ft.	Model 5 cu. ft.	Model 6 cu. ft.	Model 8 cu. ft.	Model 13 cu. ft.	Model 16 cu. ft.	Model 19 cu. ft.
Height	52 1/2	56 1/2	58 3/4	63	67 7/8	69 3/4	71 1/2
Width	24 3/8	26 3/8	29	31 7/8	40	44	47
Depth	24 1/16	24 1/16	24 11/16	24 15/16	26	26	28



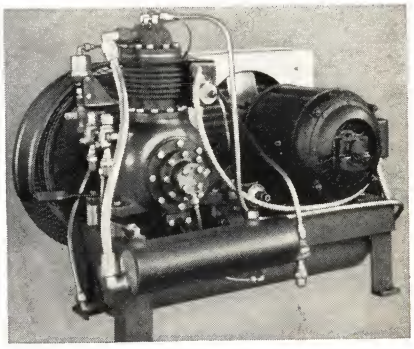
Reach-in Cabinets

Two models of 32 and 46 cu. ft. net capacity. Touch operation hardware, porcelain interior, adjustable shelves. For restaurants, taverns, dairy and delicatessen stores, markets, hotels, clubs and other commercial installations. Engineered blower-type cooling coil.

OVERALL DIMENSIONS			
32 cu. ft. model	80" high	55" wide	31 1/2" deep
46 cu. ft. model	80" high	68" wide	34 1/2" deep

Commercial Compressors

Ice-O-Matic compressors in 10 sizes (electric or gasoline driven) 1/6 to 10 hp. Combination air-water cooled units solve condensing water problems and give low operating cost.

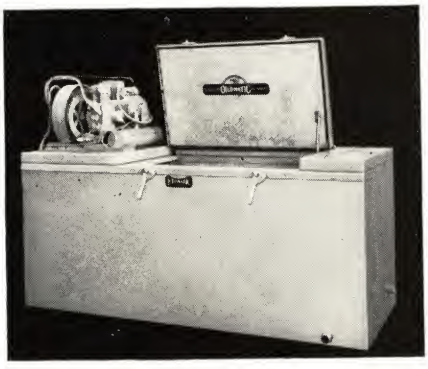


These Ice-O-Matic "WATER SAVER" compressors are available in all sizes up to and including 2 hp.

Positive pressure lubrication in all sizes of compressor units gives lubrication protection equal to that found in the highest grade automobiles.

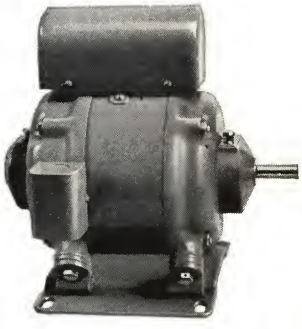
Milk Cooling Equipment

Williams Ice-O-Matic offers self-contained cooler units, complete with cabinets, tanks for remote compressor installation, or compressors and coils of various capacities to equip existing or special built cabinets. New cold spray feature speeds cooling of milk in cans and requires no pre-cooling. Cabinets available with capacities of from 2 to 20 ten-gallon cans.



Compressors either electric motor or gasoline engine driven. Water circulating pump of Williams design, powered from compressor.

Williams Capacitor Type Motor



Long life, fractional horsepower alternating current motors for all purposes. "Capacitor Start" or "Capacitor Start and Run" from 1/6 to 1/3 hp. "Split Phase" from 1/15 to 1/6 hp. Williams motors exceed by a wide margin the requirements of the National Electrical Manufacturers Association, the American Institute of Electrical Engineers and the National Board of Fire Underwriters. Each motor is built with a reserve capacity for emergency requirements. No radio interference.

Engineering Service

Engineering service is available to architects and builders.

YORK—REFRIGERATION DIVISION

YORK ICE MACHINERY CORPORATION

GENERAL OFFICES

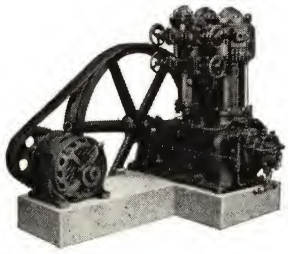
YORK, PA.

DIRECT FACTORY BRANCHES IN PRINCIPAL UNITED STATES CITIES

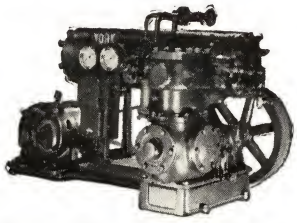
For other York pages, see File Index

REFRIGERATION—AIR CONDITIONING—MILK AND ICE CREAM PLANT EQUIPMENT

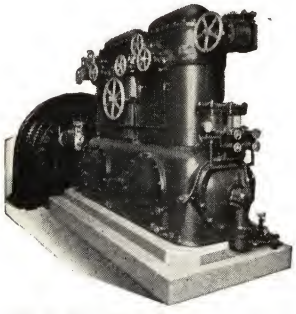
From the Largest to the Smallest—the York Line Is Complete



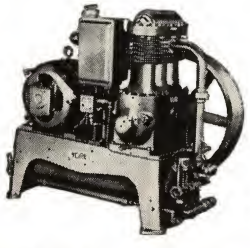
York Vertical Enclosed Single Acting Compressor for Ammonia



York Full Automatic Self-contained Refrigerating Unit for Ammonia



York Vertical Single Acting Freon (F-12) Compressor



York Full Automatic Self-contained Refrigerating Unit for Freon

And with its complete line, York offers a complete service to industry and business. York knows that it is the finished plant in operation which determines how good an investment the purchaser has made. Hence throughout the years York has created and developed an organization in which the purchaser of York equipment can concentrate full responsibility for the over-all design and proper functioning of the completed plant.

General Purpose Refrigeration Division

Compression refrigerating machines and complete systems for use with ammonia, Freon (F-12) and carbon dioxide; ammonia absorption refrigerating systems especially adapted to operation with exhaust steam.

Booster and compound compression systems for special low temperature applications.

Brine and water coolers of the York Patented Vertical Trunk Type. Special cooling applications with the York Patented Gravity Feed and Liquid Recirculating Systems.

Air Conditioning Division

Complete air conditioning systems for maintaining proper atmospheric conditions for comfort or for industrial processes. Available as central or individual unit systems. Self-contained units include spray type air conditioners and coil type coolers.

Ice Plant Division

Ice making machinery and ice plant equipment—a complete service to the ice industry.

York Vertical-Trunk Freezing Systems of the removable can type; Arctic-Pownall Stationary Can Freezing Systems.

Complete plants for production of ice in its most useful form, *"FlakIce Frozen Water Ribbons."*

Dry Ice Division

Complete systems for the production of dry ice and liquid carbon dioxide, including special by-product system which permits the efficient manufacture of dry ice with comparatively small plants at any location in the United States.

Ice Cream and Milk Plant Division

Refrigeration and complete equipment for ice cream making, dairies and milk products—ice cream freezers, homogenizers, milk and mix coolers, pasteurizers, storage and aging tanks, high-temperature short-time plate pasteurizers, etc.

Commercial Division

Self-contained refrigerating units for meat markets, groceries, delicatessens, florists, restaurants, hotels, hospitals and special applications.

Marine Division

Equipment and engineering for all marine refrigerating and air conditioning requirements.

Accessory and Supply Division

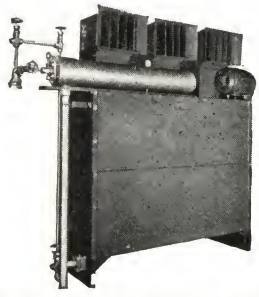
York Ammonia and Carbon Dioxide Valves and Fittings, Condensers, Brine Coolers, Coils, Receivers, Ice Cans, etc. Yorkco Cold Storage Doors. Yorkco Oils and all accessories and supplies for the operation of refrigerating plants.

Export Division

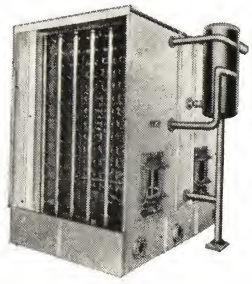
Adapts to varying needs of foreign markets, the products and service of all other York divisions. Export Division, 42nd Street and Second Avenue, Brooklyn, N. Y.

Service and Maintenance Division

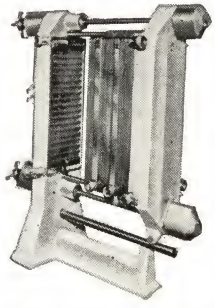
York service is at your command by communicating with the nearest of our direct factory branches. Behind every piece of York equipment are the entire resources of the York organization.



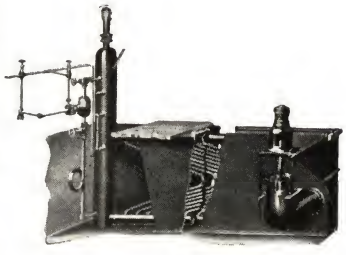
York Industrial Coil Type Air Conditioner



York Dehumidifier with Coils



York Plate Heat Exchanger



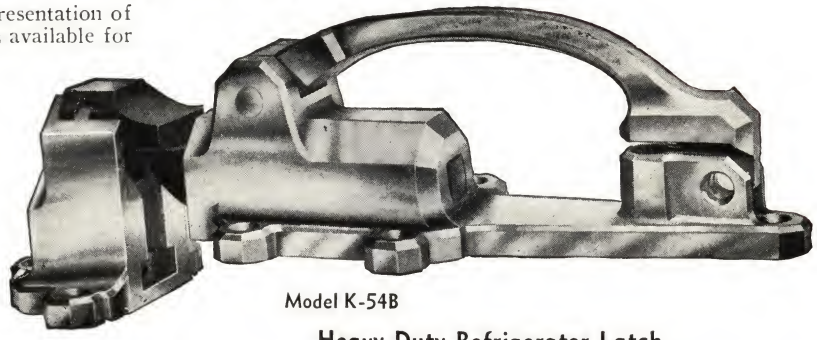
York Patented Vertical Trunk Cooler

KASON HARDWARE CORPORATION

MAIN OFFICE AND FACTORY
127-137 Wallabout Street, BROOKLYN, N. Y.
TELEPHONE
EVergreen 7-1173
SALES REPRESENTATIVES IN PRINCIPAL CITIES THROUGHOUT THE WORLD
For Kason Show Case and Store Fixture Hardware, see File Index

KASON REFRIGERATOR HARDWARE

Limitation of space does not permit a complete presentation of the comprehensive line of Kason Latches and Hinges available for commercial refrigerators, refrigerated display cases, coolers and freezers. These are set forth in detail in 76 pages of Catalog No. 38 which will be cheerfully mailed to the profession. The models presented herein, however, will serve to illustrate the outstanding features of the Kason Products and will indicate the reasons for their world-wide acceptance as the finest items of hardware available to the refrigerator industry.



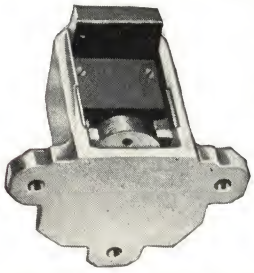
Model K-54B

Kason Forged-Brass Hardware

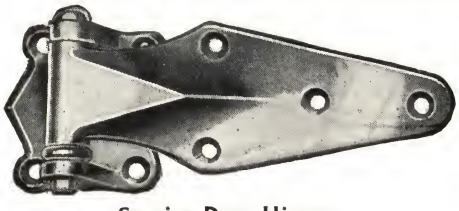
The subject of the serviceability of the refrigerator's hardware requires the special attention of the architect. Refrigerator hardware is subjected to unusual climatic and atmospheric conditions which react unfavorably on ordinary castings of even the hardier metals. To overcome this problem, Kason has developed a complete line of Forged-Brass Hardware of *super-service* quality. Forged-Brass providing as it does an elastic limit of 30,000 lbs. per sq. in., a tensile strength of 57,000 lbs. per sq. in., a Brinnell hardness of 110 and a 25% elongation in 2 ins., is the hardiest metal construction known to the industry and for the same reason Kason Forged-Brass Latches and Forged-Brass Hinges are among the sturdiest and most enduring items of hardware manufactured for refrigerator service. To avoid the hazard of interrupted refrigerator service due to broken latches or hinges, it is strongly urged that Forged-Brass be specified for these items of hardware.

Latches of Massive Sealing Power

Every line and feature of the Kason Latches is directed toward sealing the refrigerator door airtight and to guard it vigilantly against costly air leaks. The slanting tongue of the latch acts like a wedge which is forced deeply into its keeper by a dependable, relentless spring. The direct action of the simple push-pull principle of the latch provides maximum tension. The adjustable Micrometer Strike makes it possible to take up the natural play of the door (see below) and assures a perfect closure throughout the life of the refrigerator.



The Patented Micrometer Strike—This is a proved, practical device for making offset adjustments to align the body of the latch perfectly with its strike. A turn of the screw raises or lowers the strike in its socket to any desired height. Adjustments of hairline fineness can be made whenever desired to take up the natural play of the door or when the gasket becomes flattened, so that the door is always sealed air-tight with each simple operation of the latch.



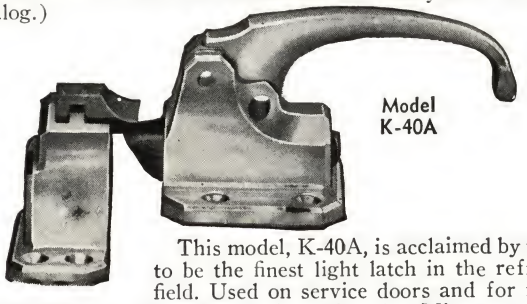
Service Door Hinges

The model illustrated is available in two sizes—No. 1070A—5-in. strap and No. 1071A—6½-in. strap. Two other models for corresponding sizes are made with a narrow flange and without the case-hardened ball-bearing washer. All models are available in Forged-Brass and in all finishes and offsets. See catalog for detailed description and full-size illustrations.

Heavy Duty Refrigerator Latch

A massive latch of massive sealing power for duty on heavy refrigerator, cooler and freezer doors. Latch is 13 ins. over all and weighs 12 lbs. Available in all finishes. Inside release handle supplied. Equipped with adjustable Micrometer Strike. Latch can be padlocked at extreme right. Model K-48 A of the same design is 11 ins. over all, weighs 6 lbs. and is used for smaller walk-in doors.

Both models are also available with built-in cylinder locks. (See catalog.)



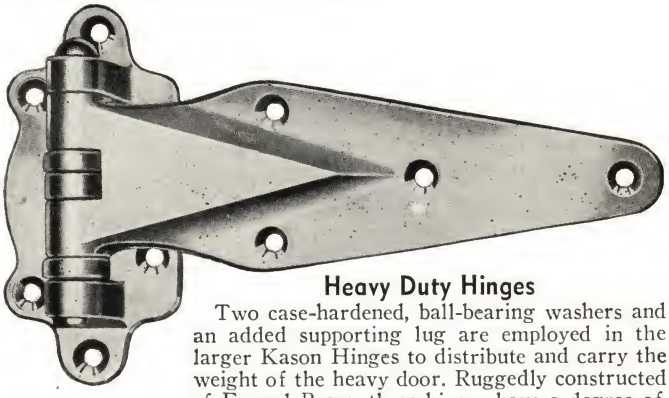
Model K-40A

This model, K-40A, is acclaimed by the trade to be the finest light latch in the refrigerator field. Used on service doors and for refrigerated display cases. Equipped with adjustable Micrometer Strike. Latch can be padlocked. Available in all finishes.

See catalog for other latches for refrigerator and freezer doors.

Kason Refrigerator Hinges

A complete line of Kason Forged-Brass Hinges from 5 to 22 ins. in length is presented in detail in catalog No. 38. The models below illustrate the basic design and mechanical construction of the line. Designed to match the Kason Latches, it is suggested that both Kason Latches and Kason Hinges be specified in combination to attain greatest ornamental value.



Heavy Duty Hinges

Two case-hardened, ball-bearing washers and an added supporting lug are employed in the larger Kason Hinges to distribute and carry the weight of the heavy door. Ruggedly constructed of Forged-Brass, these hinges have a degree of serviceworthiness far greater than severest service can ever demand of them. Available in all sizes, finishes and offsets. See catalog.

OTHER KASON PRODUCTS

Refrigerator Levers
Freezer Door Hardware
Cold Storage Door Hardware
Unlatching Bumpers
Butcher Rails
Reflectors
Dehydrating Tubes
Drain Traps

Established 1897

MARKET FORGE COMPANY

Sanitary Metal Rack Equipment for Refrigerated and General Storage Rooms

EVERETT, MASS.

REPRESENTATIVES

ATLANTA, GA., Leo S. Bosarge, 315 Spring St., N. W.
BALTIMORE, MD., Edward J. Seager, Baltimore Life Bldg.
BUFFALO, N. Y., Howard T. Cary, 293 Voorhees Ave.
CHICAGO, ILL., Stanley Baldwin, 228 No. La Salle St.
CINCINNATI, OHIO, Arthur F. Dreyer, 3119 Beaver Ave.
CLEVELAND, OHIO, Carl Sprigade, Keith Bldg.
DETROIT, MICH., W. C. Rasch, 4612 Woodward Ave.
HOUSTON, TEX., D. C. Lingo Co., 1414 Fannin St.
KANSAS CITY, MO., F. H. Turner & Son, 919 Baltimore Ave.
LOS ANGELES, CAL., Warren & Bailey Co., 350 So. Anderson St.
MILWAUKEE, WIS., W. H. Reinecke, 759 No. Milwaukee St.
MINNEAPOLIS, MINN., H. O. Johnson, 4205 Garfield Ave., So.
NEW YORK, N. Y., L. W. Tracy, 200 W. 16th Street
PHILADELPHIA, PA., E. F. Johnson, 220 So. 16th St.
PITTSBURGH, PA., Harry H. Frank, 209 Fulton Bldg.
ST. LOUIS, MO., Herbert Golterman, 717 Louderman Bldg.
SAN FRANCISCO, CAL., Phillips Refrigeration Products Inc., 141 Eleventh St.

Refrigerator Storage Equipment

Walk-in shelving, reach-in shelving, hook rail racks, cork insulated baffles, bunkers, coil supporting racks, drawers and pans for all purposes, drip pans, fur storage racks and trucks, rug storage racks and trucks, mortuary racks and trucks, and flower storage and display racks.

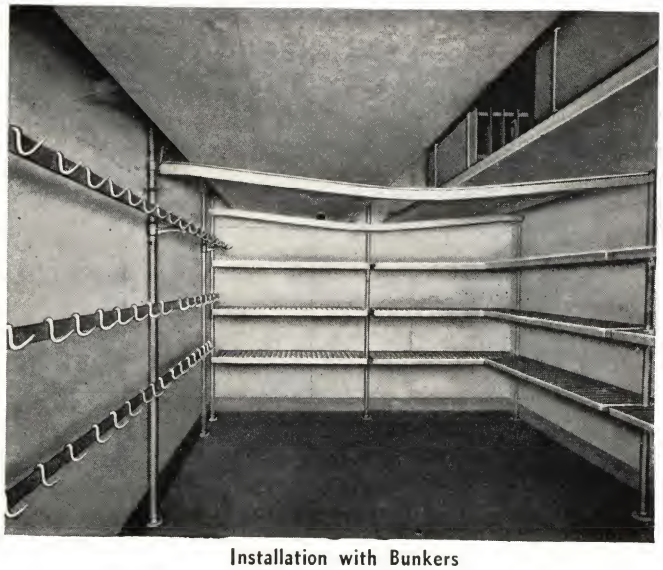
General Storage Equipment

Trunk storage racks, picture storage racks, tapestry racks, silver storage racks, barrel racks, shipping room racks and trucks. Hotel, hospital and institutional storeroom shelving and trucks, standard metal partitions, linen room shelving and counters, coffin storage racks, metal tables, trucks, racks and skids for handling and storage of all kinds of material.

"MAFORCO" WALK-IN REFRIGERATOR EQUIPMENT



Installation for Meat Storage



Installation with Bunkers

Standard Specification—"Maforco" Shelving

Posts are 1¼ in. outside diameter high carbon steel tubing. Brackets are of malleable iron rigidly fixed to posts by means of setscrews to support shelves which are vertically adjustable and readily removable for cleaning. Shelves are made of high carbon steel angles in sizes to suit loads imposed, double riveted at the corners. Slats are 1 in. x 12-gauge, 1 in. apart, flush riveted to frames with all edges well rounded and chamfered. Slatted construction permits a free circulation of air. Shelf section should not be more than 6 ft. long. Posts are neatly finished at top with ornamental acorns and with suitable malleable floor flange. Shelf may be furnished perforated or of solid sheet metal, if desired.

Unless otherwise specified, all equipment is to be furnished hot dipped galvanized after fabrication. As an alternate, we recommend stainless steel.

"Maforco" equipment conserves valuable refrigerated space. It fits snugly into corners and every inch of available space is utilized.

Rigid and self-supporting, eliminating anchorage to refrigeration construction. This avoids puncturing of insulation and resulting disintegration. Racks are assembled without the use of bolts or nuts.

Rail rack posts are 1-in. standard pipe for light loads and 1¼-in. standard pipe for heavy loads. Rail brackets are of heavy gauge pressed steel, providing for flush mounting—3, 6, 9 and 12-in. projections from the face of the posts. Rails are 1½x⅜-in. steel for light duty and 2x⅜-in. steel for heavy duty. Posts should be set at a maximum of 5-ft. centers for light duty and 3-ft. 6-in. centers for heavy duty. Removable hooks should be provided for every 6 in. of rail. Posts are expanded between floor and ceiling. Rail brackets are adjustable and removable without moving the posts.

All equipment is hot galvanized, except the hooks which are tinned. As an alternate, we recommend stainless steel.

Where wall coils occur, "Maforco" cork insulated baffles supported on shelf or rail rack posts are recommended. These are made of 1-in. sheet cork covered on both sides with galvanized sheet iron. When used in conjunction with stainless steel rack equipment, the exposed face should be covered with stainless steel. These baffles assist the circulation of cold air, making the refrigerator more efficient, protect food stuffs from the coil frosting and at the same time provide a stop at the rear of the racks.

ALL-METAL INSULATED BUNKER EQUIPMENT FOR ALL TYPES OF REFRIGERATED SPACES

All equipment is adjustable and removable—a very valuable feature allowing ready access to refrigerating equipment repairing service. Expensive built-in work is entirely avoided and the use of hot-galvanized material throughout insures long life at the lowest cost consistent with economy.

Posts are of 1¼-in. iron pipe size rigidly expanded between floor and ceiling. Posts along sidewalls spaced approximately 6 ft. on centers.

Longitudinal angles "A" supported by angle bearing brackets carry heavy cross angles "B" through which are bolted hangers for lower angles "C" on which refrigerating equipment is supported. Threads on trapeze rods allow for liberal vertical adjustment.

Bunker pan is furnished as shown in section. Construction eliminates any possible sag between supporting angles. Bunker pans and baffles are carried on angles "D" resting on vertically adjustable brackets.

Adjustability of brackets and angles supporting bunker pan, provide necessary tilt for proper circulation.

Bunker pan is watertight and furnished with threaded outlet ready for attachment of drain pipe.

Width of bunker depends upon allowance for cold and warm air flues. We suggest a cold air flue allowing 1½ in. per ft. of cooler width and 1 in. per ft. warm air flue. This type of construction is just as suitable for double as for single bunkers.

For reach-in boxes the same construction may be used. Also the same posts may be used to carry "Maforco" shelving, thereby effecting a considerable saving.

Likewise same posts used for supporting the bunker pan construction in walk-in boxes are also used to support rail racks and shelving where specified.

Where available ceiling height permits it, always use overhead location of refrigerating equipment. This assists circulation and good circulation is one of the vital requisites of proper refrigeration.

For the finest installations specify stainless steel lined and covered "Maforco" bunker equipment.

We suggest you specify "Maforco" bunker pan baffle board and coil support equipment as made by the MARKET FORGE COMPANY, Everett, Mass., wherever overhead coils are possible.

Consulting Service

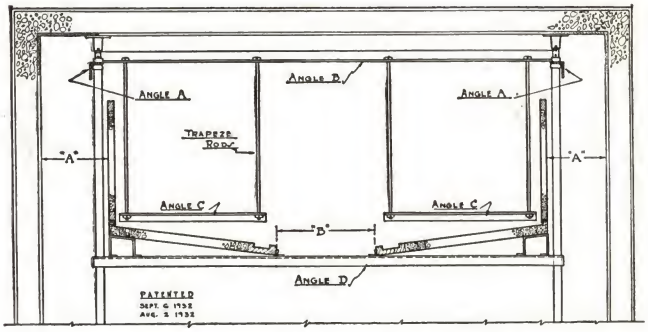
The MARKET FORGE COMPANY originated the use of all metal equipment for refrigerated storage space. Since 1897 we have been constantly improving and adding to our comprehensive coverage of this field. Our experience and knowledge enables us to proffer complete layout and specification service with no obligation incurred.

Refrigerator Specialties

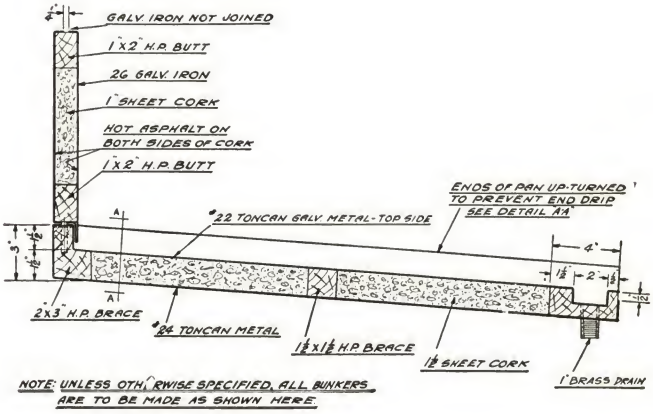
It is impossible to cover completely all the specialties we make or have made for this field. Box builders and refrigerator companies are invited to consult with us on any requirement whether or not listed or shown here.



Typical Installation



Section Through Double Bunker Pan, Baffle and Racks
"A"—1 in. per foot of refrigerator width
"B"—1½ in. per foot of refrigerator width

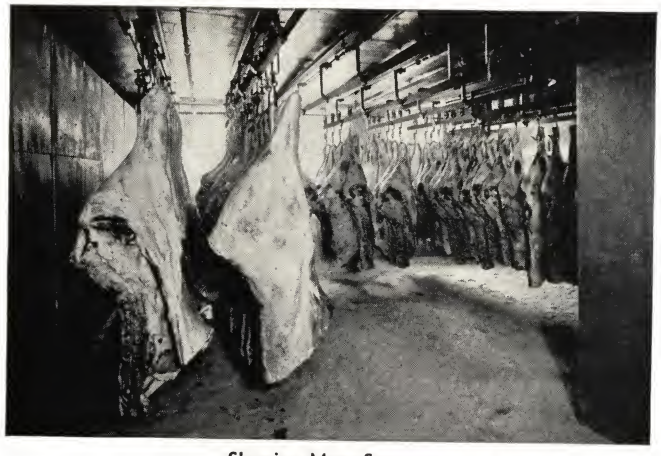


STANDARD CONSTRUCTION "MAFORCO" BUNKER PAN & BAFFLE FOR SINGLE OR DOUBLE CYCLE CIRCULATION
PAT. APPLIED FOR

List of Recent Installations

Armour & Co., various plants
Swift & Co., various plants
Cudahy Co., various plants
Hudson County Medical Center, Jersey City, N. J.
New York State Hospital, various
U. S. Veteran Hospitals, various
U. S. Navy Hospitals, various
U. S. Marine Hospitals, various
Masonic Home, St. Louis, Mo.
Missouri State Penitentiary, Jefferson City, Mo.
Purdue University, Lafayette, Ind.
Indiana University, Indianapolis, Ind.
University of Michigan, Ann Arbor, Mich.
Rhode Island State Hospitals, various
Massachusetts State Hospitals, various
U. S. Indian Hospitals, various
U. S. Forts, various
Walgreen Company, Miami, Fla.
Childs Restaurant, various
Schraffts Restaurant, various
Waldorfs Restaurant, various
Longchamps Restaurant, New York City
Sherry Netherland Hotel, New York City
Waldorf Astoria, New York City
Girard College, Philadelphia, Pa.
Duke University, Durham, N. C.
Harvard College, Cambridge, Mass.

OVERHEAD TRACKING, SCALES, SWITCHES AND TROLLEYS FOR BULK MEAT STORAGE



Showing Meat Storage



Showing Racks and Track

Many large installations of suitable equipment for the proper storage and handling of meats involve overhead tracking as illustrated. This class of work due to tremendous loads involved must be carefully planned not only on the basis of its own utility, but its relation to the general building construction. It is necessary to plan ceiling and floor details to carry the loads involved and to plan the tracking so as to simplify the general handling problem.

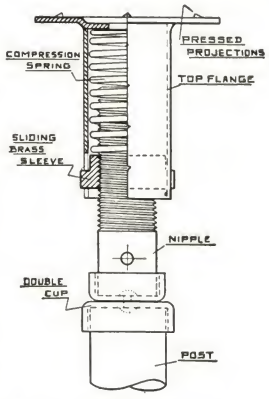
Briefly, tracking should run from a receiving platform with suitable weighing and checking equipment to various handling and processing points and, of course, to the general storage refrigerator. This involves the proper location of the processing equipment in relation to the tracking and, of course, the proper location of track and floor scales.

We are only too glad to cooperate with architects and engineers in planning tracking installations as especially adapted to hospitals and institutions of all types.

SANITARY REFRIGERATOR EQUIPMENT

"Maforco" Self-expansion Fitting

Due to nature of rack equipment required, it is not always possible to economically furnish self-supporting racks. In such cases, equipment must be supported on posts running from floor to ceiling. To avoid the necessity of attaching posts to the floor and ceiling, the "Maforco" self-expansion fitting, type No. 28, has been developed. It removes the possibility of damage to the interior finish of the refrigerator, at the same time providing an automatic adjustment to keep posts properly rigid at all times, due to their change in length resulting from changes in temperature. Ordinary types of fittings require adjustment and extreme care in the original installation. The "Maforco" self-expansion fitting eliminates these troubles. Once installed, no further adjustment is necessary.



Flange is fabricated from steel with pressed projections at the top to provide friction between the ceiling and the top of the flange. Inside of this flange is a compression spring held in place by a sliding sleeve or nut made of brass to prevent freezing at reduced temperatures. Nipple is of sufficient length to allow 1-in. adjustment either way. Connection with post is provided by means of a double cup construction of pressed steel.

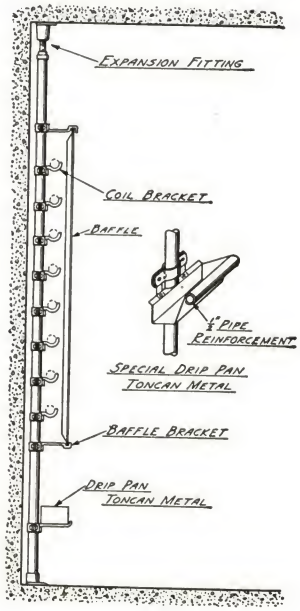
Be sure to specify "Maforco" equipment and where posts run to the ceiling insist upon the use of this No. 28 expansion fitting.

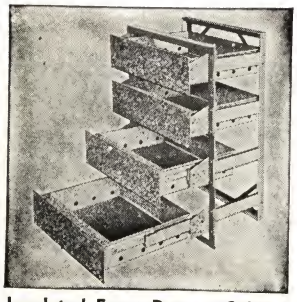
"Maforco" Wall Coil Supports

"Maforco" coil supports satisfy demand for a simple, economical method for supporting coils, at the same time avoiding puncturing of insulation, and use saves refrigerator space by making it possible to bring coils as close to the wall as practical. Coil brackets are furnished for 1¼, 1½ and 2 in. pipe posts to carry 1, 1¼, 1½ and 2 in. pipe coils. Special sizes are also available, if needed.

Posts are equipped with heavy duty floor flanges and standard "Maforco" type No. 28 expansion fittings. Same posts may be used to carry drip pan, plain or reinforcing type. Plain type is of 20-gauge Toncan metal. Reinforced type has ½-in. pipe reinforcing along the front edge. The same posts may also be used to support baffle brackets for "Maforco" baffles, if desired.

This construction does away entirely with unsightly built-in supports and through use of standard equipment avoids expensive special work.





Insulated Front Drawer Cabinet
Type 113

"MAFORCO" REACH-IN REFRIGERATOR EQUIPMENT

For reach-in refrigerator work, the MARKET FORGE COMPANY has available a complete line of equipment, consisting of shelves, drawers and pans for every possible requirement.

Drawers are available in galvanized or stainless steel.

Shelving is of three main types: slatted, welded wire or perforated sheet metal. The slatted type is recommended in hot galvanized finish, welded wire in tinned finish and the perforated type in galvanized or stainless steel.

Consult with the MARKET FORGE COMPANY or your local refrigerator builder as to general layout and detailed specifications.

MARKET FORGE COMPANY

"MAFORCO" FUR AND GARMENT STORAGE RACKS

Providing Maximum Storage Capacity with Every Garment Readily Accessible and Protected from Damage in Handling

General Construction

Multiple Tier Installations

Centerpost construction made possible by the use of "Maforco" pressed steel for brackets. Provides for the utmost simplicity and economy of arrangement. Provides for low cost of equipment and installation. Allows for rearrangement or relocation to suit changing requirements. All parts neatly furnished for appearance and to avoid injury to garments. Care is taken to simplify work of loading and unloading garments. Parts are not attached to building construction but are planned to be essentially self-supporting. All equipment hot galvanized after fabrication. No other finish has proven so consistently satisfactory.

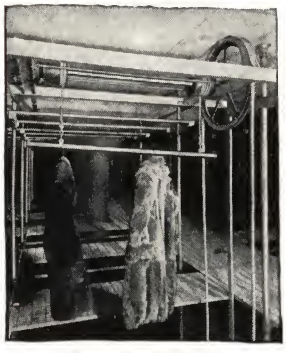


Two-Tier Installation

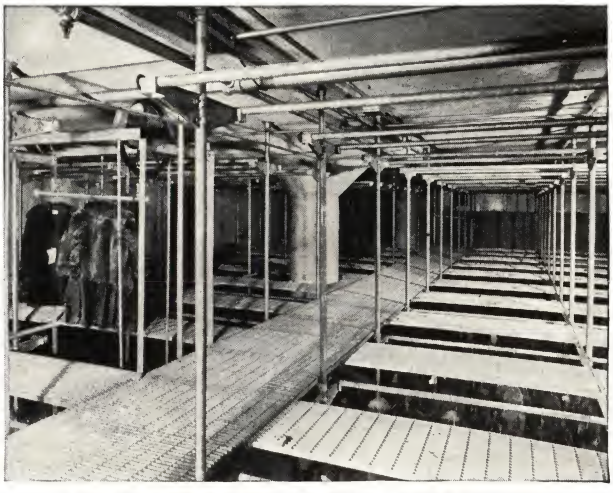
Access to upper tiers in multiple tier installations is provided for by means of ladder, stairs or spiral stairs. Walkways are provided in main and branch aisles. Care is taken to protect operators from danger. Garments are handled by means of manually or electrically operated hoists at convenient locations.

Consulting Service

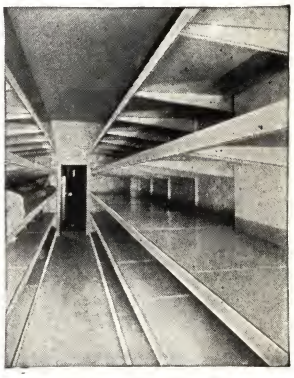
We suggest you consult us in connection with detail layout specification and budget work. There is no obligation. Space does not permit a complete coverage of all the ramifications of this field. Storage vaults may run from single tier spaces to five and six tiers high, involving stairway, walkways, hoists, etc. All other work within reasonable limits should be planned as accessory to rack layout. The true measure of the return on the entire investment is the storage capacity, in turn directly measured by the rack equipment available.



Hoist Installation



View from Upper Level Installation with Walk Ways



Installation for Rug Racks

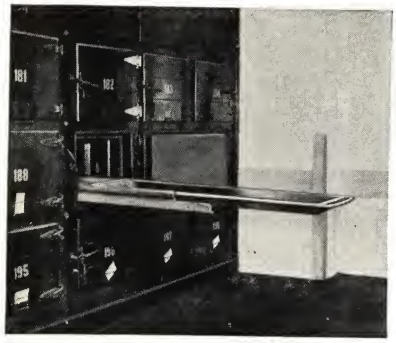
A complete line of accessory and allied equipment is available, including garment trucks, muff racks, rug storage racks, packing tables. Write to factory for complete and detailed information.

Representative Installations

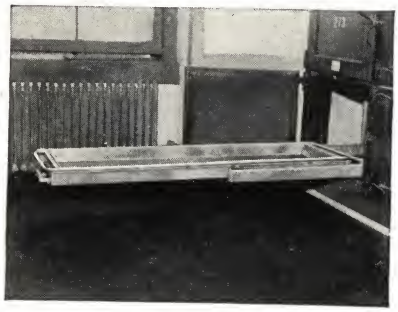
Revillon Freres, New York, N. Y.
C. C. Gunther's Sons, New York, N. Y.
Bloomingdale Warehouse, New York, N. Y.
Lincoln Safe Deposit Co., New York, N. Y.
Jordan Marsh Co., Boston, Mass.
Steigers Inc., Hartford, Conn.
Prine Cleaners, Ilion, N. Y.
Arctic Fur Co., Seattle, Wash.
Strawbridge & Clothier, Philadelphia, Pa.
Joseph Horne Co., Pittsburgh, Pa.
Morey La Rue Laundry, Elizabeth, N. J.
Paris Co., Salt Lake City, Utah
Alex Kessler Fur Co., St. Louis, Mo.
Bergdoff-Goodman Co., New York City
York City Laundry, York, Pa.
Sears Roebuck Co., Chicago, Ill.
Salem Laundry, Salem, Mass.
Goldblatt Bros., Chicago, Ill.
Merchants Transfer & Storage Co., Washington, D. C.
Clinton Trust Co., Newark, N. J.
The May Company, Cleveland, Ohio
Worcester Cold Storage Co., Worcester, Mass.
Parmalee Hall Furs Co., Omaha, Neb.
Jay Thorpe Inc., New York City
Balch Price & Co., Brooklyn, N. Y.
Kline's Inc., Kansas City, Mo.
Creed's Ltd., Toronto, Canada
Frederick & Nelson Co., Seattle, Wash.
Russek's, Brooklyn, N. Y.
Elite Laundry, Washington, D. C.

MARKET FORGE COMPANY

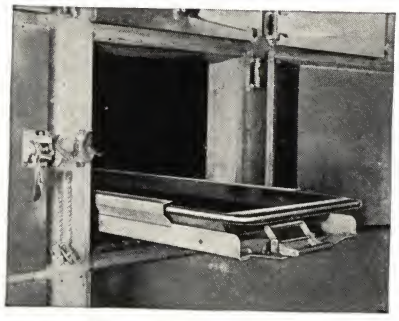
"MAFORCO" MORTUARY EQUIPMENT FOR HOSPITALS, MUNICIPAL MORGUES, MEDICAL SCHOOLS, ETC.



Style I



Style V



Illustrating Lock Handle

The proper storage of cadavers requires careful consideration for obvious reasons. Thoroughly sanitary conditions must prevail. Injuries to bodies must be avoided.

"Maforco" mortuary racks are the result of years of experience in this field.

Detailed Specifications for "Maforco" Mortuary Racks

Each rack is to consist of a tray mounted on a telescoping carriage operating in a steel bed frame. Tray is to be of 20-gauge galvanized sheet metal rolled over a one-piece hot galvanized pipe frame approximately 1-in. outside diameter. Tray is to be flared for easy cleaning and no rivets or bolts shall pass through the tray. Corners shall be loaded with solder scraped smooth.

As an alternate, we recommend the sheet metal part of the tray be of stainless steel. This is important because body acids stain galvanized steel.

Telescoping carriage shall be of especially formed steel channels with ball bearing wheels on each side and ball bearing steel rollers for the tray to roll upon. Channels shall be provided to serve as vertical and horizontal guides to keep tray in proper location. Front end of carriage is provided with trip handle and latch which automatically hold both the carriage and tray locked into place. This is a vitally important safety device normally overlooked. It prevents the possibility of accidental withdrawal of the tray with its subject. The steel bed shall have two ball bearing wheels at the front end on which the channel frame of carriage operates. Rear end of carriage and steel bed shall be suitably rubber bumpered to take the shock of tray and carriage, respectively.

Racks are so designed that the tray may be withdrawn entirely outside of refrigerator sustaining its load in a horizontal position without sagging. Carriage shall be provided with handle at end with stop attached at suitable location to permit extension to desired point, but the stop on the bed frame can be pivoted so as to permit removal of carriage.

All parts unless otherwise specified are to be hot galvanized after fabrication.

General Information

All mortuary racks are built in sizes shown. Carried in stock for immediate shipment. Refrigerator space should be built to conform with these sizes. Door width should not be less than 25 in. Vertical door opening normally 24 in., but not less than 18 in. Two-tier high installations are recommended because of ease of handling. Additional tiers are entirely practical, but necessitate the use of a tiering machine for operations.

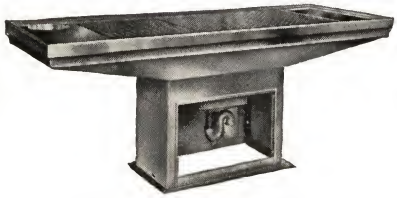
Styles No. I and No. II racks are identical, except as to method of rear support.

Style No. III rack is a double ended type which operates at either end, permitting installation of the morgue refrigerator between the receiving room and the post-mortem laboratory. This simplifies handling of cadavers, making them accessible from either room.

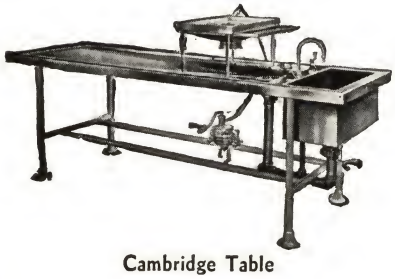
Style No. IV shows side-operating racks designed for space which does not permit the use of the end operating construction. This type of rack is to be used only where absolutely necessary, for it is not generally desirable because of the difficulty of handling.

Styles No. V and No. VI racks are recommended for municipal morgue use. They are essentially identical to Styles No. I and No. III, respectively, except that they are provided with an additional telescoping carriage, so that when the tray is completely extended, it has a support its entire length.

"Maforco" Autopsy Tables

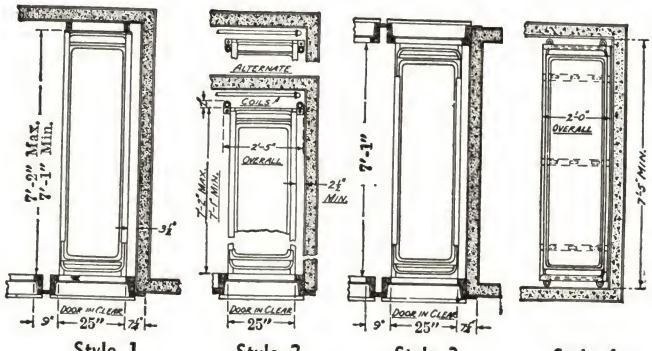


Concord Table



Cambridge Table

A complete range of designs and styles of autopsy tables. These products are the result of years of experience in this field. Write to factory for complete information.



Style 1 Style 2 Style 3 Style 4

Standard Dimensions

"Maforco" Mortuary Specialties

Trucks, tables, stands of all types for sundry morgue and pathological laboratory use. Write for details.



Vermin Proof Storage Shelves and Bins

VERMIN PROOF SHELVING AND BINS FOR DRY AND BULK STORAGE

The storage of canned goods, bulk foods and miscellaneous general storage requirements in hospitals and institutions cannot be properly handled with ordinary type commercial shelving and rack equipment. The MARKET FORGE COMPANY has designed as a result of study of the general requirements, a type of shelving and bins which may be arranged to suit any and all general requirements. The shelving is completely sanitary and adjustable. Bins in a satisfactory range of sizes for every purpose are available. All bins are completely vermin and dust-proof.

Fronts are provided with card holders for suitable identification. Front edges of shelves are furnished with or without label holders.

All equipment is made of galvanized material as a protection against corrosion and finished in enamel or aluminum bronze to suit requirements.

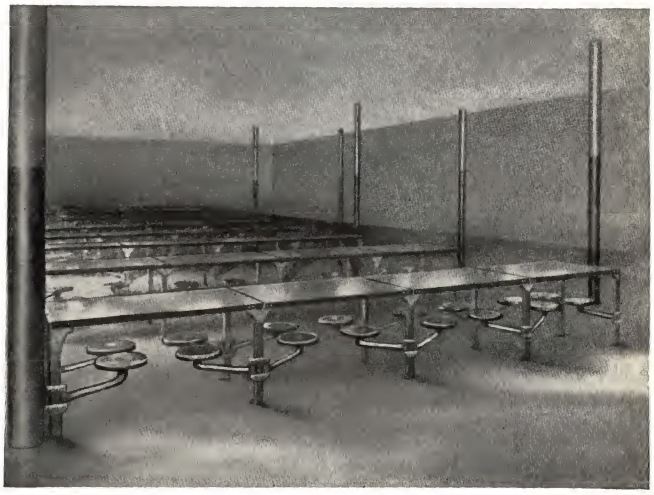
The wide range of storage requirements encountered makes it impossible to cover every possible adaptation. We illustrate typical installation and suggest you consult the MARKET FORGE COMPANY without obligation. We proffer complete layout and specification service along with budget estimates.

STAINLESS STEEL MESS HALL TABLES

All metal tables with permanently attached swinging seats are now being specified for new building work and for replacement in existing institutions of outmoded types of equipment. The construction provides all stainless steel tops suitably reinforced and is vermin-proof by being designed without concealed corners, cracks and crevices, thus making it easy to keep clean.

Permanence of all attachments and connections provide a panic and riot-proof design. This is especially desirable for institutions concerned with defective delinquents and the criminally insane.

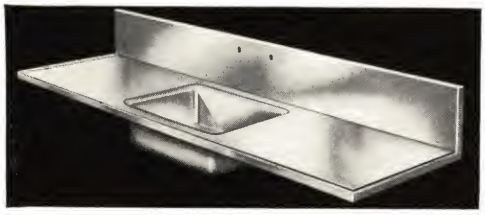
Consult the MARKET FORGE COMPANY for general layouts, detailed specifications and budget estimates without obligation.



Stainless Steel Tables with Seats Attached

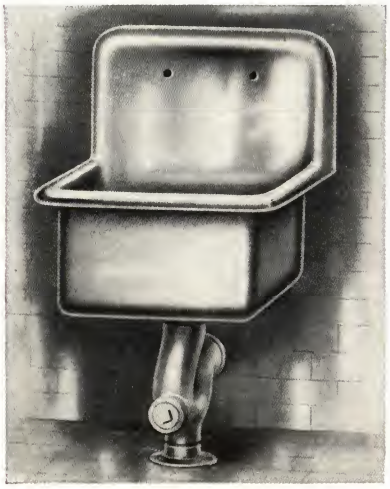
STAINLESS STEEL SPECIALTIES

The application of stainless steel to all general hospital equipment requirements is justifiably increasing in favor. It is bright, enduring and easy to keep clean. We show in illustration a few applications.



Service Sink

Ordinary service type sinks, for example, will not stand up under the rigorous use and abuse to which they are subject. Stainless steel sinks are now available for every type of hospital application.



General Utility Sink

Corner guards and push and kick plates for doors are another excellent application. The installation improves the appearance and the costs are reasonable.

The MARKET FORGE COMPANY stands ready to work with those interested in the application of stainless steel to any requirement. We are one of the pioneers in the use of stainless steel and have one of the finest equipped plants in the country for general fabrication, welding and finish of this metal. Do not hesitate to consult with us. There will be no obligation.



Door Protection

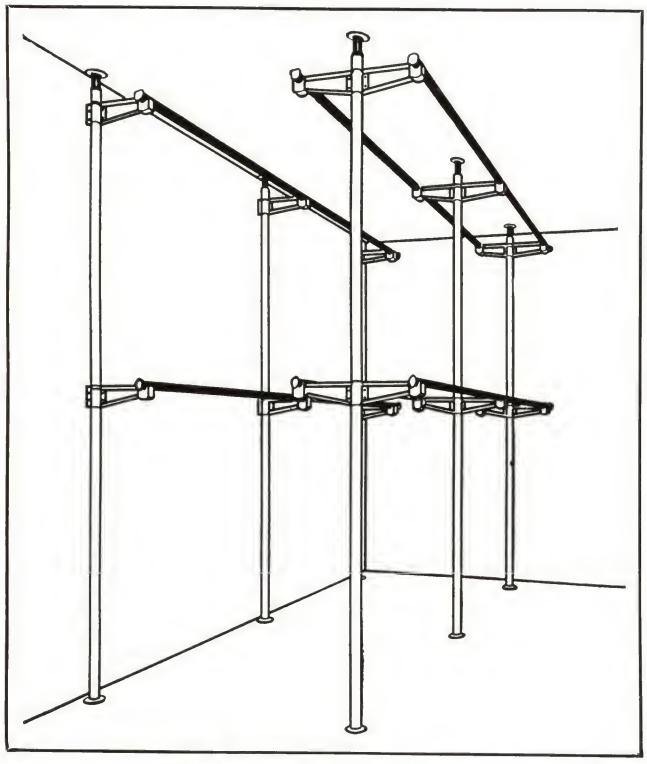
MEMORANDA

RELIABLE MACHINE WORKS, INC.

TELEPHONE
LAckawanna 4-8145

130 West 29th Street
NEW YORK, N. Y.
FACTORY: BROOKLYN, N. Y.

RELIABLE GARMENT HANGING AND RUG STORING EQUIPMENT

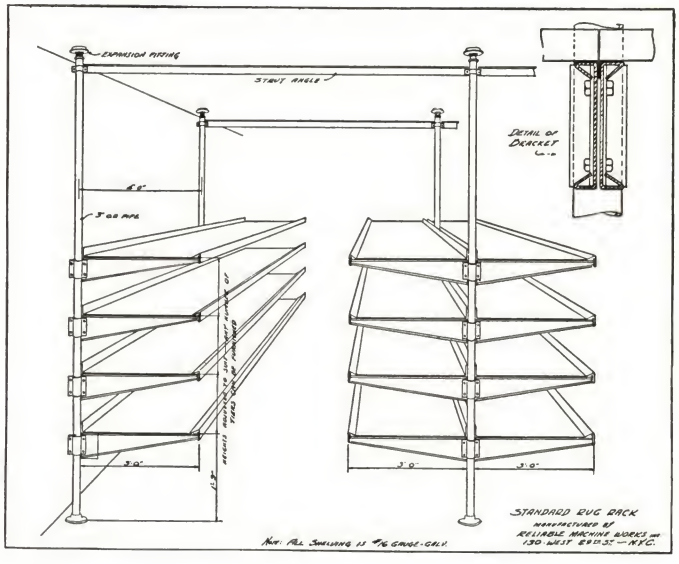


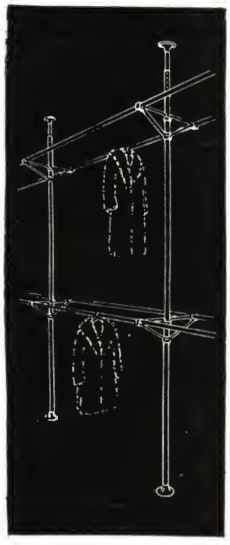
Fur Rack

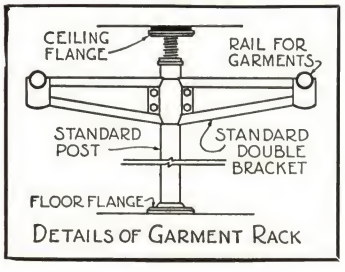
Pre-fabricated racks, easy to install and erect. Designed by experts thoroughly familiar with the needs of the business, this equipment provides ready accessibility and minimizes space required for framework, with each aisle giving access to two rows of garments. Strong, sturdy, rigid construction. Adaptable to rooms of any size and height. New type of telescope fittings eliminates attaching to ceiling and floor—no bolts or screws to puncture insulation. Brackets adjustable for spacing any height. Additions made without disturbing posts. No special tools or experienced help needed for making changes or moving. Inexpensive, ready to set up.

All equipment and fittings hot galvanized after fabrication.

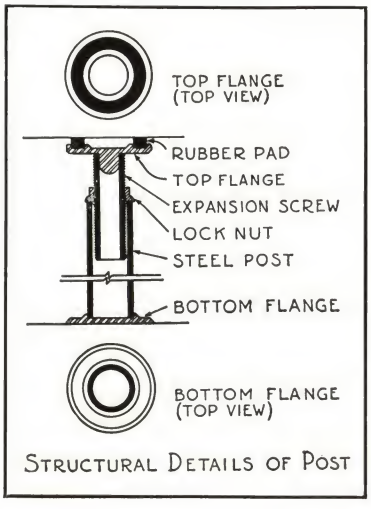
All shipped knocked down.



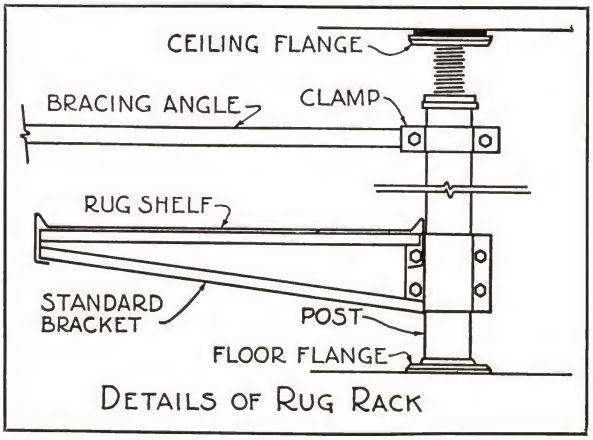




DETAILS OF GARMENT RACK



STRUCTURAL DETAILS OF POST



DETAILS OF RUG RACK

Shelves made for 26 to 36-in. wide. Made of 16-gauge steel. Pipe uprights 2½ in. I.D.

ESTABLISHED 1886

CHICAGO DRYER COMPANY

DOMESTIC-HILL LAUNDRY EQUIPMENT CO.

Manufacturers of Complete Laundry Room Equipment for Domestic, Hotel, Hospital, Institutional, School, Club and Industrial Requirements

EXECUTIVE OFFICES AND FACTORY
2210-2220 North Pulaski Road,
CHICAGO, ILL.
TELEPHONE Belmont 1060

EASTERN OFFICES
DOMESTIC-HILL LAUNDRY EQUIPMENT CO., INC.
(A. E. Morford)
5-33 48th Avenue, LONG ISLAND CITY, N. Y.
Telephone, Stillwell 4-5720

DISTRIBUTORS

BUFFALO, N. Y., George H. Drake Co., 218 Lexington Avenue
DETROIT, MICH., Frank C. Mack, 1500 West Fort Street
INDIANAPOLIS, IND., Hoover Brothers Co., 604 Majestic Building
LOS ANGELES, CALIF., Dawn Machinery Co., L. C. Schenck, 1317 East 17th Street
LOUISVILLE, KY., Equipment & Supply Co., 420 Baxter Avenue
PHILADELPHIA, PA., J. F. Alexander, 1626 Wood Street
PITTSBURGH, PA., J. M. Webber, Dartmore Avenue, Overbrook
PORTLAND, ORE., E. R. Hayssen, 3116 N. E. Schuyler Street
RICHMOND, VA., John G. Kolbe, 309-A East Main Street
ST. LOUIS, MO., Laundry Dryer & Heating Co., 3142 Olive Street
SAN FRANCISCO, CALIF., M. E. Hammond, 557 Market Street
SEATTLE, WASH., Arthur A. Dally, 332 Pioneer Building
WEST PALM BEACH, FLA., Southern Metal Products, Inc., 505 Roseland Dr.

Chicago Gas Heated Laundry Plan

Making it possible for hotels, hospitals, institutions, etc., to install Laundry Equipment at advantageous installation and operation costs. Guaranteed by results of over 50 years' experience in this field.

Catalog mailed on request.

CHICAGO
TRADE MARK REGISTERED

Co-operative Service

We invite architects and engineers to make full use of our Engineering Layout Service.

We maintain a staff of Engineers, who will be pleased to assist in *planning* installations to meet requirements.

INSTITUTIONAL LAUNDRY EQUIPMENT

Gas and Electric Heated Production Type Flatwork Ironers, Cylinder Type Washers, Extractors, Tumblers, Trucks, Ironing Boards, Tables, etc. All equipment of the direct motor driven types.

Chicago Six-Roll Gas Heated Flatwork Ironer with Motor and Blower Attached

Equipped with variable speed; single valve gas and air control, including gas regulator. Will burn almost any kind of gas. Journals at ends of heated and compression rolls operate on ball bearings.

Will maintain production capacities of from 300 to 900 lbs. dry weight flatwork per day. Will turn out higher quality flatwork at less cost per pound than any type of machine in its rated capacity. Eliminates necessity of providing high pressure steam.



FRONT VIEW PATENTED

Single thickness linens dried and ironed in one pass through machine. All rolls revolve, no wear on linens. Rolls compressed or raised from heated rolls instantaneously. Equipped with ribbon feed conveyor. Automatic safety stop finger guard approved by New York State Safety Commission. Hundreds of these machines now in service. Built in various sizes as follows:

Built in various sizes with rolls 60, 80, 100 and 120 in. in length. Operated by means of ½ hp. motor. Provide 1-in. gas supply.

Six-Roll Electrically Heated

Made in two sizes with rolls 75 and 100 in. in length.

Chicago No. 11-104 Gas Heated Flatwork Ironer With Motor and Blower Attached

Greatest production gas heated flatwork ironer built. Capacity up to 2000 lbs. and more dry weight per day. Contains 11 rolls consisting of 1 heated and 10 compression rolls measuring 104 in. in length. Motor 1½ hp. Occupies floor space 8 ft. x 11 ft. 6 ins.

Chicago-Direct Motor Driven Cylinder Type Washer

Operated by means of electric motor contained in housing. The direct unit drive attachment eliminates noisy and overhead line shaft; allows easy installation and economy in operation. Made with wood shell and wood cylinder. Brass trim.



Built in sizes as follows:

Type	Washer No.	Cylinder	Motor, hp.	Capacity, dry weight.	Occupies floor space
E.W.	3136	31"x36"	¾	50 lbs.	46"x76"
E.W.	3152	31"x52"	1	75 "	46"x92"
E.W.	3652	36"x52"	1½	100 "	54"x100"
E.W.	4064	40"x64"	2	200 "	60"x126"

May be supplied with monel metal trim when so ordered, in which event they are designated as Type E.M.



No. M-60 Universal Extractor

Basket measures 20-in. diameter and is made of spun copper, nickel plated. Capacity 25 lbs. dry weight. Extracting time 4 to 6 minutes. Space required 30 in. square. Motor 1½ hp. Speed 1725 r.p.m.

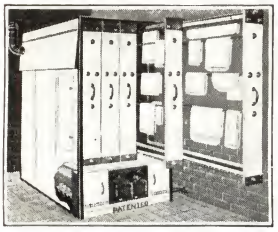
No. 15—Capacity 15 lbs. dry weight. Basket 17-in. diameter. ½ hp. motor.

These extractors are of the highest grade, yet low in price.

Drying Tumblers—Type O.E. (Open End)

Heated by gas, steam or electricity. Three sizes: Cylinder 36 x 18 in., capacity 40 lbs. dry weight per hour; 36 x 24 in., 52 lbs.; 36 x 30 in., 64 lbs.

CHICAGO CLOTHES DRYERS, WASHERS, IRONERS AND COMPLETE DOMESTIC LAUNDRY EQUIPMENT



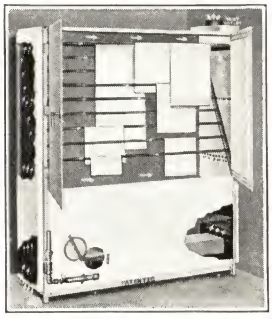
Chicago Clothes Dryers

Chicago dryers are built in all types and sizes to meet any requirement. Heated by means of gas, steam, electricity or coal stove attached. Gas heated types all equipped with indirect heating system. Burners contained within an interior drum. No exposed flame. Type S.C. as shown equipped with (type S.C.) self-contained racks eliminating overhead track system. Operates on ball bearings. Sturdy—no sagging construction. Built in following sizes:

Dryer	Dryer contains	Height	Length	Width	Hanging capacity
S.C. 296	2–9″ racks	6′–0″	6′	1′–9″	65 lin. ft.
S.C. 396	3–9″ racks	6′–0″	6′	2′–6″	97 lin. ft.
S.C. 3909	3–9″ racks	6′–10″	7′	2′–10″	117 lin. ft.
S.C. 4909	4–9″ racks	6′–10″	7′	3′–7″	156 lin. ft.
S.C. 5909	5–9″ racks	6′–10″	7′	4′–4″	195 lin. ft.
S.C. 6909	6–9″ racks	6′–10″	7′	5′–3″	234 lin. ft.
S.C. 7909	7–9″ racks	6′–10″	7′	6′–0″	273 lin. ft.
S.C. 8909	8–9″ racks	6′–10″	7′	6′–9″	312 lin. ft.

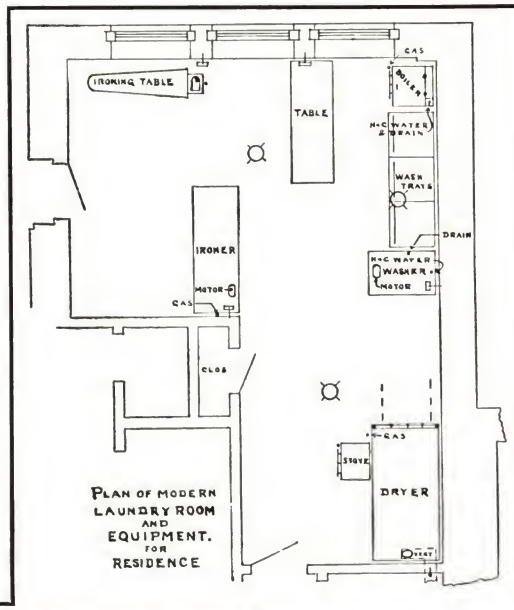
Height and length may be varied, when so required.

Cabinet Type



Chicago-Francis Gas Heated Cabinet Dryer here shown. We claim the most efficient heating and ventilating system ever devised. A popular dryer for small residential and apartment building installation. When installed in apartment buildings it is customary to supply one dryer to each set of laundry trays. Also made for electric or steam heat. Standard sizes as follows: built 6 ft. in height.

Dryer	Cabinet floor space	Hanging capacity
G-2060	20″x60″	60 lin. ft.
G-2460	24″x60″	70 lin. ft.
G-2480	24″x80″	95 lin. ft.
G-2680	26″x80″	115 lin. ft.



Chicago Three-roll Gas Heated Ironer

Construction and operation to give super-deluxe finish to flatwork, such as sheets, pillow cases, napkins, table linens, etc. Higher hourly capacity. Adaptable for residence and small institution requirements. Contains 3 rolls—namely, one heated and two compression rolls. All rolls revolve. No wear on linens. Approved by Good Housekeeping Institute.

Made with atmospheric gas burner or burner with gas blower attachment in the following sizes:

Ironer	Length rolls	Outside dimensions	Motor, hp.	Type of burner
3-50A	50″	28″x75″	¼	Atmospheric
3-50B	50″	28″x75″	⅓	Blower att.
3-60A	60″	28″x85″	¼	Atmospheric
3-60B	60″	28″x85″	⅓	Blower att.
3-75B	75″	28″x100″	⅓	Blower att.

Equipped with automatic safety stop finger guard approved by New York State Labor Safety Commission.

No. 3-50 and 3-75 sizes also made for *electric heat*. Three heats. Heaters made for operating on 230 volts only.

Chicago Stationary Clothes Boiler

Copper or monel metal equipped with water supply, drain and overflow fittings. Heated by gas or electricity.

Chicago Ironing Board and Stand No. 302

Equipped with overhead suspension arm, pilot light, sponge cup. Fittings chrome plated.

Chicago Electric Washer and Safety Wringer

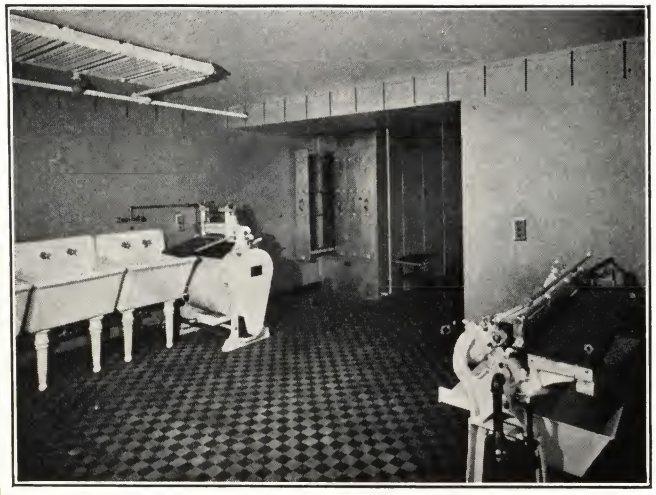
Extra large capacity for residences or small institutions. Exclusive features include automatic safety stop on wringer. Prevents tearing of clothes and insures absolute protection against possible accident to operator. Washer tub made of copper with nickeloid plating on inside. Equipped for stationary water and drain connections. 14-in. wringer. Approved by Good Housekeeping Institute.

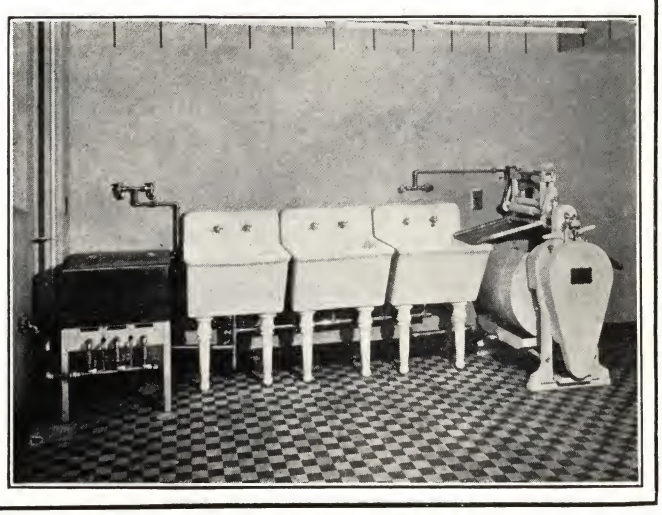
Washer	Tub capacity, dry weight	Washer tub measures
214	15 lbs.	26″x18″
314	20 lbs.	26″x21″
414	25 lbs.	26″x24″
514	30 lbs.	26″x27″

Nos. 414 and 514 sizes also supplied with monel metal tub, when so ordered.

Other Products

Include laundry tables, laundry stoves, lawn (outdoor) dryers, starch cookers, etc.





Typical Residential Laundry Room Showing Installation of Chicago Electric Washer, Three-Roll Ironer, Clothes Dryer, Stationary Gas Heated Clothes Boiler, etc.

UNITED STATES HOFFMAN MACHINERY CORPORATION

Complete Laundry Equipment Service for the Institution

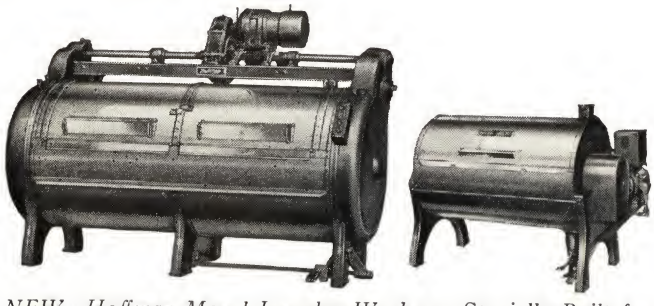
Fourth Avenue and 12th Street, NEW YORK, N. Y.

ORGANIZATION AND PRODUCTS

The UNITED STATES HOFFMAN MACHINERY CORPORATION has had wide experience in the manufacture of a diversified group of machinery products. This company has been known for over thirty years as the originators and largest manufacturers of steam garment pressing machines; Hoffman presses are used throughout the world.

Hoffman miniature steam boilers lead all others in number of sales; Hoffman centrifugal blowers find many uses throughout industry. Hoffman is the leading manufacturer of heavy duty industrial vacuum cleaning equipment.

Hoffman builds a complete line of laundry machinery. Each Hoffman machine is designed for maximum output of high quality work at lowest operating expense per pound of linen. The line has been modernized and expanded and includes machinery built especially for the institutional laundry.



NEW—Hoffman Monel Laundry Washers—Specially Built for the Institutional Laundry



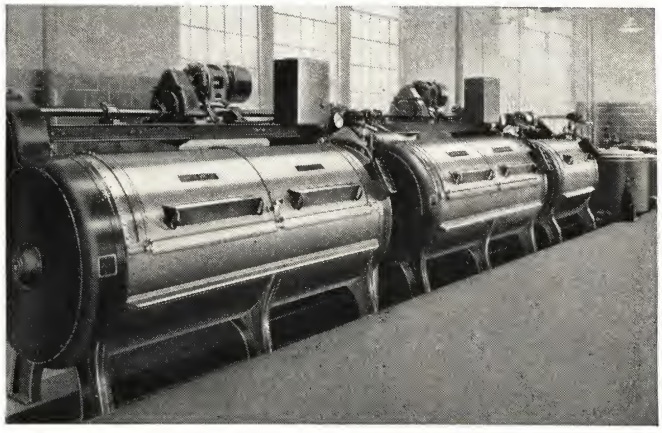
A Full Range of Sizes in Extractors—20 to 72 Inches Basket Diameter

All of these products are designed and built in the modern Hoffman factory at Syracuse, N. Y., by skilled engineering and production staffs carefully trained in the Hoffman tradition of uniformly high quality. The high performance standards set by Hoffman equipment are well known.

3-FOLD EQUIPMENT SERVICE

Out of its 34 years of service the Hoffman organization offers a 3-fold equipment service which embraces

1—Finest equipment, dependable operation
2—Skilled servicemen located in 35 cities
3—Engineering service for laundry planning



Washers and Extractors in a Hoffman-Equipped Laundry

Hoffman is unusually well equipped to consult with architects and engineers in the planning of hospital or other institutional power laundries.

ASSISTANCE TO ARCHITECTS

Selecting the proper equipment to insure maximum output and lowest operating expense in the institutional laundry—and laying out the floor plans to provide greatest convenience and economy in operation—is an engineering application project which involves a close study of the requirements. Hoffman Engineers are well equipped to undertake this study in collaboration with the architect or consultant. Experienced engineers are available to survey the present facilities at the institution; modernized laundry layouts will be furnished gladly without charge. Full details as to floor space requirements, productive capacity, installation data, etc., are immediately available.

Unfortunately, space limitations prevent a presentation of these data in this page. However, a call to Hoffman will speedily bring a competent engineer who will assist in all details of laundry planning. If desired, he will furnish complete plans and specifications for the entire laundry machinery project.



Hoffman Tumblers feature the "Dry-By-Air" principle; produce soft-textured, odorless work. Bath towels dried in Hoffman "Dry-By-Air" Tumblers are soft, fluffy and absorbent.

APPROVED
AMERICAN COLLEGE OF SURGEONS

EQUIPMENT APPROVED BY AMERICAN COLLEGE OF SURGEONS

TROY LAUNDRY MACHINERY DIVISION

AMERICAN MACHINE AND METALS, INC.

Manufacturers of Complete Laundry and Dry Cleaning Equipment for Commercial and Industrial Laundries, Hospitals, Sanatoria, Hotels, Dry Cleaners, Schools and Clubs

EXECUTIVE OFFICES
100 Sixth Avenue, NEW YORK, N. Y.

FACTORIES: EAST MOLINE, ILL.

BRANCH OFFICES

BOSTON, MASS., 248 Boylston St.
BUFFALO, N. Y., 907 Liberty Bank Bldg.
CHICAGO, ILL., 35 E. Wacker Drive
HOUSTON, TEX., 308 Hughes St.
KANSAS CITY, MO., 25 W. 31st St.
LOS ANGELES, CAL., 149 W. Washington Blvd.
PITTSBURGH, PA., 601 Mellwood St.
ST. LOUIS, MO., 2726 Locust St.
SAN FRANCISCO, CAL., 1201 Folsom St.

PRODUCTS

Motor or Belt Driven Metal and Wood Washers; Extractors; Tumblers; Ironers; Presses; Dry Rooms; Starch Equipment; Blanket Napping Machines; Dampeners; Curtain Equipment; Electric Irons; Tables; Trucks; Tubs; Dry Cleaning Equipment; Stills; etc.

THE COMPANY

Manufacturers of quality commercial laundry equipment for more than half a century. Builders of many of the largest laundry installations in the world. Factories at East Moline, Ill., located to best serve the industry. Eighty-three acres of model plant facilities. All products fully guaranteed.

TROY ADVISORY SERVICE

Troy maintains an advisory service which will aid you in planning, laying out, estimating or preparing specifications for institutional and commercial laundries of any size or type. Troy offers this service without charge.

DESCRIPTION

Washers—Monel metal machines in 24 in., 30 in., 36 in., 42 in., 44 in. and 54 in. diameters built in all standard pocket combinations and lengths, in direct motor drive and elevated header belt drive.

Metal washers are furnished in "Minute-Man," "Atlas," "Unit," "Dublend" and "Balanced Drive" models.

Wood washers available in "Star" and "Spartan" models.

Wood washers in 30 in., 36 in., 42 in., 44 in. and 54 in. diameters furnished in all standard pocket combinations and lengths in direct motor drive and elevated header belt drive.

Extractors—Underdriven, open-top types with suspended or non-suspended curbs with monel metal baskets, manufactured specifically for hospital laundry purposes in 18 in., 20 in., 26 in., 30 in., 40 in., 48 in., 60 in. and 72 in. diameters.

All machines furnished in motor drive; 18 in., 20 in., 26 in. and 30 in. sizes, also available in belt drive.

Available in Troy "Minute-Man," "Marathon," "Mercury," and "Centerslung" types. Also in "Olympic" unloading type.

Tumblers—"Once-through," up-draft, or "Recirculating" type tumblers to fit every commercial laundry requirement.

Available in 36 in. and 42 in. diameters in all standard pocket combinations and lengths, in motor and belt drives, in "Minute-Man Jr.," "Premier" and "Trojan" types.

Ironers—Steam heated machines in "Chest" and "Cylinder" types, designed to meet every laundry production and quality problem. Chest types available in one, two, four, six and eight chest combinations, in all standard lengths. Machines furnished in motor and belt drives in Troy "Handy," "Standard" and "Float-Roll" types.

Cylinder types available in single and double cylinder combinations in 16 in., 24 in., 30 in. and 48 in. diameters and in all standard lengths. Machines furnished in motor and belt drives.

Presses—All wearing apparel and shirt presses—manually and pneumatically operated. "Trojan" and "Junior" air presses and "Minute-Man" foot presses. All models.

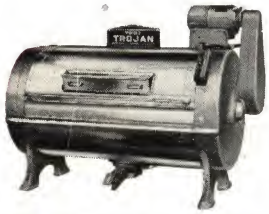
SAFETY FEATURES

All machines are equipped with full safety devices.

LITERATURE

Blueprints; floor plans; latest catalogues and circulars furnished you on request.

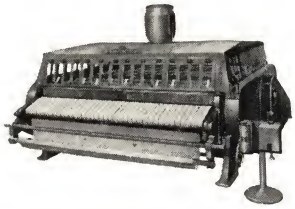
TROY
LAUNDRY MACHINERY



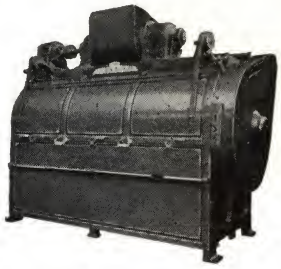
36, 42 and 54-in. Balanced Drive Washer



40 and 48-in. "Mercury" Extractor



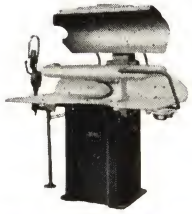
"Big 8" Flatwork Ironer with Canopy



42-in. "Premier" Once-through Tumbler



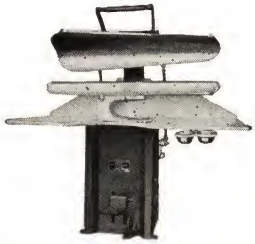
24 and 36-in. "Trojan Minute-Man" Washer



Model 40-B "Trojan" Pneumatic Press



Model 40-A "Trojan" Pneumatic Press



Model 51-38 "Minute-Man" Foot Press



30-in. "Marathon" Extractor

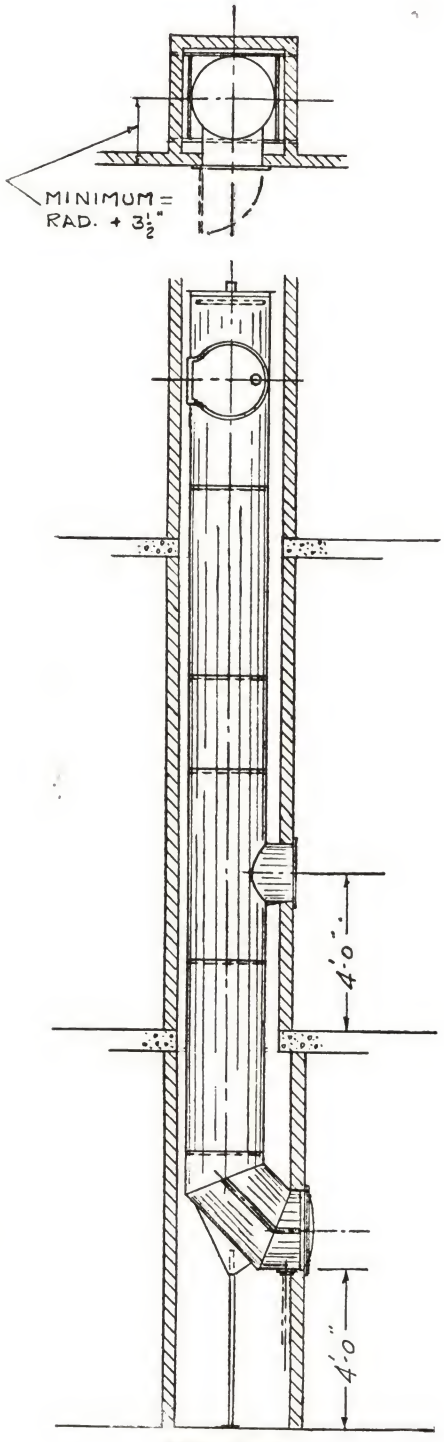
HASLETT CHUTE AND CONVEYOR COMPANY

Aluminum Clothes Chutes; Steel Rubbish Chutes; Spiral Package Chutes; Spiral and Tubular Fire Escapes; Roller Conveyor; Power Driven Conveyors

OAKS, PA.

SALES OFFICES IN ALL PRINCIPAL CITIES

For Page on Spiral and Tubular Fire Escapes, see File Index



Clothes Chute

ALUMINUM CLOTHES CHUTES

Tube — Constructed of 16-B.&S. gauge aluminum with vertical seams lock joined and horizontal seams slip joined in direction of travel. Standard diameters of 18, 20 and 24 in.

Intake Throats — No. 16-B.&S. gauge aluminum welded to tube forming an integral part of chute. Groove in bottom for drainage.

Intake Doors—Solid cast aluminum, satin finished, doors and frames furnished in two standard sizes—18 and 20 in. Doors to be self-closing and latching fitted with concealed hinges and springs, soft rubber gasket cushion and cast brass chromium plated operating T handle. Horizontal adjustment provided to conform with finished wall line.

Top Cap—Flat aluminum plate with 3 in. diameter collar for vent connection welded to center.

Supports—Outlet supported by structural steel pedestal from floor. Tube supported at inter-floors by four aluminum straps welded to tube and bolted to 2 x 2 x 3/16 in. angle grid, which is fastened to floor.

Flushing Ring—¾ in. diameter copper flushing ring with ¾ x ¾ ¾ in. copper T for water connection.

Outlet—90° elbow same diameter as chute — of 16-B.&S. gauge aluminum welded into single unit encased in No. 14 gauge steel, fitted with 2 in. diameter, cast iron, screw flange for drain connection. Solid cast aluminum, satin finished, door and frame, complete with soft rubber gasket cushion and three cam operated latches.

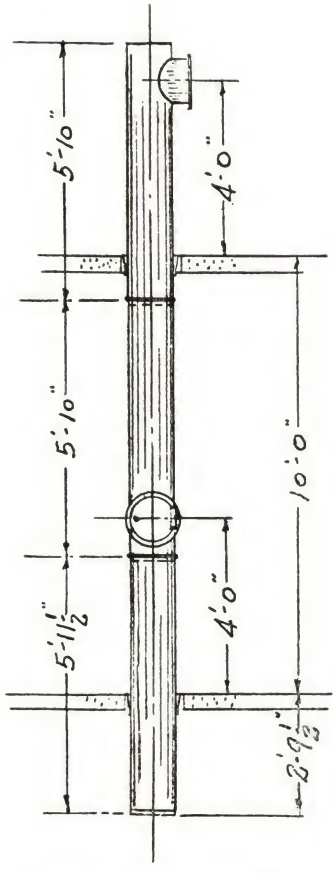
Work Not Included — Vent furnished and installed by others. Plumber to connect to flushing ring and drain.

ALUMINUM CLOTHES CHUTE FOR THE HOME

Tube—No. 18-B.&S. gauge aluminum 12¾ in. diameter, made in standard 6 ft. sections with vertical seams welded, and horizontal seams slip joined and lapped in direction of travel. Chute has welded aluminum top with vent holes and is supported at each floor by three aluminum straps welded to tube and nailed to joists.

Intakes — Throats 12 in. diameter welded to tube and filled with die cast aluminum, door and frame, flat and flush with wall.

Cost—Chute shipped in wire strapped container weighing 85 lbs. Price 50 dollars, F.O.B. Oaks, Pa.



Clothes Chute for the Home

STEEL RUBBISH CHUTE

Stack — 14-gauge steel, all seams flanged out and riveted. Standard sizes 22, 28, 35 and 46 in. square.

Cap—14-gauge steel with 6 in. diameter collar for vent.

Intakes—Furnished in two types as follows:

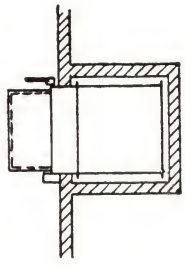
Interlocking Door Intakes Type No. 1 — Hoppers and door 14-gauge steel, welded construction. Intakes have two doors, one through which rubbish is placed in hopper and other opening into stack. Doors connected to operating handle by interrupted cut tooth gears and cams, so that one door is securely locked in closed position, while other opens and closes. No back draft at any time.

Rotary Type No. 2—Loading hopper flush with wall when closed, and so constructed that when opened back of hopper closes opening and thus prevents back draft.

Sprinkler Protection — Accessible recesses for sprinkler heads provided where required. (For average chute locate one at top of stack.)

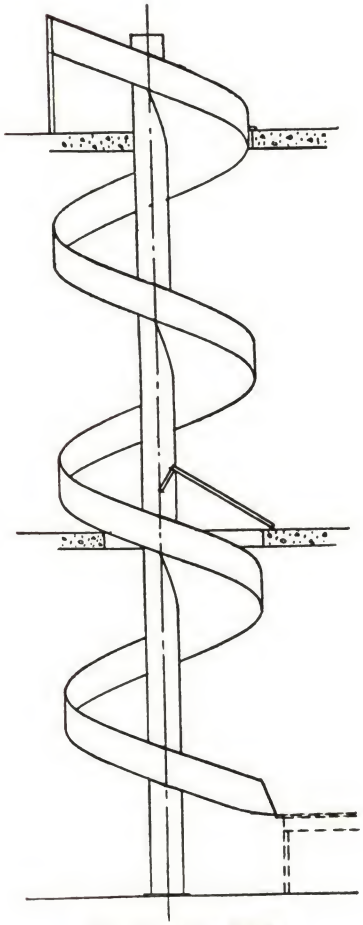
Outlet—90° elbow, 12-gauge steel sides and ¼ in. plate bottom. 12-gauge steel hinged door with heavy double latch. Elbow and door reinforced with angles.

Supports — Elbow supported by structural steel strut from foundation. Stack carried and stayed at each floor by angles across floor opening.



Painting — One shop coat.

Work Not Included — Vent and sprinkler appliances.



Spiral Package Chute

234T

SPIRAL PACKAGE CHUTES

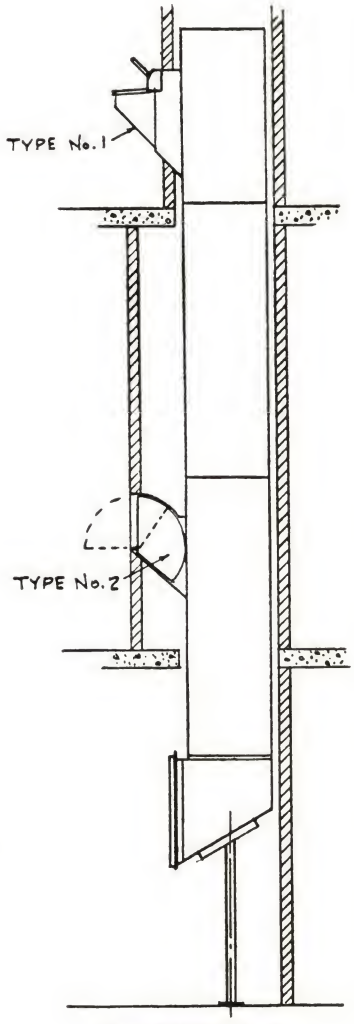
Made in both open and housed types, and designed to accommodate a wide variety of merchandise. Successful installations have been made in drug, electrical supply, grocery, and hardware warehouses and stores.

Chutes are of all steel construction with concave trough runway.

Sizes range from 3 ft. diameter with 12 in. wide trough to 15 ft. diameter with 60 in. wide trough, designed to successfully handle packages weighing only a few ounces up to 2000 lbs.

Vertical sliding counterbalanced steel fire doors furnished for housed and masonry enclosed installations. Horizontal trap type furnished for open chutes as illustrated. The latter type may be adapted for discharging merchandise at intermediate floors. All fire doors made and hung in accordance with Fire Underwriters' requirements.

Catalogues Sent on Request



Steel Rubbish Chute

NESSLER MFG. COMPANY

Laundry and Waste Chutes
201 No. Wells Street
CHICAGO, ILLINOIS

GLASS ENAMELED, ALUMINUM, ARMCO IRON PAINTED LAUNDRY AND WASTE CHUTE SPECIFICATIONS

Note: This same specification applies to Welded Armco Iron Chutes, except that in (1) (2) Glass Enameled is omitted and chute is painted one coat of metallic paint inside and out.

(C1) General

Furnish and install where indicated on plans (one (1)) (specify number) Standard Glass Enameled Laundry Chute(s) (12-in.) (18-in.) (20-in.) (24-in.) inside diameter as manufactured by the NESSLER MFG. COMPANY, Chicago.

(C2) Materials and Construction

The entire area of chute, both inside and outside, shall be surfaced with Glass Enamel fused into the metal. Chute shall be made of 18-gauge Armco Ingot Iron with all seams welded and ground perfectly smooth before enameling. No rivets shall be employed. Chutes shall be made in suitable sections to meet building requirements. Sections shall be flanged at the ends and joined together securely with cadmium plated bolts. Provide flat rubber gasket between all joints.

(C3) Door Throats

The throat sections to which service doors are attached shall be welded to and form an integral part of the chute proper. They shall be of lengths required on plans to bring the door frames flush against the finished wall. Each throat shall be made with a groove in the bottom side sloping downward in the direction of travel to insure prompt drainage when the chute is flushed.

Note: Throats are 18-in. diam. on 24-in. size, 20-in. and 18-in. sizes, and 12-in. diam. on 12-in. size.

(C4) Service Doors

At each floor to be served, provide one solid, polished, Cast Aluminum Door and frame, the center of which shall be 47 in. above the finished floor line. Each door and frame shall be cast with hinge lugs and fitted with one ⅜-in. brass nickelplated hinge rod. The door frames shall be securely fastened to throat flanges by brass nickelplated screws and aluminum backer rings. Each door shall be furnished with quick acting refrigerator latch and with round rubber cushion gasket. All doors shall be water and smoke tight.

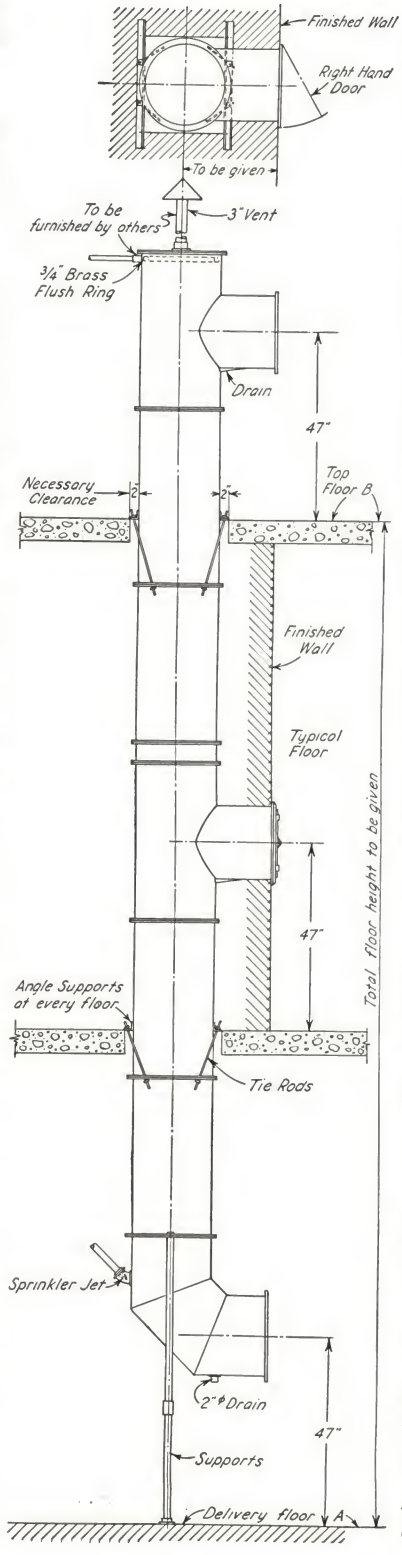
Note: Doors are 18-in. diam. on 24-in. chute, 20-in. and 18-in. chutes and 12-in. diam. on 12-in. chutes.

(C5) Outlet

Note: Select type desired.

(5a) The bottom of chute shall terminate in a 90° elbow of same diameter as the chute proper, center of which shall be 47 in. above the finished floor line. It shall be fitted with a heavy Cast Aluminum Door, attached to chute in the same manner as service doors. The door shall be provided with a round rubber cushion gasket and shall seal watertight when closed. In the elbow there shall be a standard 2-in. iron pipe connection with strainer, for connecting drain pipe to sewer.

(5b) The bottom of the chute shall terminate in a 45° elbow of same diameter as the chute proper, without a door.



(5c) The bottom of the chute shall terminate in a straight run .. in. below basement ceiling, without a door.

(5d) Furnish outlet with an automatic fire door.

Note: Adapted to (5c) only.

(C6) Top

Approximately 20 in. above top floor service door provide enameled disc top with 3-in. standard iron pipe connection in center for vent pipe. Top shall be bolted to flange of chute section and provided with a flat rubber gasket.

(C7) Flushing Ring

A perforated ¾-in. brass flushing ring shall be installed above the top throat section near the top of chute. Flushing ring shall have standard ¾-in. iron pipe connection for water supply line.

(C8) Supports

Chute shall be supported by two angle irons and four tie rods at each floor (and by pipe legs with cast iron bases at the outlet elbow).

(C9) Piping

All piping to and from chute (including vent pipe and ventilator) shall be furnished and installed by others.

(C10) Sprinkler Jets

Provide (one (1)) (specify number and location) standard 1-in. size automatic sprinkler jet(s) in (an) offset recess accessible from the inlet door.

(D) WELDED ALUMINUM LAUNDRY CHUTE SPECIFICATIONS

Note: The specification (C) Glass Enameled Laundry Chute applies to Welded Aluminum Laundry Chute in all details and construction, except as follows:

(C) Material

Chute shall be made of $\frac{1}{16}$-in. sheet aluminum (bottom elbow ⅛ in.).

(E) GLASS ENAMELED RESIDENCE LAUNDRY CHUTE SPECIFICATIONS

Note: The specification (C) Metal Glass Laundry Chutes in general applies to Residence Chutes, except as follows:

(A) Sizes

Sizes are 12 in. diameter cylindrical only.

(B) Outlets

Same as (C5a) or (C5c) with or without fire door as in (C5d). Drain fitting omitted in Outlet E.

(D) Top

Same as (C6) with the exception that ventilator outlet is customarily omitted. This can be furnished where specified.

PORCELAIN PRODUCTS COMPANY

1425 South 55th Court, CICERO, ILLINOIS

REPRESENTATIVES IN ALL PRINCIPAL CITIES
SEE LOCAL TELEPHONE DIRECTORY

For Toilet Partitions see File Index



LAUNDRY CHUTES AND WASTE CHUTES

The new Metal Glass Laundry and Waste Chutes, details and specifications for which are shown below, is an economical and durable unit designed to outlive any building in which it is installed. It is of metal construction throughout, has no rubber gaskets to deteriorate, and is completely fire and water-proof. Installation offers no problem because of its simple construction.

Left—Flush type cast aluminum door fitted with a sturdy piano hinge and lock handle. No projections on which to catch clothes. Square doors have approximately 25% greater capacity than round doors.

Right—This attractive all-porcelain-enameled door is available in a wide selection of colors for all types of chute installations. Fittings are of modern design and chromium trimmed.



LAUNDRY AND WASTE CHUTE SPECIFICATIONS

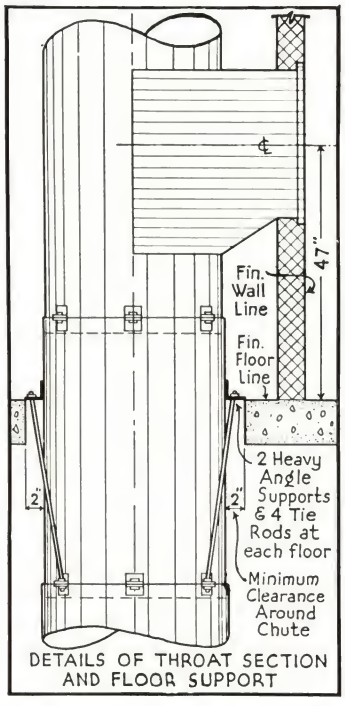
(A) Metal Glass Laundry and/or Waste Chutes

(A1) General—Furnish (specify type and number) Standard Metal Glass Laundry and/or Waste Chute (s) (state which) (16 in.) (18 in.) (20 in.) (24 in.) inside diameter as manufactured by PORCELAIN PRODUCTS COMPANY, Cicero, Illinois.

(A2) Materials and Construction—Entire area of the chute, both inside and out, shall be surfaced with porcelain enamel fused into heavy gauge special enameling iron with seams welded and ground perfectly smooth before enameling. No rivets shall be employed. Sections shall be constructed to slip into one another with 1 in. lap in direction of travel, connected by 6 clips welded to section, securely bolted together and shall be supported by 4 tierods suspended from 2 angles at each floor.

(A3) Door Throats—Throat sections are to be square and shall be welded to and form an integral part of chute proper. They shall be of lengths required on plans to bring the back of door frames flush against the finished wall. Each throat shall slope downward in the direction of travel from throat opening to chute proper, insuring prompt drainage when flushed.

Note: Throats are 16 in. on 16 and 18 in. chutes, 20 in. on 20 and 24 in. chutes.



DETAILS OF THROAT SECTION AND FLOOR SUPPORT

(A4) Service Doors—At each floor to be served, provide one square porcelain enameled door and frame or one square polished cast aluminum door and frame, the center to be 47 in. above the finished floor line.

Note: Select type desired.

(A4a) ***Aluminum Door***—Door frames shall be securely fastened to throat flanges by brass nickel plated screws. Each door shall have quick-acting latch and round rubber cushion gasket. Door handles shall be recessed and doors flush with door frames. Face of door frames shall project not more than ⅜ in. in front of finish wall line. All doors shall be water and smoke tight.

(A4b) ***Porcelain Enameled Door***—Provide one square door and frame to be securely fastened to throat flanges by brass nickel plated screws. Each door shall be furnished with quick-acting latch and round rubber cushion gasket. Door to project ¾ in. beyond door frame and be equipped with composition and chromium trimmed hinges and handle. All doors shall be water and smoke tight.

Note: Doors are 16 in. on 16 and 18 in. chutes, 20 in. on 20 and 24 in. chutes.

(A4c) Each Waste Chute inlet door shall have attached hopper so constructed that when the door is open throat opening is closed.

(A5) Outlet—Note: Select type desired.

(A5a) Bottom of chute shall terminate in a 90° elbow same diameter as chute proper, center of which shall be 47 in. above finished floor line. To be fitted with heavy round cast aluminum door attached to chute in same manner as service doors. Door shall be provided with round rubber cushion gasket and shall seal water-tight when closed. In elbow there shall be a 2-in. brass pipe connection with strainer for connecting drain pipe to sewer.

(A5b) Bottom of chute shall terminate in a 45° elbow of same diameter as chute proper without a door.

(A5c) Bottom of the chute shall terminate in a straight run ..... inches below the basement ceiling, without a door.

(A5d) Furnish outlet with automatic fire door.

Note: Adapted to (A5b and A5c) only.

(A6) At each floor chute shall be supported by 4 tierods suspended from two 2-in. angle irons resting on floor slabs and extending into walls. Bottom (A5a and A5b) shall be supported by 2-in. pipe stand with flange resting on door.

Note: Well hole for chute shall be 4 in. larger than diameter of chute.

(A7) Top—Approximately 5 ft. 6 in. above finished top floor provide porcelain enameled disc top with 3-in. galvanized pipe connection in center for vent pipe. Top shall be bolted to angles welded to chute section.

(A8) Fushing Device—Provide a flushing jet made of solid brass free of all moving parts. This piece shall be attached to cover plate. Water valve should be placed in basement for convenience.

(A9) Piping—All piping to and from the chute including water lines and drain pipe, vent pipe and ventilator shall be furnished and installed by others.

(A10) Sprinkler Jets—Provide (specify number and location) standard 1 in. automatic sprinkler jet (s) set in (an) offset recess accessible from the inlet door.

Metal Glass Laundry and Waste Chutes are also available in the flange and rubber gasket type construction or if desired can be built of aluminum. Write for literature describing our various models.

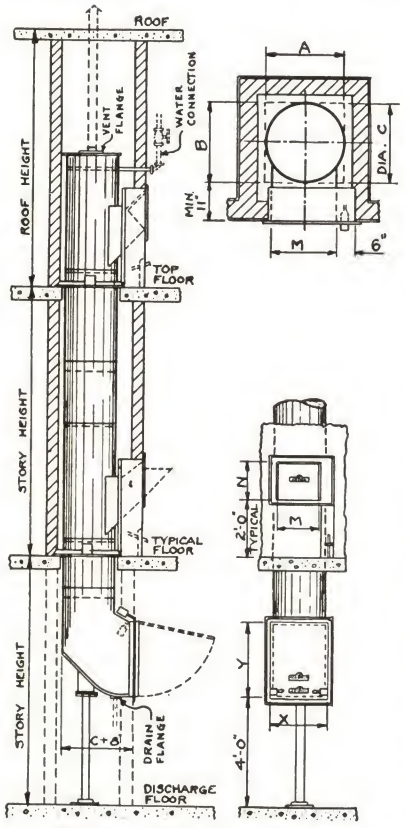
C. M. WILKINSON COMPANY

HANDLING EQUIPMENT ENGINEERS

Keith Building, 1621 Euclid Avenue, CLEVELAND, OHIO

WILKINSON CHUTES FOR SOILED LINEN OR RUBBISH DISPOSAL

(Patented)



Wilkinson Soiled Linen or Rubbish Chute

With foot operated, bottom hinged, hopper type, square intake and hopper discharge. Types W-1, W-3 and W-5

Wilkinson Chutes embody certain basic principles of standardized design which are exclusive and the result of twenty-one years as specialists in Chute Engineering. They provide convenient and instant centralized disposal for soiled linen and rubbish, paper, magazines, waste flowers, debris, etc. Best practice provides a chute of each kind for every 100 ft. of horizontal floor space. Modern in appearance the first cost is surprisingly low and Wilkinson construction requires no maintenance.

Material—Aluminum: which is homogeneous, non-corrosive, sanitary, has a permanent smooth surface and cannot chip or crack.

Smooth Joints—No rivets, no bolted flanges, no inside projections or recessed ledges.

Supports—For each story height of Chute are provided at its respective floor.

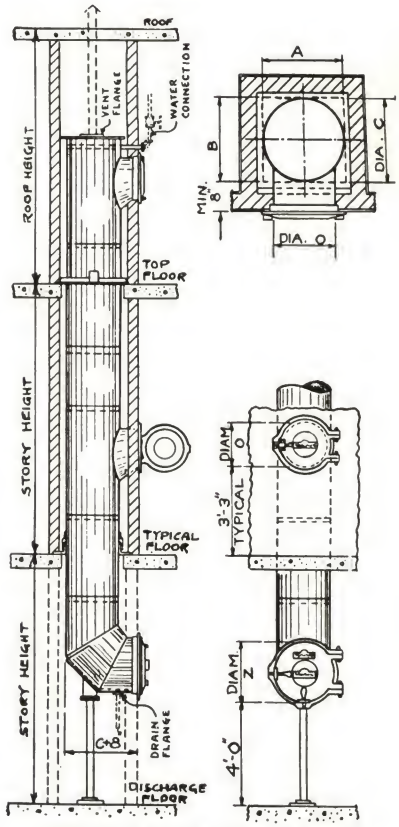
Expansion Joints—At each story, prevent cracked plaster on partition walls.

Intakes—Two types. (1) *Square, hopper type aluminum door,* bottom hinged, flush with the wall. Door, *operated by foot lever,* is noiseless and self-closing. (2) *Circular,* side hinged *aluminum door* with *cast aluminum frame.* Door is operated by hand but furnished with concealed spring, self-closing hinges when so specified. Every intake is plainly marked for the use intended.

Discharge Hopper—Large storage capacity with convenient top-hinged counterbalanced door. Elbow type discharge with circular, side swing door is optional. Both types mounted on impact plate with pipe pedestal to floor—designed to prevent bottom of chute being punctured by heavy objects.

Cleaning—A flushing ring connected with hot and cold water is provided at the top of chute for washing down the sides. Flange for drain connection is provided at bottom of chute; also a flange for vent connection is provided at top of chute.

Information for Estimates—Estimates and detailed information on exact requirements gladly furnished without obligation. When writing please give: Name and use of building; name of owner and architect; kind of use of chutes; number and kind of intakes; location and kind of discharge; story heights of building.



Wilkinson Soiled Linen or Rubbish Chute

With hand operated, side hinged, circular intake and elbow discharge. Types W-2, W-4 and W-6

Some Recent Chute Installations

St. Joseph's Hospital, Flint, Mich.—3 chutes.
Book-Cadillac Hotel, Detroit, Mich.—1 chute.
St. Mary's College and Academy, Monroe, Mich.—13 chutes.
Huron Road Hospital, Cleveland, Ohio—2 chutes.
Hamilton County Tuberculosis Hospital, Cincinnati, Ohio—2 chutes.
Jewish Home for Aged, Cincinnati, Ohio—1 chute.
Herman Briggs Memorial Hospital, Ithaca, N. Y.—5 chutes.
Taunton State Hospital, Taunton, Mass.—2 chutes.
St. Mary's Hospital, Los Angeles, Calif.—2 chutes.
St. Joseph's Infirmary, Houston, Tex.—3 chutes.

Residence Soiled Linen and Rubbish Chutes

Shipped ready to set in place. Intake sections have hopper type, hand operated and self-closing doors. Door and trim all of aluminum shipped as a complete unit.

Waste Towel Chutes

For office, loft and mercantile buildings having two or more toilet rooms one above the other. Save janitor service and prevent unsanitary and mussy conditions. Chutes are of aluminum similar to the rubbish chutes. Intake doors and frames are of aluminum, bronze, steel or other metals finished as specified. Doors are top hinged, of inside swinging type. Dimensions and details on request.

SIZES AND DIMENSIONS OF WILKINSON CHUTES

Chute Type for Soiled Linen	Chute sizes, in.			Intake openings, in.			Discharge openings, in.			Chute Type for Rubbish
	Square		Circular	Hopper Type		Circular	Square Type		Elbow Type	
	Width A	Depth B	Diam. C	Width M	Height N	Diam. O	Width X	Height Y	Diam. Z	
W-1HS	27	27	28	22	18	.....	28	36	.....	W-1HR
W-2HS	.....	.....	28	.....	.....	24	28	36	.....	W-2HR
W-3HS	22½	22½	24	18	18	.....	24	30	.....	W-3HR
W-3CS	.....	.....	24	18	18	.....	.....	.....	24	W-3CR
W-4HS	.....	.....	24	.....	.....	18	24	30	.....	W-4HR
W-4CS	.....	.....	24	.....	.....	18	.....	.....	24	W-4CR
W-5HS	18	18	18 or 20	15	18	.....	18	30	.....	W-5HR
W-5CS	.....	.....	18 or 20	.....	.....	18	.....	.....	18	W-5CR
W-6HS	.....	.....	18 or 20	.....	.....	18	18	30	.....	W-6HR
W-6CS	.....	.....	18	.....	.....	18	.....	.....	18	W-6CR
W-7S	12	12	12	12	15	.....	24	30	.....	W-7R
W-8S	11	6	.....	9	12	.....	24	30	.....	W-8R

Chute Types W-3, W-4, W-5 and W-6 are standard sizes. Can be made either circular or square—circular chutes recommended.

Wilkinson Dust Chutes

Wilkinson Dust Chutes provide the modern and proper way to readily clean dust mops, brooms, rags, etc. and to remove dust and debris quickly and easily.

Intake doors are bottom hinged, hopper type, foot operated. Opening the door automatically starts the suction fan which vigorously pulls all dust and dirt down the chute into the dust collector where the dust and dirt is collected in a pan. Releasing the foot lever closes the door automatically and silently and shuts off the suction fan.

Further details and dimensions furnished on request.

THE SPENCER TURBINE CO.

Member of The Producers' Council, Inc.

Manufacturers of Vacuum Cleaning Systems, Blowers and Exhausters

488 New Park Avenue, HARTFORD, CONN.

Products

CENTRAL AND PORTABLE VACUUM CLEANING SYSTEMS; SWIMMING POOL CLEANING EQUIPMENT; BOILER FLUE CLEANING APPARATUS; the SPENCER TUBE-VAC. Also Turbo Compressors (Blowers); Organ Blowers (Orgoblo).

Spencer Central Vacuum Cleaning Systems

Spencer Central Vacuum Cleaning is a permanently installed system for the speedy and complete removal of dirt and dust from all kinds of floors, walls, ceilings, furniture and other building equipment. It consists of five essential parts, each carefully selected and installed to meet the special requirements for each individual building.

A vacuum producer, located in the basement, and piped to inlet valves on all floors of the building, draws all dirt and dust into a specially designed separator which is entirely enclosed and readily cleaned. Light weight, flexible hose and special vacuum tools are provided for each operator.

Capacities—In general, the Spencer System provides a capacity of 2½ hp. per sweeper up to and including 30 hp. Above 30 hp., the capacity is 2 hp. per sweeper.

Each type of building calls for a different layout, equipment and tools. Data sheets with tool recommendations are available for every type of building. Spencer Engineers are available for layout service. An indication of some of the more important considerations and approximate capacities is given below.

Apartments—Cleaning allowance, 15 minutes per room, per week, between 8 and 12 A. M. only. A 3 hp. one sweeper unit will provide for 24 apartments. Savings on the carpet, upholstery and decorations is an important item.

Churches—One man with a 3 hp. unit can clean most churches. Larger churches requiring two operators, use the 5 hp. unit. When parish houses, chapels and other related buildings must be cleaned simultaneously, larger units may be necessary.

Department Stores—One sweeper capacity for every 20,000 sq. ft. of sales floor. Diversity of surfaces requires careful selection of vacuum tools.

Hospitals—Cleaning usually completed by 10 A. M., with one operator cleaning about 2500 sq. ft. per hour. Special noiseless equipment recommended. Dry mop cleaner also available.

Hotels—One sweeper capacity for every one hundred rooms. Saving on carpets an important item. Special tool layout includes wall, upholstery, and radiator cleaning tools.

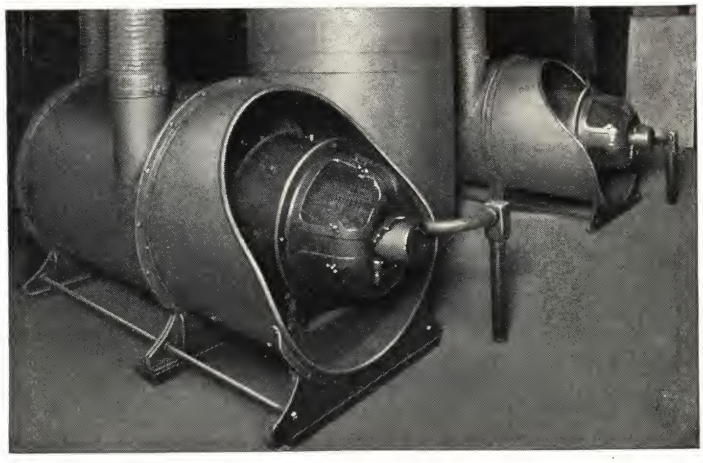
Industrial—Applications too extensive for data on capacity. Used extensively for reducing hazards of injurious dusts. Larger volumes of material can be handled.

Office Buildings—One sweeper capacity for every 20,000 sq. ft. of rentable floor space, with women operating the vacuum 7 hours per day. The Spencer sheepskin faced linoleum tool and Spencer cement floor brush are recommended as additional tool equipment.

Residences—Up to nine rooms: ¾ hp. single sweeper. 10 to 15 rooms: 2 hp. single sweeper.

Schools—One janitor can clean twelve average sized class rooms in two hours with a 3 hp. Spencer System. The Spencer elbow joint makes cleaning around furniture easy. Eraser cleaners suggested as additional equipment.

Theaters—Up to 1,000 seats, one 3 hp. single sweeper capacity. 3,000 to 4,000 seats with balconies, 10 hp. four-sweeper capacity. Special tools for stage curtains, walls and projection room.



Two H. P. Spencer Vacuum Producers



Spencer Central Vacuum Cleaning

Heavy Duty Portable Vacuum Cleaners



The Spencer ¾ hp. Portable Unit embodying the same principles and using the same tools as the Central System, weighs only 150 lb., is easily moved around, provides complete separation of the dust and is easily cleaned.

Entirely practical for schools, hotels, theatres and hospitals and used also in office buildings and stores.

Larger units of the Portable Truck type are also available for industrial plant service. Bulletins on request.

Boiler Flue Cleaning Apparatus

With special attachments available, Spencer system can be used in cleaning horizontal return tubular and cast iron sectional boilers with a remarkable economy in fuel consumption.

Swimming Pool Cleaning Equipment

The use of Spencer cleaning equipment for swimming pools is most desirable since it permits the removal of sediment from the bottom of the pool without lowering the water level appreciably. Bulletin on request.

Engineering Service—The Engineering Department offers its services without obligation in recommending the proper size and type of equipment, piping layout, or other engineering details. Bulletins for Architects on request.

B. F. STURTEVANT COMPANY

Vacuum Cleaning, Heating, Ventilating and Air Conditioning Equipment

MAIN OFFICE AND WORKS

HYDE PARK, BOSTON, MASS.

List of Offices is given on our page on Fans, Blowers, etc., for which see File Index

Sturtevant Products

Sturtevant Puts Air to Work

The complete line of Sturtevant Equipment includes PORTABLE and STATIONARY VACUUM CLEANERS and practically every type of AIR SUPPLYING, EXHAUSTING and CONDITIONING APPARATUS; UNIT HEATERS; and many other related items.

For Sturtevant Fans, see File Index.

Co-operation

Sturtevant Engineers located at each of the branch offices are always ready to co-operate with architects, engineers and contractors in the selection of equipment suitable for any prospective installation. These men are at your service. Call on them.

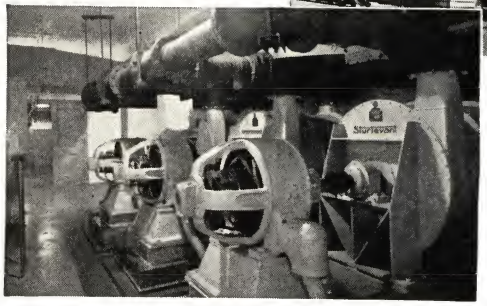
Central Vacuum Cleaning System

The central vacuum system is recognized today as the most efficient method of cleaning public and private buildings, but the economical operation of such a system depends upon the piping, vacuum producer and design of tools.

The Sturtevant Central Vacuum Cleaning System includes piping recommendations which insure correct operation of the system—vacuum producer which will maintain the correct vacuum throughout the system—tools designed individually for specific cleaning operations.

The system consists of a vacuum producer together with a dust separator, both located in the basement and connected to a piping system which runs through the building. Outlets from this piping system are so located that any part of the building can be reached by an operator with 50 feet of hose and the necessary cleaning tools.





House of Representatives Office Building, Washington, D. C.

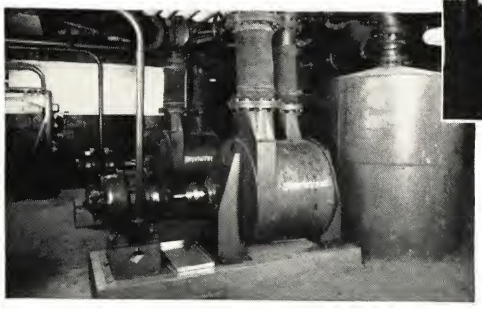
The cleaning principle is based on the maintenance, by the exhauster in the basement, of a fixed vacuum on the system and a flow of air at controlled velocities through the tools and the piping system. At the tool, high velocity flow of air is necessary to pick up the dirt within the floor space covered by the tool and to hold it in the air stream. In the piping system, however, the velocity is reduced to the minimum that will carry the dirt along the pipe, thus reducing the power required to operate the system.

In spite of the apparently complicated requirements of the Sturtevant Central Vacuum Cleaning System it has only one rotating element and is simple to operate and control.

Typical Installations

Department of Justice Building, Washington, D. C.
House of Representatives Office Bldg., Washington, D. C.
60 Wall Tower, New York, N. Y.
Hotel Traymore, Atlantic City, N. J.
Central High School, Kansas City, Mo.
Broadway Department Store, Los Angeles, Cal.
Earl Carroll Theatre, New York, N. Y.
Municipal Auditorium, St. Louis, Mo.
Oliver High School, Pittsburgh, Pa.
University Club, Boston, Mass.
Public Schools Nos. 123, 124 and 150, New York, N. Y.





60 Wall Street Tower, New York, N. Y.

Complete Data

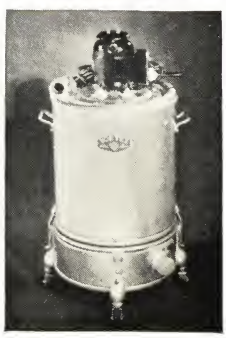
Our twenty-page booklet describes the system in full detail, gives helpful data on determining size of cleaning plant, layout of piping system and pipe and fitting requirements. Also describes Vacuum Producers and Separators and gives complete Standard Specifications. Write for your copy of this Bulletin No. 397-I.



Portable Vacuum Cleaner

The new Sturtevant Vortex Cleaner, suitable for use where a central system is not available, is the combined result of Sturtevant Engineering and the helpful suggestions of hundreds of users. Exceptionally rugged in construction, yet weighing only 60 lbs., it can be easily handled by one man.

Height—36 in. *Working Suction*—23½ in. *Water Working Volume*—85 c.f.m. *Motor*—Universal 110-volt or 220-volt single phase, a.c. or d.c.



COMBO CORPORATION

Manufacturers of Combination Incinerator and Gas Water Heater Units

ROCHESTER, N. Y.

THE MODERN INCINERATOR AND STORAGE GAS WATER HEATER—IN ONE UNIT

The Combo Incinerator and Automatic Gas Water Heater is a thoroughly dependable unit. It has been carefully developed and placed upon the market only after years of successful operation. Architects now specify its installation; public utility companies recommend it; plumbing and heating contractors approve it.

What Combo Does

(1) Combo is an efficient and adequate incinerator which burns up the waste materials coming from the kitchen (as well as papers, boxes and other rubbish) reducing them to purest ash.

(2 Combo gives a thoroughly reliable and ample source of hot water at all times. Thermostatic control (usually set at 130°F.) automatically lights burner when water temperature drops below desired point, and shuts off burner when water temperature reaches correct point.

Two Models

Combo is supplied in two models: "Master A" with a 40- or 55-gal. tank and "Model C" with a 20- or 30-gal. tank.

How Combo Works

The Combo Incinerator and Automatic Gas Water Heater makes use of otherwise wasted heat, in two ways. The sectional diagram shows the copper coil heating unit is equipped with a vent baffle through which are discharged the hot gases and heat generated by the burner. This heat, delivered under the incinerator grate, dehydrates the refuse above and constantly assures *complete* incineration. Also, the heat derived from burning refuse is used to warm the water. Thus a two-way saving is effected: The water heater aids incineration and the incinerator, when burning, helps heat the water.

Note that the water tank and incinerator are thoroughly insulated with air cell asbestos and rock wool. This reduces gas consumption to a minimum and permits placing the Combo unit in or near kitchen. All models are equipped with latest approved controls and safety devices.

Finishes

The "Master A" is finished in aluminum lacquer. "Model C" is furnished in two tones of green enamel. Both models are modern and attractive in appearance.

Architects' Specifications

Furnish and set in place where indicated (in basement or first floor as desired) one "Model C" (20-gal. or 30-gal. capacity) "Master A" (40-gal. or 55-gal. capacity) Combo Incinerator and Automatic Gas Water Heater as manufactured by the Combo Corporation, Rochester, N. Y.

Furnish all connections and shut-offs as follows:

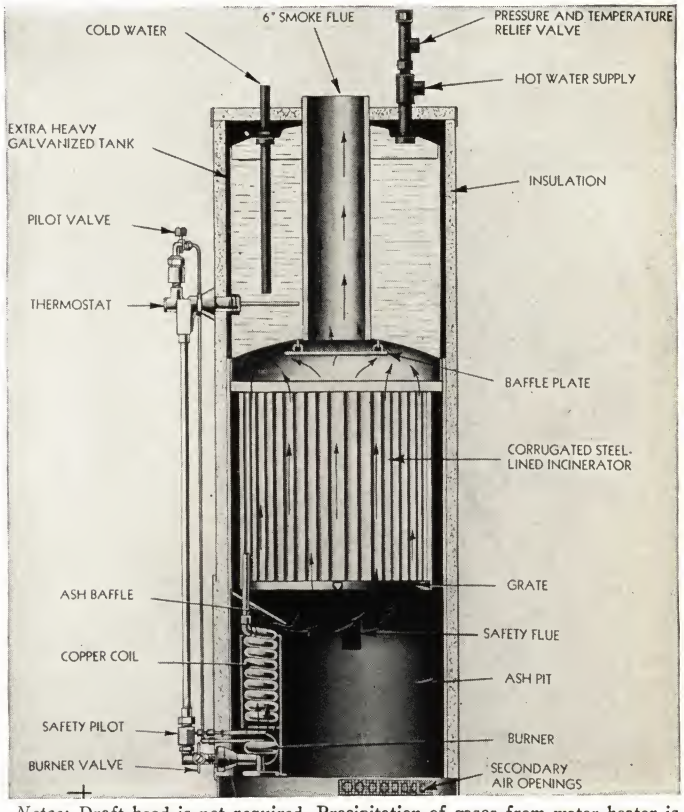
Model C		Master A
½ in.	Cold water line	1 or ¾ in.
¾ in.	Hot water line	1 or ¾ in.
⅜ in.	Gas line	½ in.
6 in.	24-gauge galvanized Iron smoke pipe	6 in.
21 in. diam.	Size of unit on floor	23 x 23 in
23 x 26½ in.	Size of unit over all	32 x 35 in
59½ in. (C-20)	Height of unit	(A-40) 67 in.
68½ in. (C-30)	Height of unit	(A-55) 75½ in.
459 lbs. (C-20)	Weight with tank full of water	(A-40) 957 lbs.
569 lbs. (C-30)	Weight with tank full of water	(A-55) 1077 lbs.



Model "C"



"Master A"



Notes: Draft hood is not required. Precipitation of gases from water heater is eliminated. Combo Smoke Pipe may be connected to same flue with any other unit. It will not retard the draft.

Prices

Model C	—	20 gal.	— $160.00	Master A	—	40 gal.	— $263.00
Model C	—	30 gal.	— 175.00	Master A	—	55 gal.	— 273.00

F.O.B. Rochester, New York

For More Complete Details Write to Combo Corporation, Rochester, N. Y.

MEMORANDA

DUPLEX INCINERATOR DIVISION

OF THE CONSOLIDATED IRON-STEEL MFG. CO.

Manufacturers of Duplex Incinerators

1291 East 53rd Street, CLEVELAND, OHIO

The Company

The Consolidated Iron-Steel Mfg. Co., of which Duplex Incinerator Company is a Division, is a substantial organization with fifty years of successful manufacturing experience.

The improved features of Duplex Incinerators, which are made complete in our own foundry and shops, have been developed from long, intimate experience with garbage and waste burning equipment. They are sold as a proven product and guaranteed by an institution worthy of confidence.

Engineering Service

In selecting a Duplex Incinerator, the owner secures the services of a skilled sales engineer who understands the technique of incineration and has been thoroughly trained in the service of this company. This insures an adequate, properly adapted installation, with permanent satisfaction—guaranteed by the name, "Duplex".

In addition to our standardized, chimney-fed incinerators, we also design and furnish special incinerators and destructors. An Engineering Department, trained in this work, is maintained for the benefit of architects and engineers. This service is without obligation, and we welcome the opportunity to consult with you.

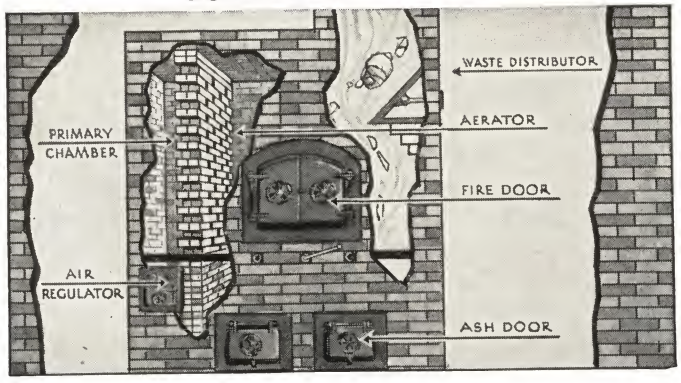
DUPLEX INCINERATORS

Description

The Duplex Incinerator is arranged with a brick combustion chamber of highly efficient, though simple, design having a fire brick lining. It is located at the base of a chimney, usually in the basement of the building. Into this chamber are built grate rests with full dumping grates, wall bearings, stops, waste distributor, access doors, draft regulator and miscellaneous supporting iron.

Chimney starts on top of the incinerator and extends straight up through the building, usually in the kitchen wall or convenient to corridor or rear porch. Service or receiving hopper doors, readily accessible, are built into chimney wall at the most convenient point on the floor or floors above.

All metal parts are furnished by us with ¾-in. scale installation detail drawings for guidance of mason in setting the parts.



Operation

Duplex Incinerator performs a triple function in the disposal of waste in that it—(a) provides sanitary concealed storage for waste until it is dried, ready to be burned; (b) provides fuelless, odorless burning, and (c) provides storage for the ashes, flame-sterilized tin cans, broken glass and crockery for timely removal.

Garbage, waste paper, broken boxes of wood and paper, wilted flowers, discarded newspapers, sweepings, and all other miscellaneous waste are deposited in the receiving doors, right at hand on upper floors of buildings, where they fall to the incinerator chamber. As waste falls it strikes the waste distributor, which scatters the material over the grates, preventing packing which would interfere with drying and combustion. Then follows the drying out process by means of the chimney draft and aerator lattice.

When lighted, the waste paper, broken wood and other readily combustible matter contribute a hot fire which completes the drying and consumes the contents of the incinerator chamber, as garbage is then readily combustible.

Principles of Construction

The Aerator Lattice—Air is drawn by the chimney through the draft regulator into the primary chamber and is distributed by the aerator lattice which extends the full width and height of the incinerator. This current of air passes through and over *all* the garbage and other waste in the main incinerator chamber.

Between burnings, this greater air circulation prepares the waste for burning by evaporation of moisture.

During burning, the incoming air is heated by the hot fire brick in the aerator lattice which is in contact with the fire, and that feeds a perfectly distributed supply of preheated oxygen to maintain combustion *on top* of the waste accumulation. Odorous gases released by the heat approaching waste below must pass through the fire and be sterilized or consumed.

Draft regulator provides separate control of up-draft through horizontal grates, and top draft through Aerator, to obtain controlled burning and maximum results under all conditions.

The Waste Distributor—The efficient, fuelless incineration accomplished in Duplex Incinerators is the result of positive aeration of all waste secured as follows:

First—by air distribution the entire height and width of the incinerator. Second—by placing air intake and distribution on side opposite chimney so that air current acts on *all* the waste. These two results are accomplished by the Duplex Aerator Lattice in a highly satisfactory manner.

Third—by avoiding the compression of the accumulation of waste due to the impact of its fall from upper floors of the building. Fourth—by shifting the waste in a loose pile toward the point of incoming air to insure its contact with the drying air current. The latter two results are secured by the unbreakable heavy iron waste distributor which prevents packing and shifts waste into a loose pile to dry.

These functions, with consequent complete aeration of waste, set a new standard of performance in fuelless, chimney-fed incinerators.

Standard Models

Duplex Incinerators are manufactured in a wide range of standard models designed to meet specific requirements. The table below will guide the reader to the type which will meet his needs and we will be glad to furnish additional data regarding any model upon request. We also manufacture outdoor incinerators, direct charged basement incinerators and high temperature incinerators or destructors for large installations in hotels, hospitals, laboratories, etc.

STANDARD MODELS

Model	Residences, rooms	Apartments, rooms	Schools, students	Hospitals, beds	Stores, average group
S	Not over 10				
B	10—14	Under 18			
D	Very large	18— 40			
L		40— 80	Under 300	50	1— 6
T		80—120	300— 500	50— 90	6— 8
N		120—160	500— 700	90—120	8—10
F		160—240	700—1000	120—180	10—15
K		240—320	1000—1200	180—260	15—18

Architect's Specifications

The contractor shall furnish all metal parts, fire brick, masonry materials and labor, to install complete where shown on plans—( ) Model ( ) Duplex Incinerator, having ( ) No. ( ) Receiving Doors.

Incinerator (s) to be installed according to the detail plans and specifications of Duplex Incinerator Company, 1291 East 53rd Street, Cleveland, Ohio.

EQUAL-AIRE INCINERATOR DIVISION

SARGENT BUILDING SPECIALTIES CO.
16 Warren Street
NEW YORK, N. Y.

TELEPHONE
BArclay 7-5875

SALES REPRESENTATIVES IN PRINCIPAL CITIES

THE SARGENT "EQUAL-AIRE" INCINERATOR

Standard Models
100% Cast Iron Grate Areas

Destructors

If incineration is to be complete, economical and odorless, certain fundamental laws of combustion must be observed.

The Sargent "Equal-Aire" Incinerator provides equal distribution of air in the combustion chamber. This accounts for its uniformly successful performance. In terms of incineration, it means utmost waste destruction in the shortest time with maximum consumption of liberated gases.

Equal distribution of air is attained by means of air controls in the front or side of the incinerator which supply air through a duct between the fire brick and common brick walls to a series of air ports in the fire brick wall. By distributing these ports over the entire wall surface, a constant flow of air on all sides of the waste is assured, thus providing a drying out process before burning. Top burning, which is essential to the elimination of obnoxious odors, is effected by the feeding of preheated air through the ports. Besides furnishing air in correct proportions to all parts of the incinerator, a steady circulation is created, thereby insulating the outer walls, which reduces the possibility of heat cracks much more effectively than a dead air space.

"C" Models
Cast Iron Grate and Hearth

The method of laying up the walls requires a minimum of fire brick, lending economy to its construction.

STRUCTURAL FEATURES AND MATERIALS

Grate Assembly—The Standard Model has 100% grate area, which aids dehydration and eliminates the nuisance of odors. The Model "C" is a combination of grate and brick hearth. Dumping grates are standard equipment on all models. All parts of the grate assembly including the grate frame are made of the finest grade high-silicon gray iron, producing clean, tough castings; much more heat-resistant than steel. Grates are especially designed to eliminate distortion under normal conditions, allow ample passage for air and are easy dumping. Grate frames consist of a series of interlocked units, interchangeable, which can be renewed without disturbing the masonry.

Air Intake Control—Air intake controls permit the feeding of air to the top of the fire without opening ash doors and creating excessive draft. Also assist the drying process.

Doors—Heavy cast iron. Three sizes—13 x 16, 18 x 20 ins. single leaf and 20 x 26 ins. double-leaf firing doors give a complete and practical selection for the various models.

Spark Arrestor—A heavy galvanized wire mesh spark arrestor is furnished to cap the flue, thereby preventing the escape of flying sparks, as required by law.

Hopper Doors

Appearance, durability and mechanical perfection have been successfully combined in the Sargent Hopper Doors.

A checking device, which automatically closes the door and prevents slamming, is standard equipment.

The hopper buck is not sheet metal, but of heavy cast iron, eliminating the possibility of distortion in handling and assuring a perfect fit when hopper door is attached to buck.

Flush type doors have a maximum projection of 1¼-in. Offset type, 4-in.



Offset Type

HOPPER DOOR SIZES

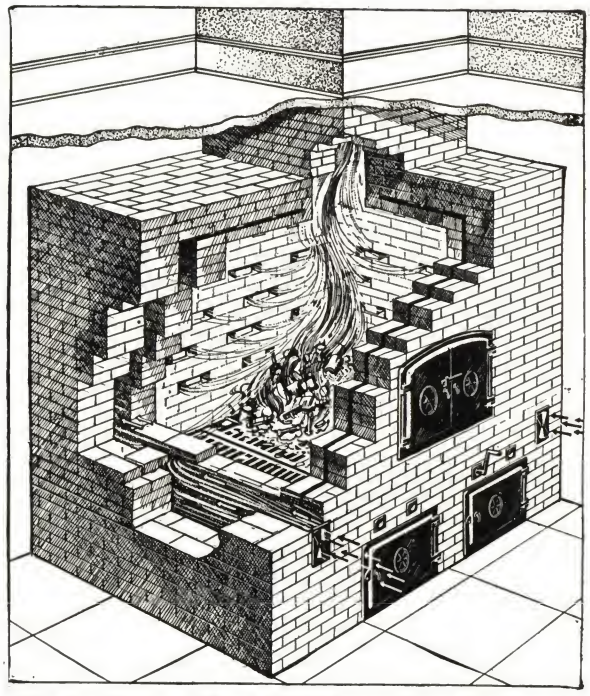
No.	Type	Material	Approx. door size
1	Offset	Aluminum	12″ x14″
3	Offset	Aluminum	10″ x11½″
5	Flush	Cast iron*	11½″x11″
6	Flush	Cast iron*	10″ x 8½″

*Can be furnished in polished cast aluminum.

Standard equipment includes Yale and Towne Concealed Door Closer Equipment.



Flush Type



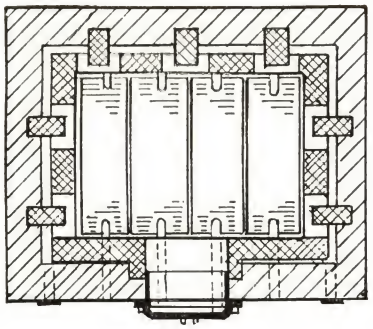
Showing Standard "Equal-Aire" Construction with Live-Air Insulating Duct and Air Intake Controls

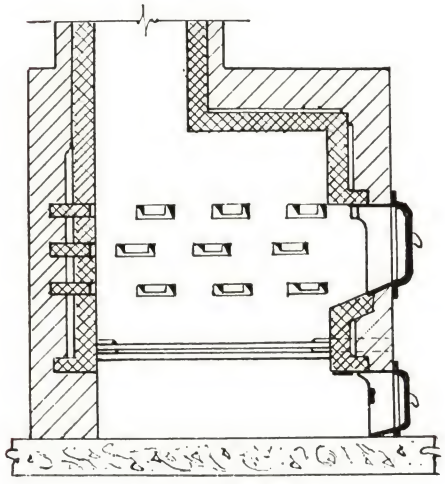
Specifications

Furnish and install where shown on plans Sargent "Equal-Aire" Incinerator(s) Model .... equipped with heavy cast iron dump grates and having a live-air insulating and air-feeding duct between the common brickwork and the fire brick lining.

Hopper Doors No. (choice of door) to be built in flue on each floor above basement (or where indicated) and to have cast iron [polished aluminum] front equipped with concealed checking device.

All work to be completed in a neat and workmanlike manner and in strict accordance with detailed drawings and specifications by the manufacturer, SARGENT BUILDING SPECIALTIES CO., 16 Warren Street, New York, N. Y.





Standard Models
100% Cast Iron Grate Areas

ERECTION DETAILS AND CONSTRUCTION DATA FOR THE "EQUAL-AIRE" INCINERATOR

Concrete Footings—Should extend 6 in. beyond outside of incinerator on all sides, level with finished basement floor and should have 6 in. minimum depth.

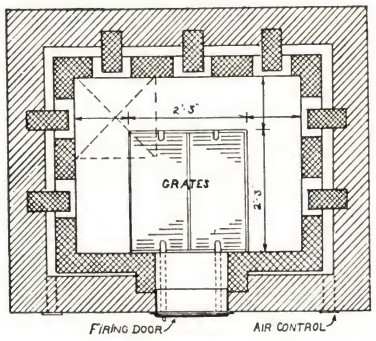
Flues—Serving Models 22, 23 and 32, should be lined with standard fire-clay flue lining. For larger models, 4½-in. fire-brick lining to a point 30 ft. above top of incinerator, 8 in. common brick above. All flues must project at least 6 ft. above any surrounding wind obstructions. Where hopper doors are installed, flues must be plumb to top, without slope or offset.

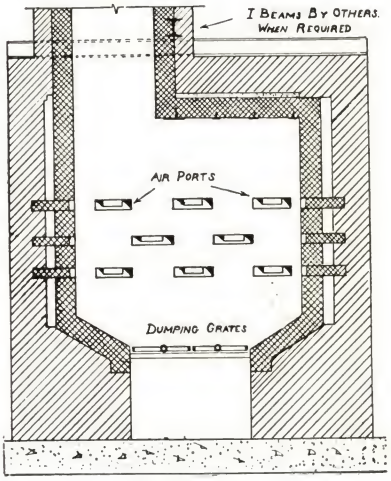
Flue may be located in any corner of incinerator.

Incinerating Chamber Construction—Walls and roof to be constructed of high grade common brick, and 4½-in. fire-brick lining, with air duct between as shown. Fire-brick must be laid with tight joints in fire-clay, dipped, not buttered.

Roof Construction—Steel for supporting roof of incinerating chamber is to be set as shown on installation detail furnished with every incinerator.

Chimney Support—The flue on all models may be placed in any corner of the incinerator chamber. Structural support of the flue must be provided unless the chimney walls are carried from floor to floor.





"C" Models
Cast Iron Grate and Hearth

STANDARD LAYOUTS AND CAPACITIES FOR APARTMENTS, RESIDENCES, SCHOOLS AND HOSPITALS

Model		Dwellings	*Apartments		Hospitals Number beds	Schools Number students	Grate area (sq. ft.)	Minimum flue size (Inside dimensions in inches)		**Standard height of incinerator above basement floor
Model "C"	Standard	Number rooms	Number rooms	Number suites				Using No. 1 or No. 5 hopper doors	Using No. 3 or No. 6 hopper doors	
	22	6–10					5		12x12, if more than one hopper 16x16	6'–8"
23-C or 32-C	23 or 32	14–15	40	18	40	250	7.5	18x18	16x16, for dwelling (1 hopper), 12x12	6'–8"
24-C	24	16–20	90	36	40–70	250–350	10	18x18, over 4 story, 20x20	16x16, over 4 story, 18x18	7'–2"
33-C	33	21–25	110	40	50–80	300–400	11	18x18, over 4 story, 20x20	16x16, over 4 story, 18x18	7'–0"
25-C	25		150	70	70–90	400–500	12.5	18x18, over 4 story, 20x20	16x16, over 4 story, 18x18	7'–2"
34-C or 26-C	34 or 26		180	80	80–120	500–700	14.5	20x20, over 6 story, 24x24	16x16, over 4 story, 18x18	7'–2"
35-C	35		230	100	120–200	700–1000	18	20x20, over 6 story, 24x24	16x16, over 4 story, 18x18	7'–2"
36-C	36		280	125	200–275	1000–1250	21	20x20, over 6 story, 24x24	16x16, over 4 story, 18x18	7'–2"

*In selecting proper Model for Apartments, both number of rooms and suites must be considered.
**Height of incinerator is variable, depending upon headroom in basement.

"EQUAL-AIRE" DESTRUCTORS

The "Equal-Aire" Destructors are developed to meet the requirements of heavy duty incineration. The waste may be charged directly through the side of the furnace or through the top from a charging floor above.

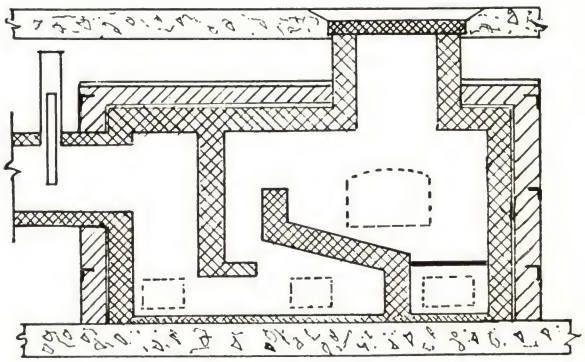
They are made in the following models:

Type "D"—Rubbish destructor. Consumes 80% dry waste and 20% wet waste.

Type "E"—As indicated at the right. Burns a mixture of 50% waste and 50% dry waste.

Type "W"—Burns 65% wet waste and 35% dry waste.

The "Equal-Aire" Destructors are built to meet specific requirements. We are prepared to make recommendations and submit layouts with costs.



Type "E" "Equal-Aire" Destructor

List of Installations Gladly Furnished On Request

EWING INCINERATOR COMPANY

2430 Irving Park Road, CHICAGO, ILL.

WRITE FOR ADDRESS OF NEAREST REPRESENTATIVE

"EWING DUAL-DRAFT" FLUE FED INCINERATORS

In 1913 Hugh W. Ewing pioneered Flue Fed Incineration in Chicago. As an outgrowth of all these years spent exclusively in the Incinerator business, the EWING INCINERATOR COMPANY are the originators and owners of patents covering the introduction of *automatically controlled over-fire air* in Flue Fed Incinerators.

Dual Draft Principle Found Only in Ewing Incinerators

For the successful incineration of garbage and waste a specially designed unit is required, superseding the early types that incorporated principles of stove construction. Radically different in design from this early type, and giving an efficiency of operation never before obtained in incinerator practice, the "Ewing Dual-Draft" is built upon accepted engineering principles. The admitting of continuous over fire air in variable quantities and at widely spaced, individually controlled levels is of the greatest importance for efficient combustion. This is accomplished by the engineering and design of the large Combination Fire and Ash Door, which is always placed in the short side of the incinerator opposite the chimney so that air for combustion is drawn the entire length of the combustion chamber, leaving no dead corners where unburned material will remain.

Advantages of Fire Brick Hearth

The purpose of the Fire Brick Hearth, which is one of the most important developments in incinerator construction, is four fold: (1) it makes positive the control of all air entering the combustion chamber, (2) it prevents the distillation of smoke and odor, (3) it eliminates the cold ash pit which attracts and harbors insects and rodents, (4) it retains heat, drying material deposited prior to the next burning.

The "Ewing AUTOMATIC Dual-Draft" Principle

When the material in the Incinerator is lighted, the air for combustion must first be drawn through the upper air port where it impinges directly on the material to be burned. This produces a slow, even flame across the entire top of the material.

As the fire gathers headway, the velocity of the flue gases increases and the upper damper starts to function. The chimney suction gradually pulls this damper shut so the volume of incoming air is *automatically* diminished. The small amount of air need is drawn through a permanent opening above the damper.

As the fire burns down slowly, air is being drawn through the lower air port, impinging upon the base of the material producing the same high efficiency in combustion as obtained with under grate air in boiler practice. As the lower damper is almost twice as heavy as the upper, it remains open longer, directing a greater volume of air at the base of the material where it is most needed.

As might be expected, the introduction of oxygen at this point speeds up the fire. Soon this damper is *automatically* closed by the suction of the chimney before too great a velocity of flue gases can take place. And, as is the case with the upper damper, a sufficient amount of oxygen is taken in above the damper to maintain slow, complete combustion. As the fire in the Incinerator burns down, the chimney suction becomes less and the lower damper, due to its extra weight starts to open first, again supplying additional oxygen at the base of the material. When the burning is about over, the suction becomes even less and the upper damper gradually opens and a continuous passage of air through both air ports and up the chimney is established for drying and absorbing moisture from material thrown down prior to the next burning.

Gas burning equipment is not necessary with this type of flue fed incinerator and since it constitutes a continuous and unnecessary expense, is not recommended.

Exclusive Ewing Features

(1) Automatic control of all incoming air for combustion.
(2) No dead corners where unburned material remains.
(3) All engineering details incorporated in Combination Fire and Ash Door assure same high efficiency in each installation.
(4) Elimination of ash pit gives greater bushel capacity with relation to floor space.
(5) Large clear opening of Fire Door makes it easy to charge, easy to clean.
(6) Simplicity of construction enables the mason to build this Incinerator in ¾ the time usually required. No time is wasted setting unnecessary parts, etc.
(7) No troublesome grates to warp, break, clog or to shake. No expensive repairs.
(8) Handsome flush type Receiving Doors.
(9) No need for auxiliary gas.
(10) No service panel necessary with silent self closing receiving doors.
(11) No cold, soggy ash pit to attract and harbor vermin.

Standard Models

The Standard "Ewing Dual-Draft" incinerator (Non-Automatic) produce the same high efficiency of operation as the Automatic, being built on the same principle of combustion. Draft control in these models is hand operated and the price is somewhat less. By scrutinizing the illustration below, the difference in design is at once apparent.



The Automatic "Ewing-Dual Draft"
Air for combustion introduced through two widely spaced, automaticaliy controlled air ports, prevents sparks and fly-ash



The Easiest Incinerator to Clean
When the incinerator is to be cleaned, the entire lower air port may be slipped out—much more convenient than removing residue through a small ash pit door at the floor level. The fire brick hearth is set at a proper height above the floor so that a small ordinary garbage can will fit under the opening; the ashes are either shoveled or hoed directly into the can



The Standard "Ewing Dual-Draft"
Lower in price—the operation is just as efficient, but it does not have the automatic draft control

Standard Receiving Doors

All Ewing Receiving Doors are the flush type with beveled edges extending out from the wall ¼ in. They consist of two pieces, a wall frame that is bricked into the masonry and the handsome finished door that is installed when the building is ready for occupancy. They are so designed that no bolts or advertising matter mars their smooth attractive surface.

Ewing Silent Self-Closing Doors

Ewing Silent Self-Closing Doors are available in all types. They are of advanced design and do not require constant service; hence there is no wall space sacrified for an unsightly service panel. The cushioning device is air cooled and protected by a heavy steel housing that is imbedded in the brick work of the chimney wall. The closing and silencing mechanism is part of the door and not attached to any part of the frame. In this way the clean, unmarred door can be installed when the building is ready for occupancy.

Architects Information

Chimney must be in either of the rear corners to give the best results.

Chimney—The sides of the chimney must be perpendicular all the way up and the top of the chimney must extend high enough above any roof construction to avoid interference with the draft.

Footing for the Incinerator should extend at least 6 ins. out from the outside of the Incinerator walls.

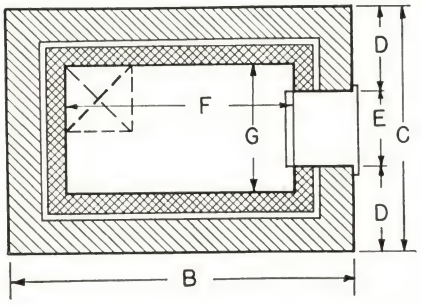
Incinerator Lining—4½-in. fire brick lining in the Incinerator must be used in all models.

Ordinarily in 12 x 12 in. and 16 x 16 in. chimneys, flue lining is used; however, in larger chimneys 4½-in. fire brick lining must be carried to a height of not less than 30 ft. above the Incinerator roof.

In buildings other than residences, the steel furnished for the support of the Incinerator roof is not designed to support the chimney. Where the chimney is not carried from floor to floor additional structural steel must be furnished.

Standard Specification

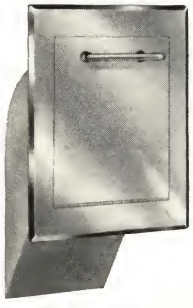
The mason contractor shall furnish and install where shown on plans ..... (AUTOMATIC) or (STANDARD) "EWING DUAL-DRAFT" Incinerator (s), Model (s) ....., having ..... Receiving Door (s) Type ..... Finish ....., in strict accordance with the manufacturer's construction details.



DATA, RECEIVING DOORS

TYPE	DAYLIGHT OPENING	OVERALL DIMENSIONS	DEPTH FRAME	TYPE OF FINISH
G Standard	8½ x 8½	11¾ x 14½	6½	Aluminum, Light Gray Enamel, or Satin Chrome
G-S Silent Self Closing	8½ x 8½	11¾ x 14½	6½	
H Standard	11 x 12	14 x 16	9	
H-S Silent Self Closing	11 x 12	14 x 16	9	

Minimum Chimney Size—Type G, 12 x 12. Where door is used above 1st floor, 16 x 16.
Minimum Chimney Size—Type H, 18 x 18.
Most convenient height from floor, 2'-4" but to be determined by Architect with relation to surrounding conditions such as cabinets, etc.



Type G, Receiving Door



Type H, Receiving Door

DIMENSIONS AND CAPACITIES FOR AUTOMATIC AND STANDARD MODELS

MODEL RATING	8	B	1-B	2-B	3-B	4-C	5-C	6-C	7-D
Res. (No. of Rooms)	8	10	14	20					
Apts. (No. of Rooms)		24	60	90	140	200	250	300	400
Hospitals (No. of Beds)					60	80	100	125	200
Schools (No. of Pupils)						1000	1200	1500	2000
BUSHEL CAPACITY	8	10.6	16.6	21.8	26.7	37.7	48.2	56.5	76.0
HEARTH AREA, Sq. Ft.	2.7	3.2	5.1	6.7	8.2	10.0	12.5	14.8	20.0
DIMENSIONS									
Incinerator Height A	6′ 2″	6′ 6½″	6′ 6½″	6′ 6½″	7′ 1″	7′ 6″	7′ 6″	8′ 0″	8′ 0″
Outside Measurements B	3′ 0″	3′ 8″	4′ 2″	4′ 7″	4′ 7″	6′ 1″	6′ 11″	6′ 11″	8′ 6″
Outside Measurements C	2′ 8″	3′ 0″	3′ 5″	3′ 8″	4′ 2″	5′ 0″	5′ 0″	5′ 4″	5′ 4″
Outside Measurements D	9″	11″	1′ 1½″	1′ 3″	1′ 4″	1′ 9″	1′ 9″	1′ 9″	1′ 9″
Outside Measurements E	1′ 2″	1′ 2″	1′ 2″	1′ 2″	1′ 6″	1′ 6″	1′ 6″	1′ 10″	1′ 10″
Inside Measurements F	1′ 10″	2′ 2″	2′ 8″	3′ 1″	3′ 1″	3′ 9″	4′ 7″	4′ 7″	6′ 2″
Inside Measurements G	1′ 6″	1′ 6″	1′ 11″	2′ 2″	2′ 8″	2′ 8″	2′ 8″	3′ 0″	3′ 0″
FIRE DOORS									
AUTOMATIC TYPE—Size		14 x 18	14 x 18	14 x 18	14 x 18	18 x 18	18 x 18	18 x 18	22 x 23
Clear Opening		14 x 25	14 x 25	14 x 25	14 x 25	18 x 25	18 x 25	18 x 25	22 x 30
Overall Size		21 x 34	21 x 34	21 x 34	21 x 34	25 x 35	25 x 35	25 x 35	29 x 40
Weight, pounds		150	150	150	150	209	209	209	240
STANDARD TYPE—Size	14 x 14	14 x 14	18 x 18	18 x 18	18 x 18	18 x 18	18 x 18	18 x 18	22 x 24
Clear Opening	14 x 18	14 x 18	18 x 22	18 x 22	18 x 22	18 x 22	18 x 22	18 x 22	22 x 30
Overall Size	17 x 20	17 x 20	22 x 25	22 x 25	22 x 25	22 x 25	22 x 25	22 x 25	28 x 36
Weight, pounds	50	50	94	94	94	96	96	96	144
FLUE SIZES									
Res. & Apts. 1 Rec. Door on first floor	12 x 12	12 x 12	12 x 12	12 x 12	16 x 16	16 x 16			
With more than one	16 x 16	16 x 16	16 x 16	16 x 16	16 x 16	16 x 16			
Up to 3 story bldgs.		16 x 16	16 x 16	16 x 16	16 x 16	16 x 16	16 x 16	16 x 16	16 x 16
Up to 8 story bldgs.				20 x 20	20 x 20	20 x 20	20 x 20	20 x 20	20 x 20
Over 8 story bldgs.					24 x 24	24 x 24	24 x 24	24 x 24	24 x 24
BRICK REQUIREMENTS									
Fire Brick	154	248	310	392	468	583	675	741	910
Fire Clay, pounds	46	75	93	117	140	170	202	225	270
Com. Brick (Free Standing)	464	585	741	855	988	2166	2394	2400	2790

When specifying a particular model designate whether it is AUTOMATIC or STANDARD, as:
1-B AUTOMATIC or 1-B STANDARD.

For data on "Ewing Dual-Draft" Garburner see following page

"EWING DUAL-DRAFT" GARBURNERS

Eliminates the fire hazard of accumulated waste. Banishes the unsightly, unsanitary garbage pail.

Keeps gardens and yards free of burned rubbish. Ends discomfort due to heat radiation.

Available in Either Gas-Burning or Non-Gas-Burning Models

An efficient portable incinerator that quickly, completely and economically burns rubbish, garbage, and other waste. Built upon the "Ewing Dual-Draft" principal of combustion, it gives the same high efficiency of operation as found in the Flue Fed type. Available in four sizes, it meets the need of the home both large and small as well as the school, hospital, apartment, industrial plant, camp, etc. In communities, where gas is not available, this unit solves the problem of Incineration.

Where a gas burning incinerator is desired, the Garburner is equipped with a specially designed gas burner placed between the ash door opening and the hearth directly in the path of the incoming air for combustion which is introduced through the grill set in the ash door. The burner is protected by a heavy shield. With the flue outlet at the rear and close to the hearth, the suction, caused by the chimney, pulls the oxygen and flame through and around the entire mass.

Because of the position of the burner, there is no smoldering at the end of the burning since all gases must pass through this blanket of flame where they are consumed before passing up the chimney.

Modern in Design

Thoroughly modern in design, this compact, steel encased unit is supplied in a baked gun metal crackle finish with black baked enamel castings for residential use. For commercial use and outdoor installations the entire unit is finished in black baked enamel.

Sturdy Construction Plus Exclusive Garburner Features Assure Economy of Operation

The top and sides are lined with a special heavy refractory and insulating material which reduces heat radiation to a minimum. This lining is acid-proof and will not expand or contract under varying temperatures.

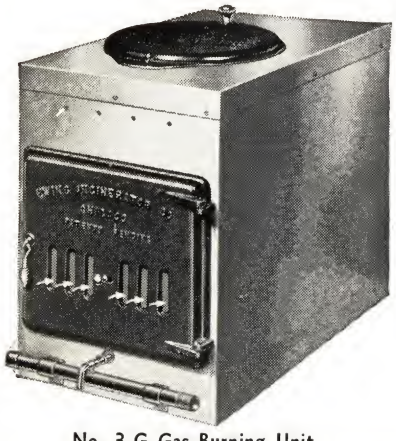
The hearth is of a special heavy gauge iron supported on a strong angle iron frame. The lower air port is attached to and swings out with the ash door, thus affording an unusually large opening for easy cleaning. A heavy cast iron by-pass grate is hung from the top 4 inches in front of the flue outlet, which is taken off the back of the unit a short distance above the hearth.

This prevents any possibility of the draft being retarded or material obstructing the outlet. It provides for a continuous flow of air through and around the material at all times, thus absorbing moisture and drying the material prior to the burning. The bottom of the by-pass grate is 7 inches above the hearth and cannot interfere with the easy cleaning of the unit.

A large feed door is standard on Models, 7-L, 7-L-G, 10-L and 10-L-G, which are used principally for industrial plants, schools, hospitals and large homes.

Where the heating unit of the building is fired with gas, oil, or stoker, the Garburner may be connected directly to the same chimney.

Where a coal furnace, with natural draft, is used, the Garburner must be connected to a separate chimney. A footing and adequate smoke stack must be provided for outside installations.



No. 3-G Gas-Burning Unit
Capacity approximately 3 bushels. Designed for use in residences up to 6 rooms.

Exclusive GARBURNER Features

No specially located chimney required.
No expense for additional brick work.
No troublesome grates to warp, break, clog or shake.
No objectionable smoke or odor.
No excessive heat radiation.
No cold ash pit to attract and harbor vermin.
No expensive repairs—nothing to wear out.



No. 10-L
Capacity, 10 bushels. Has a large feed door as illustrated and is equipped with twin gas burners when desired.

DATA, "EWING DUAL-DRAFT" GARBURNERS

Model numbers	Approx. capacity Bushels	Residence up to	Width in.	Depth in.	Height in.	Size feed door, in.	Size ash door, in.	Minimum chimney, in.	Ship. weight, lb.
3 or 3-G	3	6 Rooms	18	26	24	12" Round	12 x 14	8 x 8	225
4 or 4-G	4	8 Rooms	18	30	30	12" Round	12 x 14	8 x 8	350
7 or 7-G	7	12 Rooms	26	34	30	12" Round	12 x 14	8 x 12	450
7-L or 7-L-G	7	12 Rooms	26	34	30	14 x 18	12 x 14	8 x 12	511
10-L or 10-L-G	10	20 Rooms	26	34	42	14 x 18	12 x 14	12 x 12	730

G—Denotes unit equipped with gas.
L—Denotes unit equipped with large feed door.
The selection of the Model suitable for apartment, commercial or industrial use depends upon the amount and kind of material to be burned. Ordinarily these units will burn three to four times their rated capacity per 8-hour day.

JOSEPH GODER INCINERATORS

SCHWAB FURNACE & MFG. CO., MILWAUKEE, WIS.

Manufacturers of Incinerators of All Types and Sizes

193 So. 2nd Street, MILWAUKEE, WIS.

REPRESENTATIVES

BUFFALO, N. Y., Ideal Specialty Co., 84 Sterling Ave.
CHICAGO, ILL., Joseph Goder, 43 E. Ohio St.
COLUMBUS, OHIO, The V-W Co., 214 Oak St.
DENVER, COLO., Geo. P. Heinz Co., 812 12th Street
DETROIT, MICH., Walter M. Rogers, 207 Architects Bldg.
HAMDEN, CONN., P. O. Gilmond, 47 Treadwell St.
HOUSTON, TEX., Lehman Steel Products Co., M. & M. Bldg.
INDIANAPOLIS, IND., Geo. A. Haynes, 5356 Ohmer Ave.
MADISON, WIS., Theo. Kupfer Foundry & Iron Works, 629 E. Mifflin St.
MINNEAPOLIS, MINN., J. F. Jackson, 803 Pence Bldg.
OMAHA, NEB., Earl S. Lewis & Co., 601 Redick Tower
PEORIA, ILL., L. P. Kirwan, 111 No. Bourland St.
PHILADELPHIA, PA., W. A. Laub Co., 1700 Walnut St.
PITTSBURGH, PA., E. W. Lauschke, Fulton Bldg.
ST. LOUIS, MO., Builders Specialty Co., 4377 McPherson Ave.
ST. PAUL, MINN., C. B. Ellyson, 503 Minnesota Mutual Life Bldg.



Gilt Edge-Goder Disposall 3

Disposall 3

The Odorless and Safe Home Incinerator

Disposall incinerator absolutely destroys odorous gas. It stands out, because it is completely insulated with asbestos; also has a fire-brick lined combustion chamber. Disposall can be connected to heating plant chimney.

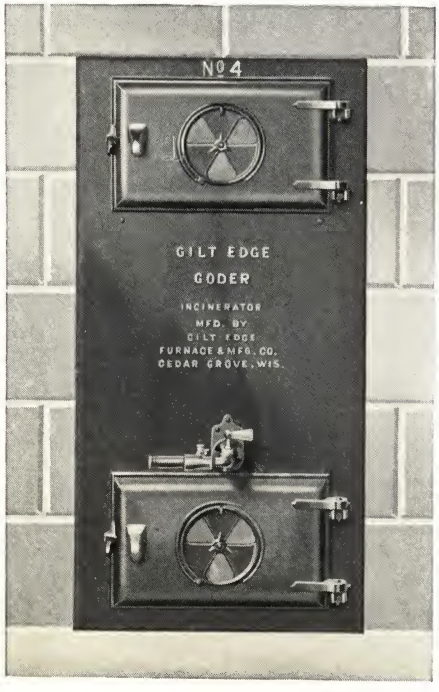
Specifications

Capacity.....3 bu.
Diameter....25 in.
Height.....35 in.
Gas conn....¾ in.
Flue.....7 in. pipe
Weight....300 lbs.

Wall Type—Disposall No. 4

Gilt Edge-Goder No. 4 Disposall offers the advantages of a satisfactory incinerator at a minimum cost. It is installed directly beneath a flue, acting both as a chute for refuse and a chimney for the disposal system, thus combining the advantages of a chimney-fed incinerator with the low cost of our No. 3 Disposall.

Disposall No. 4 is delivered as a complete incinerator unit, ready to slip into the wall recess provided. No additional masonry required.



Disposall No. 4
Front View

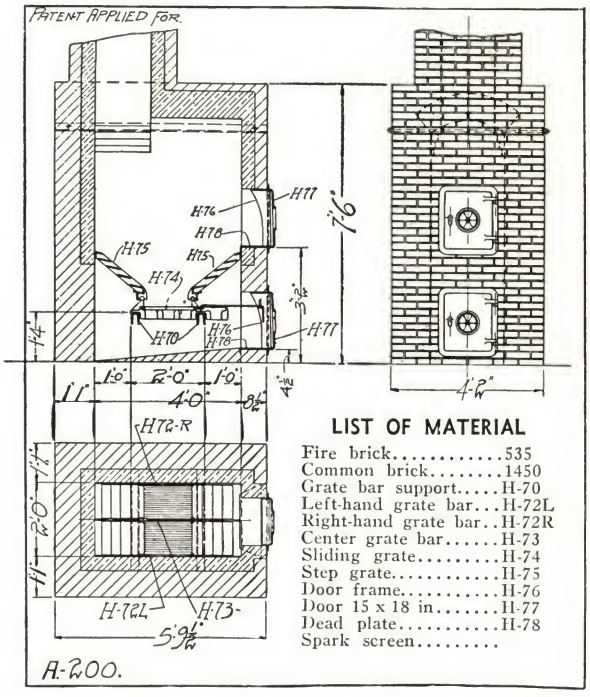
Specifications

Capacity.....4 bu.
Steel shell fire brick lined
Cast iron front plate and doors.
Size: 42″ high
22″ wide
20″ deep
Weight....400 lbs.
Gas burner standard equipment.

Gilt Edge-Goder Chimney Fed Incinerators

Goder Incinerators incorporate the Step Grate in their design, which permits the closest possible contact of air with the material to be burned. Goder Step grates also permit the use of the Sliding Ash Grate and provide an inclined fuel bed to prevent the packing of material on the grates.

Simplicity and ease of installation is one of the most important advantages offered. Sizes adaptable to all requirements.



LIST OF MATERIAL

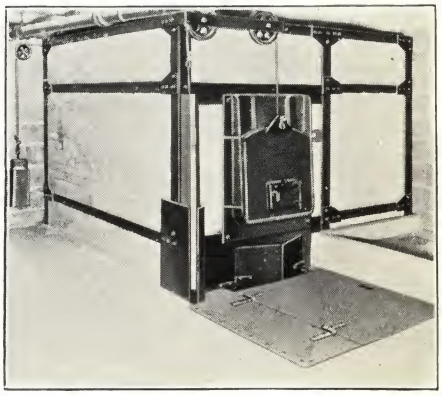
Fire brick.....535
Common brick.....1450
Grate bar support.....H-70
Left-hand grate bar...H-72L
Right-hand grate bar..H-72R
Center grate bar.....H-73
Sliding grate.....H-74
Step grate.....H-75
Door frame.....H-76
Door 15 x 18 in.....H-77
Dead plate.....H-78
Spark screen.....

Gilt Edge-Goder Destructors

Goder Destructors have been in use for over twenty years in hospitals, institutions, hotels, industrial establishments, municipal and government installations, sewage plants, etc.

Goder designed Step-grate Incinerators are universally adapted and have been in use for years under widely varying conditions with complete satisfaction.

We are equipped to furnish destructors for all requirements and all capacities. Outline your disposal problem to us and our engineering department will suggest correct type and size.



Goder Destructor

KELLOGG MANN CORPORATION

Combustion Engineers and Manufacturers of K-M Incinerators
Designers and Manufacturers of Garbage and Waste Disposal Equipment for Heavy-Duty Requirements

GENERAL OFFICES
33-35 Franklin Street, BUFFALO, N. Y.
NEW YORK OFFICE: 30 Vesey Street. TELEPHONE: Rector, 2-5490

ENGINEERING

Complete and odorless refuse destruction can be achieved only through experienced engineering. Each installation presents a problem which should be reviewed by a specialist. In this way, the many inexcusable mistakes of cheap or faulty installations —poor dehydration, deficient top air, undersized or cheaply designed combustion chambers, lack of consideration of the nature and amount of refuse, etc.—will be avoided, and incineration will receive the recognition it deserves.

K-M INCINERATOR

KELLOGG MANN CORPORATION are engaged *solely* in designing and manufacturing all types of low and high temperature incinerators. Both K-M standard products and special designs are thoughtfully engineered. K-M Engineers are combustion specialists, experienced in solving unusual or difficult problems of waste incineration; thoroughly competent to design, build and install special equipment. Architects, engineers, and builders are invited to consult us on any unusual problems of design or construction involving waste disposal.

PRODUCTS

K-M INCINERATORS, CHIMNEY-FED, BASEMENT-FED, OUTDOOR TYPES. Seven standard models and many special designs. For residences, apartments, schools, smaller hospitals, institutions, office buildings, country estates, parks, etc. Operate with or without auxiliary fuel. Principles of incineration and construction described below.

SUPER MANN DESTRUCTALL for heavy duty high temperature work; industrial plants, larger hospitals, schools and institutions, restaurants, hotels, markets, etc. New design effective either where additional fuel is necessary or where no fuel is required as in the case of burnable refuse. Equally effective to destroy any combination of *unsorted* wet and dry refuse; built of modern materials in accordance with latest high temperature practice. Our engineers develop special designs to meet individual requirements.

GEELOCK CREMATORY for cremation of human remains is of advanced design and outstanding quality; silent, odorless, and effective. For details information write our Engineering Department.

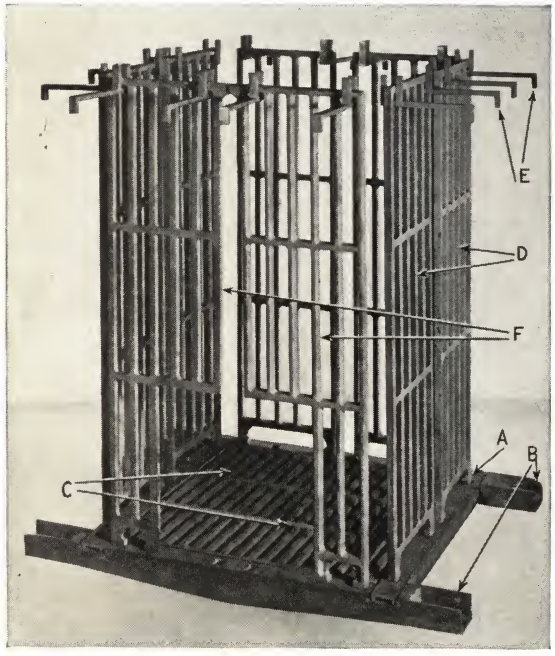
K-M INCINERATOR—AN EXCEPTIONALLY EFFICIENT MEANS OF WASTE DISPOSAL

Flue-fed, Basement-fed, or Outdoor-fed for All Types of Buildings

General Description

An incinerator to *completely* destroy wet garbage as well as burnable refuse without odor must be designed to perform two highly important functions. *First, to rapidly and thoroughly dehydrate wet garbage and refuse. Second, to produce complete combustion.* Both these functions are dependent on adequate draft. K-M Engineers have long recognized that a thorough dehydration of wet garbage was absolutely necessary for the complete combustion required to obtain odorless destruction of waste matter. With this in mind, they designed the combustion chamber into which the refuse is fed with a suspended basket arrangement of grates and a blast furnace top to insure maximum draft at all times.

This construction utilizes the draft to the utmost, resulting in thorough drying, complete and odorless burning, and easy ash removal. No auxiliary fuel is required, except where there is a preponderance of wet garbage.



The Exclusive K-M Patented, Suspended Basket Arrangement of Grates with Combustion Chamber and Doors Removed

Sustaining members, A, interlock with heavy, supporting members, B, which are embedded in the combustion chamber wall, to form a support for the horizontal grates, C. The vertical grates, F and D, are supported on the bottom by the members, B and A, and guided on top by the lugs, E. All parts are made of high quality, low phosphor, low sulphur cast iron. Note their great thickness and strength and their design to withstand terrific heat without cracking and warping.

Features and Advantages

(1) Patented Suspended Basket Type of Construction—A system of vertical grates entirely lining the combustion chamber, excepting space occupied by cleanout doors, with a 2-in. space between grates and side walls, permits the charge of mixed wet and dry refuse to be suspended in the combustion chamber with a powerful draft circulating on all sides. This construction has outstanding advantages.

(2) Sanitary Treatment Decaying Garbage—The air space between vertical grates and side walls prevents wet garbage from piling up against the brick walls, and sticking fast to them, thus eliminating obnoxious odors from the decaying mass.

(3) Quick Drying—The air space between vertical grates and fire wall provides a channel for fast moving air on all four sides of wet refuse producing the greatest possible evaporation and quick drying between burnings.

The side grate construction gives the K-M five times greater dehydration area than incinerators employing horizontal grates only—a feature of greatest possible importance.

(4) Top Air Combustion—The air space on all four sides of the combustion chamber delivers a constant stream of air to the top of ignited refuse where combustion takes place. Air is thus constantly fed over top of the burning mass. *As the charge burns down air continues to be delivered at the point of burning.* The corbelled roof provides a large secondary air chamber above the charge vital to complete combustion.

(5) Complete Odorless Combustion—As a result of above, the entire mass of refuse, both on sides and top, is enveloped

in flame. Rapidly rising temperature builds up a powerful draft. Gases and odors liberated from garbage beneath pass up through flames and are consumed. Complete combustion results.

(6) Extends Life of Fire Brick Lining—Fire brick is porous. Vertical grates protect this lining. Moisture absorbed by the bricks from the wet garbage causes formation of steam in brick pores when combustion takes place. This materially reduces its life and eventually necessitates expensive relining job.

(7) Insures Odorless Combustion Chamber—Vertical grates prevent porous fire brick from absorbing decaying garbage. Lining does not foul and give off obnoxious odors.

(8) Sturdy Cast Iron Construction—Both vertical and horizontal grates are of heavy section supported on four strong cast iron supporting members. Size of parts increase as size of combustion chamber increases. No exposed steel members are used to support roof or grates. Steel members exposed to flame overheat, resulting in expensive failure.

(9) No Dumping—Clean Ash Pit—The stationary, yet removable horizontal grates eliminate dumping and avoid the possibility of the ash pit filling up with unburned refuse which shuts off the draft so essential to the drying process. No garbage remains in the ashes.

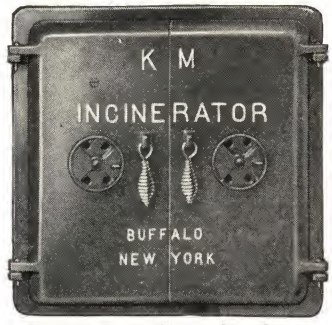
(10) Grates Will Not Warp, Clog or Crack—Since the grates are of the non-dumping, stationary type, they never give trouble by clogging or warping. Hot ashes cannot be dumped to come up against the grates and burn them out if ash pit is full.

(11) Nothing to Get Out of Order—Simple, sturdy construction. No bearing blocks, nuts, bolts, shakers, handles; no moving parts, no mechanism to get out of order or interfere with continuous operation.

(12) Easy to Remove Ashes and Unburnables—The fire door is set flush with horizontal grates, not above them, as in many machines. The unburnables are then raked into a receptacle. Assures much easier cleaning of grates and substantial labor saving.

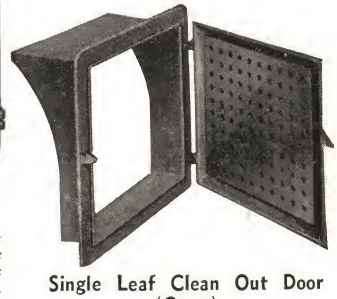
(13) All Parts Easily Removable—To remove the vertical grates it is only necessary to lift them from the supporting hooks—the horizontal grates are easily lifted from their sustaining pieces. It is just as simple to replace them.

(14) Corbelled-in Roof Construction—The most efficient type construction known for giving maximum draft and intensifying heat on the mass to be consumed.



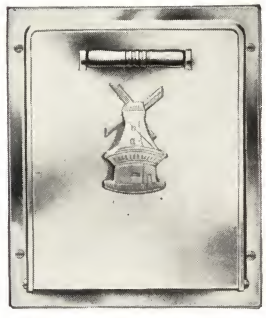
Double Leaf Clean Out Door (Closed)

Details of these doors deserve more than a passing glance. Notice their unusual thickness, and offset construction making the doors extra strong. Baffle-plates make them last longer, more heat resistant as well as draft equalizing. Lip keeps out fire glare.



Single Leaf Clean Out Door (Open)

Doors are carefully fitted and are smoke and odor proof. Handles are wire for air cooling. All doors are cast with a heavy cast iron frame, wedge shaped and deep for secure anchoring in masonry and to support brickwork over door openings. No steel lintels are required. Hinges are balanced for easy opening and sealed closing.



Aluminum Receiving Door

Typical Receiving Door

Receiving hopper doors are well constructed and have specially designed air-cooled handles; are available in smooth grained cast iron or solid aluminum, highly polished, and with any of three raised decorative designs on their surface which contributes to beauty of any kitchen. Hopper buck is of heavy cast iron construction assuring secure anchoring in chimney.

HOPPER DOOR SPECIFICATION

Door size daylight opening, in.	Material	Design on door face	Flue sizes, minimum, in.
7x7	Cast iron	K-M	12x12
	Polished aluminum	K-M	
8½x10½	Cast iron	K-M	16x16
	Polished aluminum	Ship or Windmill	
12½x13½	Cast iron	K-M	22½x22½

Additional finishes—chromium plated or enameled on special order.

TYPICAL SPECIFICATION

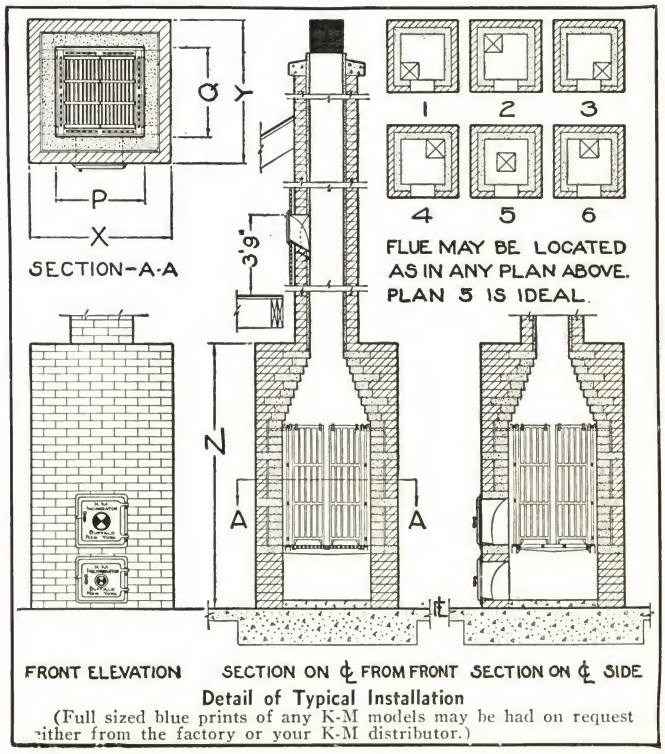
The contractor shall furnish all masonry, material and labor, including fire brick, and all metal Incinerator parts to install complete where shown on the plans.....
1, 2, etc.
Model ..... K-M Incinerator(s), having .....
SR, R, etc. 1, 2, etc.
Receiving Hopper Door(s) of..... size,
7x7"; 8½x10½"; 12½x13½"
.....type, ... design,
Polished Solid Aluminum Ship, Windmill, etc.
or Cast Iron Aluminum Primed

Incinerator(s) shall be installed in strict accordance with the directions of the manufacturers, the KELLOGG MANN CORPORATION, 33-35 Franklin Street, Buffalo, New York.

DIMENSIONS AND CAPACITIES OF 7 STANDARD "K-M" INCINERATORS

Series model	Capacity	Outside dimens., in.			Inside dimens., in.		Flue size, in. (inside)
		X	Y	Z**	P	Q	
SR	Residences to 6 rooms	38	38	78	20	20	*12x12
R	Residences to 10 rooms; Apartments 3 2-bedrooms or 4 1-bedroom	48	48	80½	30	30	*12x12
LR	Residences to 16 rooms Apartments to 40 rooms Outdoor installations—Parks, Camps, etc.	53	53	91	35	35	16x16
SA	Apartments to 60 rooms Small institutions Country estates	60	48	91	42	30	18x18
A	Apartments to 90 rooms Hospitals to 60 beds Schools to 700 pupils	68	68	95	42	42	18x18
LA	Apartments to 160 rooms Hospitals to 85 beds Schools 700 to 1000 pupils	80	68	106½	54	42	20x20
H	Apartments to 240 rooms Hospitals to 125 beds Schools 1000 to 1500 pupils Small hotels, etc.	80	80	106½	54	54	22x22

* On SR and R, if two or more hopper doors are used, flue must be 16x16 in.
** Height may be altered to meet any condition.



Detail of Typical Installation

(Full sized blue prints of any K-M models may be had on request either from the factory or your K-M distributor.)

KERNER INCINERATOR COMPANY

Originators of Flue Fed Incineration
3551 North Richards Street
MILWAUKEE, WIS.
BRANCH OFFICES AND AGENCIES IN 150 CITIES

GENERAL AND CONSTRUCTION NOTES

Incinerator Chamber

The chamber is lined with fire brick from the grate level up to and including the inner course of the top.

Chimney Support

Roof steel furnished with incinerator is *not* designed for support of chimney. Where walls of chimney are not carried from floor to floor, *structural support* of flue walls above incinerator roof *must be provided, by others.*

Flue

The flue for Flue-Fed Models must be carried up *plumb, without slopes or offsets,* and all flues must extend high enough above any roof obstructions to avoid interference with draft.

Flues not provided with fire clay flue lining must have 4½-in. fire brick lining for a distance of not less than 30 ft. above incinerator chamber.

Note: Brick quantities given below do not include chimney above incinerator top.

Gas Burners

Auxiliary gas burners should be provided in installations where it is felt that the volume of combustible waste is at times insufficient for complete incineration of the garbage.

The Kerner Patented Burner is placed immediately above fire door, and gives a long torch-like flame that penetrates downwards into the garbage.

On Models T and J, a burner is provided as standard equipment, and a suitable burner is available for all other models.

All Flue Dimensions are inside measurements

STANDARD MODELS

Models	T	J	J1	J2	J3	J4	J5
Grates	1—16 x 16 in.	1—16 x 16 in.	1—16 x 16 in.	2—12 x 20½ in.	2—12 x 20½ in.	2—12 x 25 in.	3—12 x 25 in.
Grate area	2¼ sq. ft.	2¼ sq. ft.	2¼ sq. ft.	4¼ sq. ft.	4¼ sq. ft.	5 sq. ft.	7½ sq. ft.
Hearth area	None	1⅛ sq. ft.	2¾ sq. ft.	2½ sq. ft.	5½ sq. ft.	8½ sq. ft.	10½ sq. ft.
Total burning area	2¼ sq. ft.	3⅜ sq. ft.	5 sq. ft.	6¾ sq. ft.	9¾ sq. ft.	13½ sq. ft.	18 sq. ft.
Common brick	525	675	900	985	2410	2980	3590
Firebrick (standard)	175	225	300	385	585	740	950
Arch brick (No. 1)	None	None	None	None	6	6	6
Feather edge brick	2	2	2	2	5	5	7
Fire doors	T	J	JA-S	JA-S	JB-S	JB-S	JC-S
Ash doors	T	T	T	J	J	J	J
Cubic capacity	7¾ cu. ft.	11½ cu. ft.	17½ cu. ft.	25¼ cu. ft.	39 cu. ft.	59 cu. ft.	86 cu. ft.
Capacity (bushels)	6 bu.	9 bu.	14 bu.	20 bu.	31 bu.	47 bu.	68 bu.

FIRE AND ASH DOORS

	Style	Opening	Weight
Standard fire and ash doors (no air box or baffle)	T	13¾ x 9½ in.	15 lbs.
	J	16 x 12 in.	24 lbs.
Standard fire doors (with air box)	JA-S	17½ x 14½ in.	55 lbs.
	JB-S	22 x 17 in.	86 lbs.
	JC-S	29½ x 22 in.	130 lbs.

	Style	Opening	Weight
Special fire doors (with baffle)	JA-B	17½ x 14½ in.	52 lbs.
	JB-B	22 x 17 in.	82 lbs.
	JC-B	29½ x 22 in.	125 lbs.

Note—All fire and ash door dimensions are width by height. Weights of doors are without lintels.

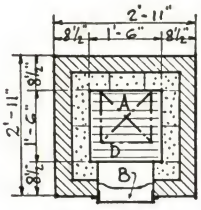
SPECIAL MODELS

Models	Heavy Duty Type J	Small Retort	Large Retort	Heavy Duty Retort
Grates	Stationary bars	2—12 x 20½ in.	3—12 x 25 in.	Stationary bars
Grate area	7½ sq. ft.	4¼ sq. ft.	7½ sq. ft.	10 sq. ft.
Hearth area	7 sq. ft.	4¾ sq. ft.	11½ sq. ft.	9 sq. ft.
Total burning area	14½ sq. ft.	9 sq. ft.	19 sq. ft.	19 sq. ft.
Common brick	2950	1370	3525	3260
Firebrick (standard)	790	800	1660	1540
Arch Brick (No. 1)	46	None	25	112
Feather edge brick	8	4	8	10
Jamb brick	32	17	25	23
Fire doors	JC-S	1 JA-S and 1 JB-B	1 JB-S and 1 JB-B	1 JC-S and 1 JB-B
Ash doors	J	2T	2 J	2 J
Cubic capacity	65 cu. ft.	27 cu. ft.	58 cu. ft.	58 cu. ft.
Capacity (bushels)	52 bu.	21 bu.	46 bu.	46 bu.

SUGGESTED ARCHITECTS' SPECIFICATIONS UNDER MASONRY

The contractor shall furnish all masonry, material and labor—including fire brick, and all metal incinerator parts to install complete where shown on the plans..... Model.....Kerner Air-Torch Incinerator(s), together with.....Type..... .....Size.....Hopper Doors, all in strict accordance with the installation drawings furnished by the KERNER INCINERATOR COMPANY.
(Quantity) (A, B or C) (33 or 55)

STANDARD LAYOUTS



Model T

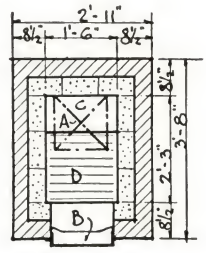
For Residences—Up to 6 rooms.

Flue Size—12x12 in. if small (Size 33) hopper door is used on first floor only. 16x16 in. if hopper door is used on second floor.

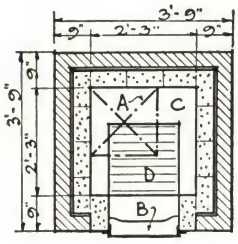
HEIGHT OF INCINERATOR—6 ft. 1 in. above floor. Top of footings figured 1 in. below floor level.

Model J

For Residences—Up to 8 rooms.



Model J1-L (J1-R Flue opposite side)



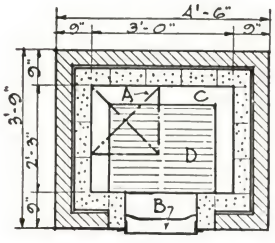
For Residences—Up to 10 rooms.

For Apartments—Up to 24 rooms.

Flue Size—12x12 in. in residences if small (Size 33) hopper door is used on first floor only. 16x16 in. if hopper door is used on second floor. 16x16 in. for apartment buildings 4 stories or less, if small (Size 33) hopper doors are used, 18x18 in. if large (Size 55) hopper doors are used and for all buildings up to 6 stories.

HEIGHT OF INCINERATOR—6 ft. 2 in. above floor. Top of footings figured 1 in. below floor level.

Model J2-L (J2-R Flue opposite side)

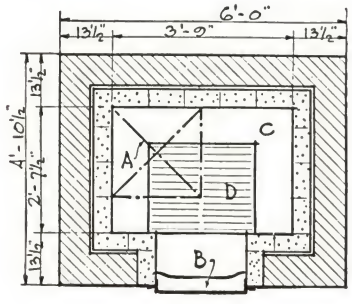


For Residences—Up to 12 rooms.

For Apartments—Up to 80 rooms.

Flue Size—16x16 in. in residences and for other buildings 4 stories or less if small (Size 33) hopper doors are used. 18x18 in. if large (Size 55) hopper doors are used and for all buildings up to 6 stories. 22½x22½ in. for all buildings over 6 stories. HEIGHT OF INCINERATOR—6 ft. 4½ in. above floor. Top of footings figured 1 in. below floor level.

Model J3-L (J3-R Flue opposite side)



For Apartments—Up to 140 rooms.

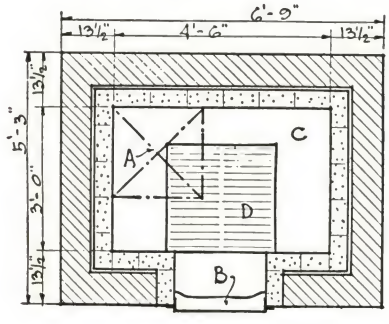
For Hospitals—Up to 60 beds.

For Schools—Up to 800 pupils.

Flue Size—22½x22½ in. for buildings over 6 stories; 18x18 in. for buildings 6 stories or less.

HEIGHT OF INCINERATOR—7 ft. 1 in. above floor. Top of footings figured 1 in. below floor level.

Model J4-L (J4-R Flue opposite side)



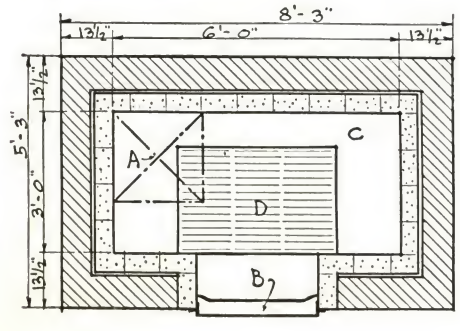
For Apartments—Up to 200 rooms.

For Hospitals—Up to 80 beds.

For Schools—Up to 1,000 pupils.

Flue Size—22½x22½ in. for buildings over 6 stories; 18x18 in. for buildings 6 stories or less. HEIGHT OF INCINERATOR—7 ft. 6 in. above floor. Top of footings figured 1 in. below floor level.

Model J5-L (J5-R Flue opposite side)



For Apartments—Up to 300 rooms.

For Hospitals—Up to 125 beds.

For Schools—Up to 1,500 pupils.

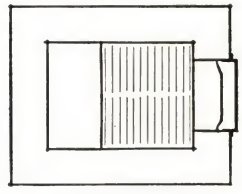
Flue Size—22½x22½ in. for buildings over 6 stories; 18x18 in. for buildings 6 stories or less.

HEIGHT OF INCINERATOR—7 ft. 11 in. above floor. Top of footings figured 1 in. below floor level.

Modified Layouts

Standard layouts are flexible to some extent and can be modified to suit particular plan conditions.

End Charging



Rectangular models can be arranged for end operation, as shown, where space conditions and limits make use of standard layouts impossible.

Direct Fed Models

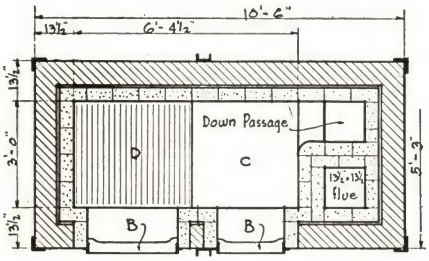
Any model can be used as a Direct Fed Incinerator, either with the flue extending up from the top of the incinerator chamber or connected by a breeching to an adjoining flue.

For Hopper Doors and Special Models See Pages 3 and 4.

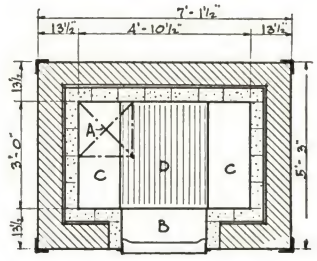
Index to Parts

A—Chimney flue
B—Fire and ash doors
C—Firebrick hearth
D—Dumping grates
Scale—¼ in. = 1 ft.

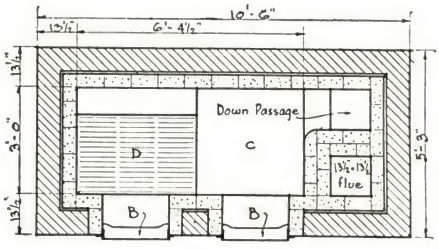
SPECIAL LAYOUTS



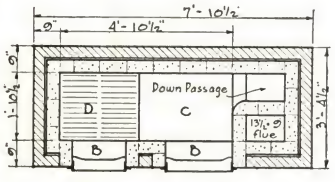
Heavy Duty Retort
Height of incinerator 7 ft. 1 in.



Heavy Duty Type J
Height of incinerator 7 ft. 8½ in.



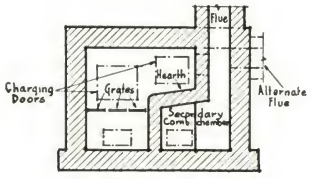
Large Retort
Height of incinerator 6 ft. 11½ in.



Small Retort
Height of incinerator 6 ft. 4½ in.

Heavy Duty Type J—The Heavy Duty Type J Incinerator is built to withstand higher temperatures than is usually encountered in burning residential or general apartment house waste. It has fire brick arched roof construction, and is reinforced with buckstays and tie rods. Grates are the heavy stationary bar type.

Can be either flue-fed or direct-fed.



Typical Section

Retort Type—The Retort Type Incinerator is not flue-fed. It is designed to handle situations where large proportions of garbage or other wet waste make it necessary to charge the wet and dry waste separately for proper burning.

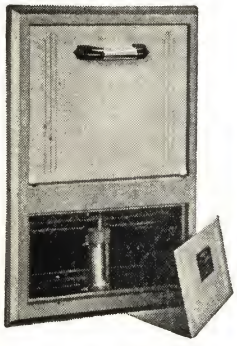
The miscellaneous dry waste is burned as the fuel on the grate section of the incinerator, the flames and hot gases from which pass over a fire brick hearth where the wet waste is placed for incineration. The gases then travel downwards to a secondary combustion chamber below the hearth, where further combustion of the gases takes place before passing up the flue.

When the amount of miscellaneous dry waste is not sufficient to provide the necessary fuel, additional fuel such as wood or coal must be burned on the cast iron grates.

The Retort Type is built in three models: Small, Large and Heavy Duty. The Heavy Duty model has fire brick arched roof construction, and is reinforced with buckstays and tie rods. The grates are the heavy stationary bar type.

Where requirements appear to call for Special Equipment described above, we suggest submission of problem to nearest Kerner Representative or Home Office

HOPPER DOORS

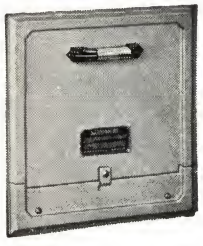


(Left) Type A

(Below) Type B



(Below) Type C



DIMENSION DATA, HOPPER DOORS								
Type	Overall height, in.		Overall width, in.		Daylight opening, in.		Depth of wall frame, in.	
	Size 33	Size 55	Size 33	Size 55	Size 33	Size 55	Size 33	Size 55
A	17	21¼	11⅜	14½	8¾ x7¾	11½x10	6½	9
B	11½	14¼	11⅜	14½	8¾ x7¾	11½x10	6½	9
C	12	15	11¼	14½	9 x9	12 x12	6½	9

Type A (Silent and Self-Closing)—Door is automatically closed by spring action. Closing is cushioned by a dashpot located in an air cooled chamber, below the doors.

Type B (Standard)—Identical with Type A door except silent self-closing features are omitted.

Type B (Low Cost Type—Without Casing)—Not as attractive in appearance as Types A and B but just as rugged and serviceable.

General—Size 55 cannot be used on flues with minimum dimensions less than 18x18 in. Where building is over 6 stories in height, flue should be larger than 18x18 in.—See Standard Layouts (page 2) for proper flue sizes.

Size 33 hopper door may be installed in a 12x12-in. flue if door is located on the first floor. Flue of larger dimensions must be used if more than one door is specified.—See Standard Layouts (page 2) for proper flue sizes.

Types A and B are painted in two-tone gray enamel finish. Type C is painted in one shade of gray enamel. (Types A and B are available in chromium plated finish at additional cost.)

Height above floor to bottom of wall frame should be determined by architect. Most convenient height is 2 ft. 4 in.

Extra Large (Projecting Type) 1A3 Hopper Door is available for commercial use. Daylight opening 14½x11½ in. This door requires a flue not less than 22½x22½ in.

All Flue Dimensions are inside measurements

THE MAJESTIC COMPANY

HUNTINGTON, IND.

Products

Manufacturers of MAJESTIC UNDERGROUND and BUILT-IN GARBAGE RECEIVERS, BUILT-IN MAIL BOXES, PORTABLE INCINERATORS, MILK and PACKAGE RECEIVERS.

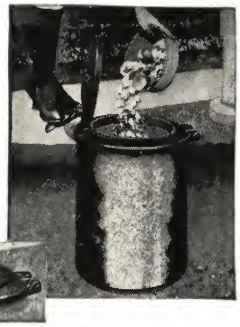
For Majestic Foundation Coal Chutes, Grade Line and Store Chutes, Circulator Fireplaces, Fireplace Dome Dampers, Fireplace Smoke Domes and Smoke Chambers, Kitchen Ventilating Fans, Garage Doors and Garage Door Hardware see File Index.

Through almost a half century of rendering high quality service at a reasonable cost, Majestic Products have won the preference of discriminating architects, and are distributed through all leading hardware jobbers, hardware dealers and lumber and building supply dealers.

Majestic Underground Garbage Receiver



Made in two types, "Quality" (shown at left), and "Special" (shown below). Each represents a decided forward step in home improvement and sanitation and each is made to Majestic's typical high standard of quality





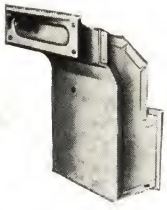


Majestic Mail Boxes



(*Left*) De Luxe Model

(*Right*) Special Model No. 803

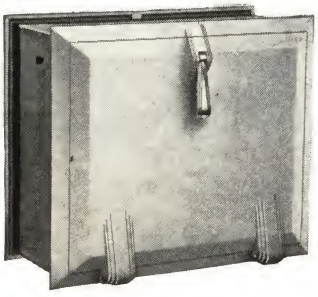


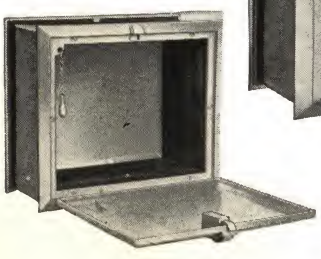
Milk and Package Receiver

(*Right*) *Inside View—Door Closed*

A modern home convenience with a combination of features that place it above the ordinary. Adaptable to any type or thickness wall construction.

See details at right.





(*Left*) Showing how the inside doors open down, serving as a convenient shelf. Also pull chain for releasing and resetting outside lock.

Majestic Portable Incinerator

The Majestic Incinerator provides a safe and sanitary method of disposing of wet or dry garbage, trash and refuse. Installed in basement and connects to flue. Eliminates a fire hazard—adds to safety, convenience and health of the home. Approved by Good Housekeeping and American Gas Association.

Ventilation provided by the chimney drys the refuse and then a few cents worth of gas a week will fire the charge and reduce it to ashes. Removable grates.

Construction—Made of cast semi-steel where subjected to the greatest amount of heat. Casings are of sheet steel and finished in heat resisting materials. Attractive and substantial.

Coal or Wood Burning—Especially built for localities where gas is not available. It has a substantial fire box and grate, otherwise it is identical in design to the gas-fired model.



SPECIFICATIONS—MAJESTIC INCINERATORS

No.	Capacity, bu.	Height over all, in.	Diam., in.	Flue, in.	Gas input per hr., ft.
1 (gas)	3	36	24	8	50
10 (coal)	3	44	24	8	

Majestic Underground Garbage Receiver

Homes that are designed for an attractive back yard definitely need an underground receiver. And the Majestic DeLuxe is the best that can be specified. The top and body are guaranteed not to break or rust out for ten years, and are the last word in convenience.

Construction—Folding, step-on pedal, top and hinges are of breakproof malleable iron. Non-rusting hinge pins prevent corrosion and binding of the lid. Heavy steel body, 16 gauge, thoroughly covered inside and out with a protective coating of rust-resisting paint. Galvanized inner can is 26-gauge steel. Double locked water-tight seams and well secured bail.

Majestic "Special" Underground Receiver

Similar in construction to the De-Luxe model. Modern lid has stationary pedal and top is cast of durable semi-steel. Not covered by ten-year guarantee.

Note: The Quality Receiver is available with plain or corrugated inside container—the Special with plain can only.

QUALITY		SPECIAL	
No.	Capac., gal.	No.	Capac., gal.
8	8	110	9
12	12	115	12
15	15	120	20
20	20		
25	25		

Majestic "DeLuxe" Mail Boxes

The aristocrat of mail boxes. Ground glass name and address plate is lighted from behind. Bell button is located above name plate. Mail slot is ample for even large magazines. Roomy heavy gauge steel body telescopes for various wall thicknesses. Inside frame is cast aluminum with prime coat finish.

"DELUXE" MAIL BOXES

No.	Mail opening, in.	Material	Finish
301	10¼x3	Cast bronze	Polished
401	10¼x3	Cast alum.	Satin finish
402	10¼x3	Cast alum.	Wrought iron

Majestic "Special" Mail Boxes

A quality product at a price that makes it ideal for the lower priced homes. Has adjustable body.

"SPECIAL" MAIL BOXES

803	1½x7½	Wrought brass	Dull
807	2¾x7	Cast alum.	Natural
808	2¾x7	Cast alum.	Wrought iron
809	2¾x7	Cast brass	Bright

Majestic Milk and Package Receivers

The Majestic Milk and Package Receiver is essential to the *modern kitchen.*

Model "S" is in three sizes and consists of two cast semi-steel doors and frames connected together with a telescoping steel body.

Model "W" consists of the doors and frames only, for built-in compartments.

Space-saving, drop doors are insulated. Outside door locks automatically after deliveries. Standard finish is baked-on white enamel with chromium plated handles. Outside dimensions of all models: frames 15¾ in. wide, 13½ in. high; wall opening required 14½x11 in. Model "S" made in three body depths; S-10 adjustable to walls from 5 to 8 in. thick; S-20 from 8 to 14 in.; S-30 from 14 to 22 in. Special depth bodies on specification.

Detailed bulletins on all items described sent upon request.

MORSE BOULGER DESTRUCTOR COMPANY

202-A East 44th Street, NEW YORK, N. Y.

AGENCIES IN PRINCIPAL CITIES—CONSULT LOCAL TELEPHONE DIRECTORY

HEAVY-DUTY INCINERATION MORSE BOULGER DESTRUCTORS

The Product

HEAVY DUTY DESTRUCTORS for heavy duty service in the incineration of:

(1) Hotel, hospital and institutional waste.
(2) Store and office building waste.
(3) Municipal garbage and rubbish.
(4) Sewage screenings and sludge.
(5) Industrial refuse.
(6) Elimination of obnoxious fumes.
(7) Removal of insulation from scrap wire.
(8) Cremation of human remains.

Morse Boulger Destructors

More than 1000 Morse Boulger Destructors have been built and are in daily operation in all parts of the world, burning almost every conceivable type of waste.

Morse Boulger Destructors are of the brickset, high temperature type and only materials which have been proven by years of service to be particularly adapted to incineration work are used. Every Morse Boulger Destructor built is guaranteed against defects in material and workmanship and carries a permanent guarantee as to capacity and correctness of design.

Standard Types

Type "R"—Designed for heavy duty, high temperature incineration of combustible rubbish in warehouses, stores, railroad yards and factories. This type may be used for water heating and generating steam where sufficient quantities of refuse are available.

Type "M"—Designed especially for the disposal of garbage and rubbish in large cities. This destructor makes use of preheated forced draft air supply and extra large settling and combustion chambers in order to destroy the refuse at temperatures above 1400° F. This type is especially valuable if a city desires to produce power.

Type "G"—Designed for use in smaller cities and towns or in hotels, hospitals and institutions where there are large quantities of very wet garbage and little dry rubbish. This type is especially efficient for use where coal, oil or gas is to be used as auxiliary fuel.

Type "A"—Designed for apartment houses, schools, apartment hotels, markets and bakeries where the proportions of garbage to rubbish is nearly equal. This destructor will burn rubbish only or rubbish mixed with garbage or garbage only may be burned by adding fuel.

Type "E"—Designed for use where space is limited and the quantities of refuse small. This type is particularly useful in small apartment houses, stores, institutions and markets.

Type "S"—Designed for the incineration of very wet sewage screenings or industrial wastes that are reluctant to burn.

Type "F"—Designed for the burning of fumes in paint factories or chemical plants. This unit will remove the insulation for copper wire without smoke and will return a bright metal.

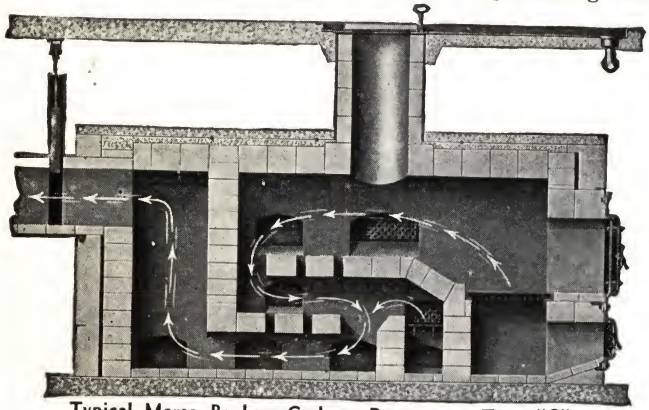
Type "U"—Designed for the incineration of combustible refuse as collected in smaller industrial and commercial establishments.

Crematories—Designed to give dignity to the building and to the service it is to render the public. From the time the casket is placed in the cool receiving vault to the presentation of the ashes in the urn no unpleasant odors, sound, or smoke is evident.

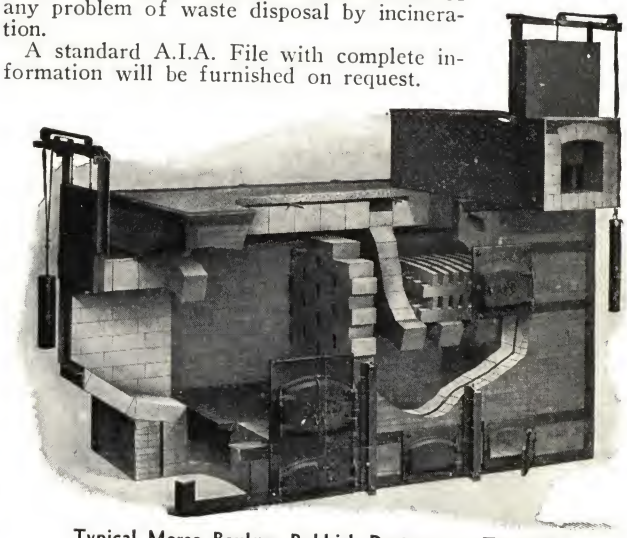
Service

The MORSE BOULGER DESTRUCTOR COMPANY offers service to Architects and Engineers for the solution of any problem of waste disposal by incineration.

A standard A.I.A. File with complete information will be furnished on request.



Typical Morse Boulger Garbage Destructor—Type "G"



Typical Morse Boulger Rubbish Destructor—Type "R"

DIMENSIONS AND CAPACITIES OF SMALL STANDARD MORSE BOULGER DESTRUCTORS

Type "G" for Garbage					Type "R" for Combustible Rubb'sh					Types "A," "E" and "U" for Rubbish and Garbage				
Model No.	Capacity, lb. per hr.	Dimensions, ft. in.			Model No.	Capacity, lb. per hr.	Dimensions, ft. in.			Model No.	Capacity, lb. per hr.	Dimensions, ft. in.		
		Length	Width	Height			Length	Width	Height			Length	Width	Height
1½-G	160	9—0	4—7	5—7	2-R	205	7—0	5—3	6—8	1¼-A	125	7—4	4—0	5—3
2 -G	215	10—9	4—7	5—7	3-R	288	8—0	5—3	7—6	2 -A	200	8—6	4—0	5—8
3 -G	340	12—9	6—0	6—7	4-R	400	11—0	5—6	7—6	3 -A	300	9—4	4—7	6—1
4 -G	430	14—0	6—0	6—7	5-R	480	12—3	6—0	8—0	4 -A	450	10—2	5—2	7—4
5 -G	520	15—6	6—0	7—0	6-R	630	13—0	6—6	8—0	6 -A	600	12—5	5—6	7—9
6½-G	660	17—0	6—0	7—3	7-R	700	14—0	6—6	8—0	"E"	90	5—1'	4—10	5—6
8 -G	815	18—0	6—6	7—7	8-R	800	14—0	7—0	8—0	"U"	75	4—11	2—11	5—8

Note: Working space at least equal to width of destructor is necessary on one side and is desirable on one end.
For clearances, sizes of flues and breechings, permissible length of charging chutes, etc., send for detailed information on any particular project.

PITTSBURGH INCINERATOR COMPANY

Mt. Washington Post Office
PITTSBURGH, PA.
NATION WIDE DISTRIBUTION

PITTSBURGH BUILT-IN-THE-CHIMNEY FLUE-FED INCINERATORS (PATENTED)

Pittsburgh Incinerators of various sizes and capacities are of common brick construction, the interior of combustion chamber being lined with fire brick, constructed with by-pass projections, a patented feature of the PITTSBURGH Incinerator. Each type is equipped with one, two or more dump grates and side wing grates where a Type H, 4FA, A, AA, AAA or AAAA is used. Side wing grates and by-passes will afford better circulation of air and heat around the charge of refuse. These grates are removable through feed doors. Grates and roof arches for 4FA and larger types are furnished in heat resisting alloy iron.

Incinerators are equipped with patented gas burner protected by a specially formed burner block. The gas is used only in case of emergency at such times as large quantities of garbage containing moisture accumulates. Will operate without gas.

The position of flue may be in either corner or center over the combustion chamber, but must be perpendicular in all cases. Flue area determined by number of self-closing hopper doors. All ash pits must be cemented.

Specification Insert—The Mason Contractor shall furnish and install where shown on the plans (....) Type No. (....) Incinerator as manufactured by the PITTSBURGH INCINERATOR COMPANY, Pittsburgh, Pa., having (....) No. (....) Hopper Receiving Doors and (....) Durable Cast Iron Spark Arrester; with all the necessary incinerator parts complete and in strict accordance with the detailed working drawings and directions as furnished by the manufacturer.

Commercial and Industrial Units

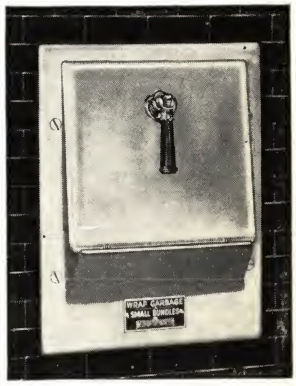
Designed for the destruction of garbage, rubbish and combustible waste material. Submit complete information as to requirements, daily amount of refuse to be destroyed rated pounds per hour, nature of waste material and sketch of space available together with dimensions of existing stack.

Architects, Engineers and Builders will receive our full co-operation. We deem it a privilege to assist you.

Receiving Hoppers

Automatic, self-closing and free from fire hazards. Plain and polished aluminum and porcelain enamel. Enamel doors in any finish desired.

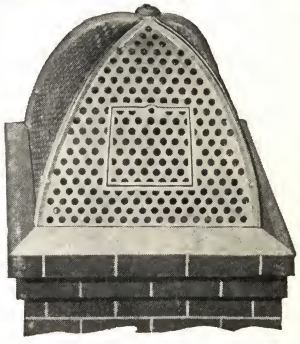
Hopper No.	Daylight opening, in.		Wall flange, in.		Wall opening, in.	
	Wide	High	Wide	High	Wide	High
1	8½	8	11	14	9	17
2	9½	9	12	16¼	9½	19
3	12	12	16	23	16	27
4	15	12	19	23	19	27



Durable Cast Iron Chimney Spark Arrester

The cast iron spark arrester is built for heavy duty and long duration, architecturally designed to improve the appearance of chimney tops; a vast improvement over the galvanized wire screen in appearance and lasting qualities. So constructed to cause a down swirling motion on all four sides, shunting burnt paper and sparks back into flue.

Specially designed cleanout door installed to assist in removing any obstruction that may occur.



SPECIFICATIONS OF FLUE FED INCINERATORS

Model or Type	Combustion chamber outside—over all, in.			Combustion chamber inside, in.			Approximate brick to build		Minimum flue lining size, in.	Shipping weights, lb.	Doors, in.	
	Depth	Width	Height	Depth	Width	Height	Fire	Red			Fire	Ash
Junior	33	33	72	15½	15½	45	175	450	13x13	275	9x12	9x12
Type H	33	46	76	15½	28½	49½	250	575	13x13	375	9x12	9x12
Type 4 FA	42	48	85	24	30	51	450	700	18x18	550	12x16	12x16
Type A	48	53	85	30	35	51	500	767	18x18	700	12x16	12x16
Type AA	56	74	85	30	48	51	600	1800	18x18	1050	12x16	12x16
Type AAA	56	90½	85	30	64½	51	660	2150	20x20	1600	20x20	12x16
Type AAAA	56	108½	85	30	82½	51	790	2425	24x24	1800	20x20	12x16

Junior and Type H—8¾-in. walls; 4FA and A—9-in. walls; Type "AA," "AAA" and "AAAA"—13-in. walls.

Capacities—Junior—up to 6 rooms; Type "H"—6 to 8 rooms and duplex; Type 4FA—4-family apartment; Type "A"—up to 15 apartments; Type "AA"—up to 25 apartments; schools 700 pupils, hospitals 50 beds; Type "AAA"—up to 50 apartments, schools 1000 pupils, hospitals 75 beds; Type "AAAA" up to 75 apartments, schools 1500 pupils, hospitals 100 beds.

PITTSBURGH SAN-A-TOR PORTABLE AND WALL TYPES

Self-contained and complete units delivered and shipped assembled, and easily installed and put in operation after a few minute's work in the same manner as an ordinary stove.

One and Two-Bushel Portables—Scientifically odorless SAN-A-TOR lined with 2-in. fire brick encased in 18-gauge sheet steel sides and back; cast iron front, top and base. Side grates supporting the garbage charge; central cone operates by a handle in front, which assists in disturbing and dumping ashes. All parts can easily be removed by hand through fire door of the incinerator.

Gas Burner—Loop type design according to the United States Bureau of Standards, and American Gas Assn. data on good burner design. Shoots every unit of concentrated heat through the garbage charge before reaching flue. All parts in burner properly protected from clogging.

Five-Bushel Portables—Constructed with cast iron top, front, base and doors; sheet steel sides and back. Interior lined with 2-in. fire brick; channel spaced by-passes; grates of heat resisting alloy iron in basket formation; two side wing and bottom grates; gas conveying manifold equipped with one burner in rear of each side and one special center burner. All grates are removed and replaced through door opening.

CAPACITIES AND DIMENSIONS PORTABLE TYPE

No.	Cap., bu.	Height, in.	Floor space, in.	Ship. weight, lb.
11	1	37½	21x21	450
12	2	55	21x21	700
50	½	37½	21x21	450
15	5	60	24x32	1800

CAPACITIES AND DIMENSIONS WALL TYPE

No.	Cap., bu.	Height, in.	Width, depth, in.	Ship. weight, lb.
21	1	31½	18x18	450
22	2	49½	18x18	700
31	1	31½	18x18	450
32	2	49½	18x18	700
41	1	31½	18x18	450
42	2	49½	18x18	700
25	5	59½	24x32	1800



Flue Capacity: 1 and 2 bu., 9 in.; 5 bu., 16 in.; ¾-in. gas connection.
Fire Doors: 7¼x11¼ in. for 1 bu.; 9¼x11¼ in. for 2 bu.; 12x16 in. for 5 bu.

Time-O-Stat Clock Control can be furnished at an additional cost. It is not standard equipment.

THE PYRONEEL CO.

DIVISION OF J. C. ROCHESTER & CO., INC.

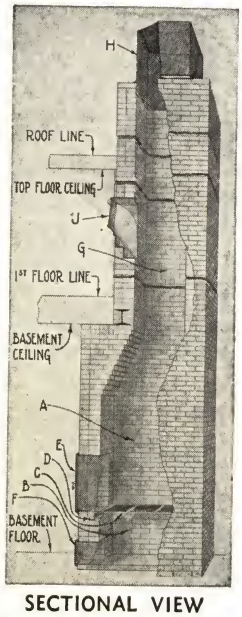
370 Lexington Avenue, NEW YORK, N. Y.

AGENTS IN PRINCIPAL CITIES

PYRONEEL INCINERATORS

Full-Grate *Flue-Fed*

The Pyroneel principle of incineration, while not a radical departure from the methods of former years, has proven to be an accepted standard of today. PYRONEEL stresses dehydration—a major function equal in importance to combustion. In planning with equal care for both functions Pyroneel has produced the closest approach today to odorless free-burning incineration.



SECTIONAL VIEW

A—Combustion Chamber
B—Ash Pit
C—Removable Grates
D—Grate Supports
E—Fire Door
F—Ash Door
G—Flue
H—Spark Screen
J—Hopper Doors

Note: Hopper Doors "J" for depositing refuse into the flue-chute may be installed on each floor of the building.

How to Specify Size

TABLE 1. BUSHEL RATING

Model No.	Basement Ceiling Heights					Each add'l. 6 in.
	7 ft.	7 ft., 6 in.	8 ft.	8 ft. 6 in.	9 ft.	
	Bushel Rating					
21	7	8	9	10	11	1
22	13	15	17	19	21	2
23	21	23	25	27	29	2
32	21	23	25	27	29	2
24	29	32	35	38	41	3
42	29	32	35	38	41	3
33	33	37	41	45	49	4
25	35	39	43	47	51	4
52	35	39	43	47	51	4
26	45	50	55	60	65	5
62	45	50	55	60	65	5
34	45	50	55	60	65	5
43	45	50	55	60	65	5
35	52	58	64	70	76	6
53	52	58	64	70	76	6
44	55	62	69	76	83	7
36	60	67	74	81	88	7
63	60	67	74	81	88	7
45	65	73	81	89	97	8
54	65	73	81	89	97	8
46	76	86	96	106	116	10
64	76	86	96	106	116	10

First—determine the number of bedrooms in the building. The reason bedrooms are considered a reasonably accurate guide to incinerator capacity is because they are the best known factor for estimating 24-hour occupancy of the premises.

Second—if it is an apartment building consider each bedroom to have 1-bushel rating, based on incinerator being fired each night.

If a private dwelling consider each bedroom to have 3-bushel rating based on incinerator being fired twice a week—6 bushels per bedroom when fired once a week.

Third — after determining bushel rating of aggregate number of bedrooms, consult Table No. 1 at left. Select the column corresponding to ceiling height in basement. Find in this column the bushels corresponding to bedrooms. In column on extreme left of that figure is shown the proper model Pyroneel.

Combustion Chambers

Table No. 4 gives plan dimensions of all 22 models of Pyroneel. The height is governed by basement ceiling height. No roof steel is required in Pyroneel Incinerators, as corbelling is designed to carry across from combustion chamber walls to flue walls. Our working drawings furnished with each Pyroneel give accurate details and dimensions of combustion chamber for mason contractor's guidance. In no case do we estimate or furnish steel members for support of chimney, as this is governed by height of building and other factors that may not be known to us. Neither can we specify exact thickness of footings under combustion chamber as we know nothing about local soil conditions. However, we recommend a minimum of 6-in. thickness and 6 in. beyond combustion chamber walls for all footings.

Flues

The flue size should be selected for appropriate draft depending upon the height of the chimney and the bushel capacity of the incinerator. We recommend the flue to be as large as possible so that refuse will not become clogged in the flue; but the size should be consistent with all other incinerator conditions.

We can furnish Pyr-o-Justors for control of flue draft—an automatic barometric damper. Also gas burners can be furnished with all models of Pyroneels. Details of both on request.

TABLE 4

Table 4 is based on 13-in. walls for all models. However, The National Board of Fire Underwriters regulations permit 9-in. walls for models having 9 sq. ft. grate area or less.

Model	Grate area, sq. ft.	Inside		Outside	
		Width, ft.	Depth, ft.	Width, ft.–in.	Depth, ft.–in.
21	2	2	1	4–2	3–2
22	4	2	2	4–2	4–2
23	6	2	3	4–2	5–2
32	6	3	2	5–2	4–2
24	8	2	4	4–2	6–2
42	8	4	2	6–2	4–2
33	9	3	3	5–2	5–2
25	10	2	5	4–2	7–2
52	10	5	2	7–2	4–2
26	12	2	6	4–2	8–2
62	12	6	2	8–2	4–2
34	12	3	4	5–2	6–2
43	12	4	3	6–2	5–2
35	15	3	5	5–2	7–2
53	15	5	3	7–2	5–2
44	16	4	4	6–2	6–2
36	18	3	6	5–2	8–2
63	18	6	3	8–2	5–2
45	20	4	5	6–2	7–2
54	20	5	4	7–2	6–2
46	24	4	6	6–2	8–2
64	24	6	4	8–2	6–2

Write for Architect's Lay-out Card.

We also manufacture Basement-Fed, Down-Draft, and Estate Type Incinerators.
Pyroneels are applicable to schools, hospitals, hotels and clubs. Your inquiries are invited.

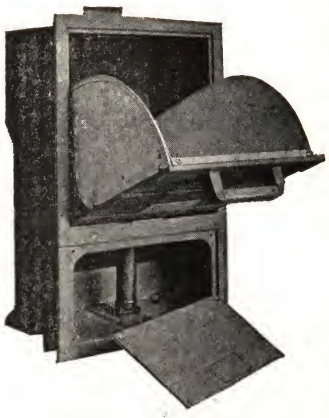
HOPPER DOORS



No. 78 Door



S-115 and S-140 Doors



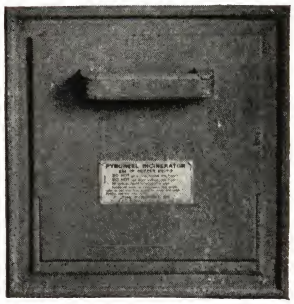
D-115 and D-140 Doors

Opened side view showing vertical Door Check. Horizontal door check, shown below can also be used



Horizontal Door Check

Usable with either D-115 or D-140 doors



No. 85 Door

Pyroneel's new Hopper Doors are styled in line with the new trend. All except No. 78 are flush doors—not projecting from the wall. Furnished with or without counterweights or door checks.

Finishes

Stock Finishes—Prime coat of paint, baked enamel, crackle finish in 16 colors.

Special Finishes and Makes—Polished Enamel, Chromium, Aluminum.

DIMENSIONS OF HOPPER DOORS

Door Nos. and description	For	For flues I.D. dimension, in.	Daylight opening of Door, sq. in.	Daylight opening of Door, in.	Size of Door frame, in.	Size of Wall opening, in.	Depth of buck, in.	Extension from wall, in.
No. 78 No. 78-C—Counterweighted	Residences	12 x 12	49	7 x 7	8¾ x 11	7⅜ x 15¾	5¾	3¾
No. 85C—Counterweighted	Residences and Apartments	16 x 16 18 x 18	85	9 x 9½	12 x 12½	10 x 13¼	5¾	Flush
No. S-115 No. S-115-C—Counterweighted No. D-115-H—With Horizontal Door Check No. D-115-V—With Vertical Door Check	Apartments, Schools, Hospitals	18 x 18 20 x 20 24 x 24	115	11¼ x 10¼ 11¼ x 10¼ 11¼ x 10¼ 11¼ x 10¼	13¼ x 12¼ 13¼ x 12¼ 13¼ x 19¼ 13¼ x 19¼	12¾ x 18¼ 12¾ x 18¼ 12¾ x 18¼ 12¾ x 18¼	8	Flush
No. S-140 No. S-140-C—Counterweighted No. D-140-H—With Horizontal Check No. D-140-V—With Vertical Door Check	Apartments, Schools, Hospitals	20 x 20 22 x 22 24 x 24 and larger	140	11¼ x 12½ 11¼ x 12½ 11¼ x 12½ 11¼ x 12½	13¼ x 14½ 13¼ x 14½ 13¼ x 21½ 13¼ x 21½	12¾ x 20½ 12¾ x 20½ 12¾ x 20½ 12¾ x 20½	8	Flush

Hopper door daylight opening should not exceed one-third the inside area of the flue.

SUGGESTED SPECIFICATION

Furnish and install where shown on plans a Pyroneel Full-Grate Incinerator. To be of size as shown, with Hopper Door, (Model) on each of the floors above the basement. All work to be done in accordance with detailed drawings and instructions of the manufacturer.

SOME NOTABLE PYRONEEL INSTALLATIONS

Building and Location	Type	Architect	No. of Pyroneels
Chelsea Lane Apartments, New York, N. Y.	5 and 6 Stories	Jos. Martine & Geo. F. Miller, New York, N. Y.	12
Hillside Housing Project, New York, N. Y.	Group Apartments	Clarence Stein, New York, N. Y.	114
Williamsburgh Houses Project, Brooklyn, N. Y.	Group Apartments	Williamsburg Project Ass'n, R. H. Shreve	136
Dixie Homes, Memphis, Tenn.	Group Apartments	Associated Architects, J. Frazier Smith	30
Harlem Macombs Housing, New York, N. Y.	Group Apartments	Archibald Brown, New York, N. Y.	47
No. 5 Riverside Drive Apartments, New York, N. Y.	20 Stories	Boak and Paris, New York, N. Y.	1
Paul Bissinger, San Francisco, Cal.	Residence	Angus McSweeney, San Francisco, Calif.	1
Lawrence High School, Lawrence, L. I., N. Y.	3 Stories	L. J. Lincoln, Hewlett, L. I., N. Y.	1

E. C. STEARNS & COMPANY

Manufacturers of Built-in and Portable Incinerators

SYRACUSE, N. Y.

THE BUILT-IN INCINERITE

The problem of disposing of garbage and waste, most efficiently, without odor and at a minimum of expense, has been solved effectually for the modern home and apartment building, by the Stearns Built-in Incinerite.

Many years of tests and experience have proven the correctness of the Stearns Incinerite design and construction. It has been built from the standpoint of long service. No weakening of important points has been permitted just to effect the saving of a few cents in manufacturing cost. The roof steel as supplied is complete as well as of proper weight and strength. The hopper and fire doors are of a quality and weight of metal that will resist the heat to which they will be subjected.

The Stearns Built-in Incinerite differs from all other equipment of this kind in its correctly positioned and proportioned auxiliary draft control as well as in the permanent checker-work wall at the side of the combustion chamber. Rapid and adequate pre-drying of an accumulated charge is followed by complete and odorless combustion because the combustion chamber has been designed with provision for a definite—instead of an accidental or casual—distribution of air above and below the horizontal grates.

The Stearns auxiliary draft control admits outside air above the horizontal grates independently of the volume of air that must be admitted under these grates. This auxiliary, above-grate air, is distributed to the charge through a permanent, checker-work, fire brick wall. The air thus admitted is preheated and may be regulated in volume as required, both during pre-drying and during burning. In this way, the best conditions for maximum speed in drying and for most efficient combustion, may be quickly established for each installation.

Independently regulated over-grate air is essential to perfect incineration without odor or smoke. It is permanently provided for in the Stearns construction by the checker-work fire brick wall, which requires no upkeep expense. The Stearns Incinerite is characterized throughout its entire construction by the weight and durability of all its parts.

All the details of construction as well as all working drawings and specifications relative to its erection, conform with the requirements of the National Board of Fire Underwriters.

Installation Details

We provide large scale blueprints with each installation, showing all details of construction and with complete specifications for erection. For conditions that require a modification of any of the standard designs or for special installations, we will gladly furnish specially drawn plans and recommendations.

Foundation

Foundations or footings for the incinerator chamber should be of concrete and extend 6 in. beyond the outer sides of the walls.

Chimney Construction

Chimneys measuring 16 x 16-in. or less may be enclosed by common brick 3¾-in. thick and lined with standard fire clay chimney lining. Chimneys larger than 16 x 16-in. must be lined with fire brick 4½-in. thick for a distance of not less than 30 ft. above roof of the combustion chamber, the fire brick lining being enclosed with common brickwork 3¾-in. thick. Above this point the chimney may consist of common brickwork not less than 8-in. thick, which may be lined with standard fire clay chimney lining, if desired.

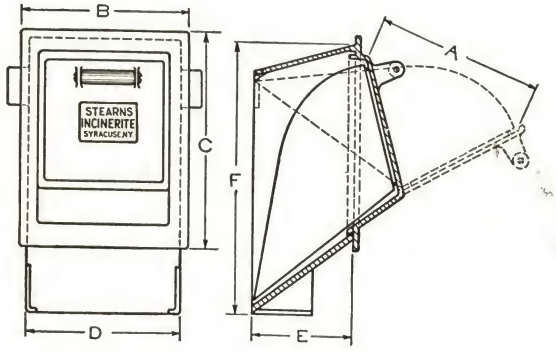
Chimney Screens

Chimney screens or spark arresters must be set on top of the chimney cap and fastened to the cap or sides of the chimney by masonry nails.

Hopper Doors

Hopper doors may be installed on any side of the chimney and may be located at the most convenient points within the building, subject to the condition that there be no offsets or slopes on the inside of the chimney below the topmost door.

Below we show a front and side diagram of the Stearns Incinerite hopper doors, together with detailed measurements of both Standard and Flush-type doors.

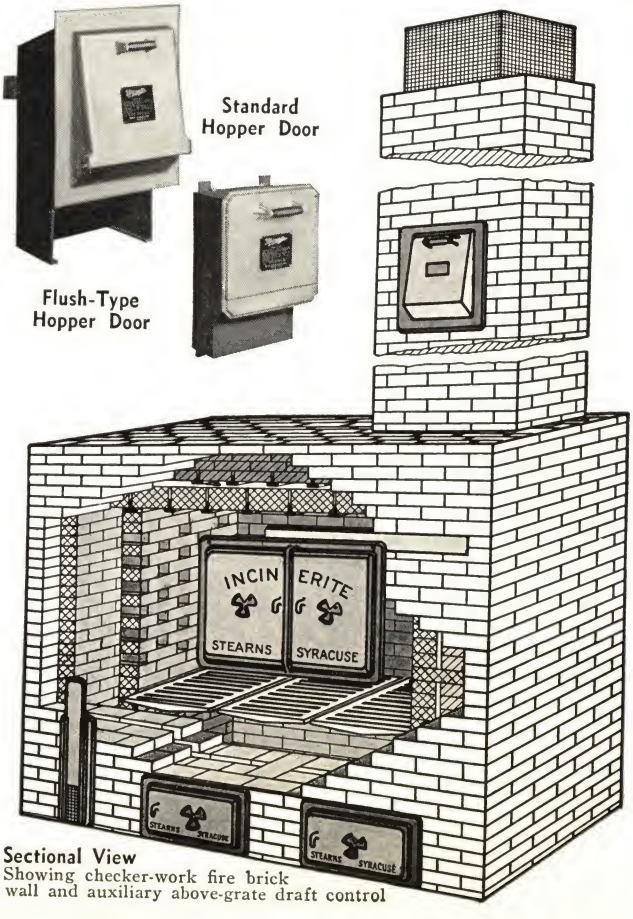


HOPPER DOOR DIMENSIONS

Door sizes	A-opening	B	C	D	E	F	Minimum flue size
Standard Type							
No. 0	6½″x10″	9½″	9¾″	8¼″	5″	11¾″	12″x12″
No. 1	8¾″x10¾″	11¼″	14½″	10¼″	6¾″	18¼″	12″x12″
No. 2	11½″x15½″	16″	19½″	13¼″	9½″	24″	16″x16″
No. 3	15½″x18½″	18¼″	21¾″	16¼″	9¾″	26¼″	20″x20″
Flush Type							
No. 4	8½″x10″	10 9/16″	11 5/16″	9″	6¾″	14½″	12″x12″
No. 5	10″ x11½″	12½″	13″	10 9/16″	6¾″	16½″	12″x12″

Standard Hopper Door

Flush-Type Hopper Door

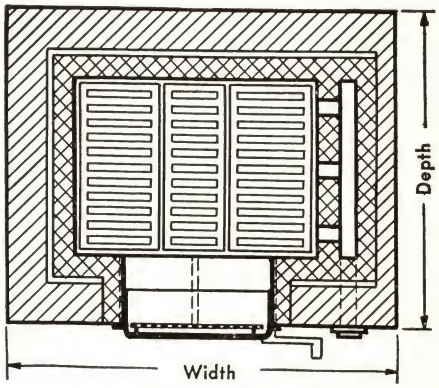


Sectional View
Showing checker-work fire brick wall and auxiliary above-grate draft control

FLOOR PLAN LAYOUTS (STANDARD BUILT-IN TYPES)

DIMENSIONS AND CAPACITIES BY SIZES

No.	Width	Depth	Standard height	Bushels capacity	Grate area	Grates
1	3′9″	3′7″	6′3″	8½	3 sq. ft.	1—18″x24″
2	4′3½″	3′7″	6′3″	11	4 sq. ft.	2—12″x24″
2½	4′9½″	3′7″	6′3″	14	5 sq. ft.	1—18″x24″ 1—12″x24″
3	5′3½″	3′7″	6′6″	18	6 sq. ft.	2—18″x24″
3½	5′3½″	4′1″	6′6″	22½	7½ sq. ft.	2—18″x30″
4	5′10″	3′7″	6′6″	21	7 sq. ft.	1—18″x24″ 2—12″x24″
5	5′3½″	4′7″	6′6″	27	9 sq. ft.	2—18″x36″
6	6′9″	5′5″	8′0″	48	12 sq. ft.	1—12″x36″ 2—18″x36″
7	7′3″	5′5″	8′0″	54	13½ sq. ft.	3—18″x36″
8	9′2″	5′5″	8′0″	72	18 sq. ft.	4—18″x36″



Typical Section Above Grates

APPLICATION OF UNITS BY SIZES

No. 1 —For 8-room residences. Flue size 12x12 in.

No. 2 —For 10-room residences. Flue size 12x12 in.

No. 2½—For 14-room residences, 4-family apartments, or up to 24 rooms. Flue size 12x12 in. for residences; 16x16 in. for apartments.

No. 3 —For 20-room residences, 6-family apartments, or up to 32 rooms. Flue size 12x12 in. for residences; 16x16 in. for apartments.

No. 3½—For 8-family apartments or up to 50 rooms. Flue size—under 4 stories, 16x16 in.; 4 stories or more, 20x20 in.

No. 4 —For 8-family apartments or up to 50 rooms. Flue size—under 4 stories, 16x16 in.; 4 stories or more, 20x20 in.

No. 5 —For 12-family apartments or up to 90 rooms. Hospitals—35 beds. Schools—500 students. Flue size—under 4 stories, 16x16 in.; 4 stories or more, 20x20 in.

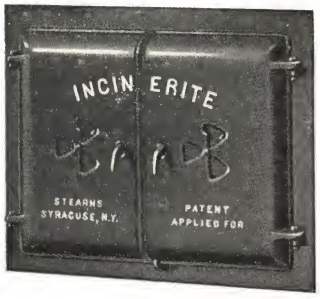
No. 6 —For 18-family apartments or up to 130 rooms. Hospitals—35 to 60 beds. Schools—500 to 800 students. Flue size—under 7 stories, 20x20 in.; 7 stories or more, 24x24 in.

No. 7 —For 24-family apartments or up to 175 rooms. Hospitals—60 to 85 beds. Schools—800 to 1200 students. Flue size—under 7 stories, 20x20 in.; 7 stories or more, 24x24 in.

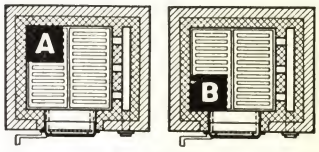
No. 8 —For 40-family apartments or up to 300 rooms. Hospitals—85 to 125 beds. Schools—1200 to 1500 students. Flue size 24x24 in. or larger.



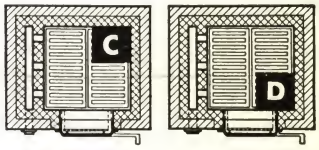
FIRE DOORS
Built for Service



Chimney and Grate Positions



All sizes of the INCINERITE are made for each of the standard chimney positions as shown here. Orders should specify the chimney position as well as size.



DIMENSIONS AND DATA

Fire Doors	No. 1 (single leaf)	No. 2 (single leaf)	No. 3 (double leaf)
Size	11″x20″	18″x22″	22″x30″
Brick opening	11⅝″x20⅝″	18¾″x22¾″	22¾″x30¾″
Used on Incinerite	Nos. 1, 2, 2½, 3	Nos. 3½, 4, 5	Nos. 6, 7, 8

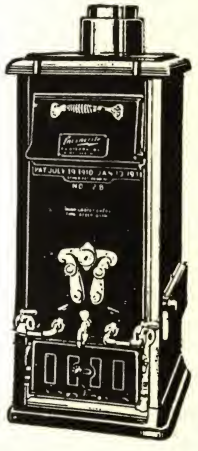
PORTABLE AND WALL TYPE INCINERATORS

Gas Fired



There are numerous forms of so-called "portable" as distinguished from built-in incinerators available. These vary greatly in design and construction—likewise in price. Many of them will burn paper or readily combustible waste, others can dispose of garbage and wet waste in moderate amounts—if liberally diluted with dry material of high fuel value. A very few are actually capable of satisfactorily solving the ever-present household problem of disposing of a daily accumulation of wet garbage.

The Stearns Incinerite—either portable or wall type—completely and permanently solves the problem once it is installed because it really does what an incinerator is intended to do—it burns garbage quickly, completely and without odor. The Stearns Incinerite is a tested and proven unit—not to be compared with make-shift or flimsily constructed affairs built primarily to sell at a price. The Stearns Incinerite with its heavy cast iron firebox will stand up under long use and give the service that equipment of this type should give, even under the hardest usage. It will dispose of a maximum charge of waste with a minimum consumption of gas or other fuel.



Complete dimensions and weights of these units will be provided on application

HUSTON METAL PRODUCTS DIVISION

OF VENT-O-LITE COMPANY

TELEPHONE
VANburen 2808

4230 West Taylor Street
CHICAGO, ILL.

For Skylights, see File Index

HUSTON HOME INCINERATOR—ALL YEAR 'ROUND CONVENIENCE—ODORLESS



DOWN DRAFT
NO FLIES
NO ODOR
BURNS GARBAGE, RAGS OR REFUSE

No more need to go outside in cold or wet weather to dispose of garbage. Simply wrap the garbage in newspapers and place in the storage chamber of the incinerator until you have accumulated enough to burn. Add a few more newspapers and apply a match. For extremely wet garbage, the addition of a few sticks of wood will assure complete incineration of the garbage.

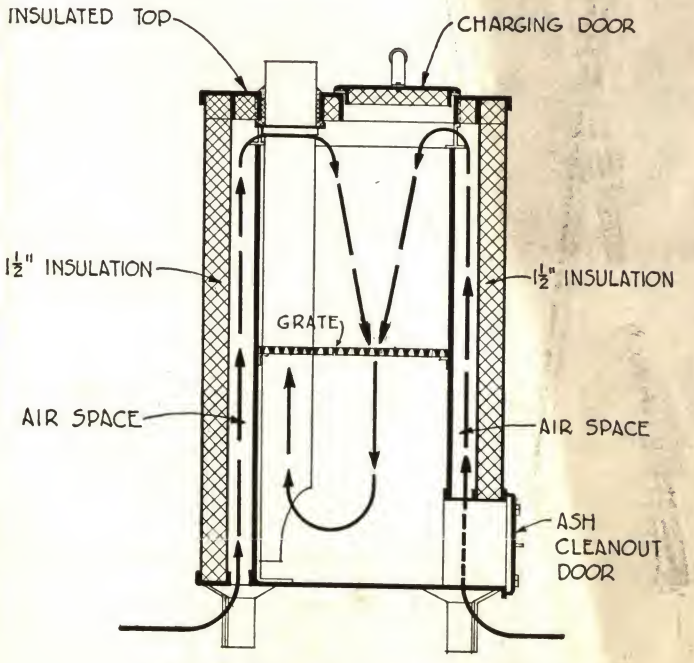
The down-draft operation of this incinerator aids combustion, and the combustion is complete and quick, so that the garbage is reduced to a flakey powdery ash without residue. All combustible smoke and malodorous gases are drawn through the flame and exhausted through the smoke pipe, whose outlet is located at the bottom of the incinerator.

Rugged and Sturdy

Constructed of steel and cast iron, this incinerator is built to furnish years of service. The top, bottom and grate are gray iron castings and cylinder walls are steel. The grate is divided so that it is readily removable for cleaning or replacement. The outer cylinders confine a 1½-in. thickness of insulation, to prevent unnecessary heating of the area surrounding the incinerator.

Easily and Quickly Installed

This incinerator may be installed in the basement or kitchen. Attaches to any flue or chimney, or if desired can be connected to the smoke pipe of the present furnace. A collar is provided to clamp around an eight-inch smoke pipe to receive the smoke pipe of the incinerator. The damper in the incinerator smoke pipe reduces the possibility of draft interference when the furnace is operating.



• SECTIONAL • DIAGRAM •

Specifications

Capacity—30 quarts, ample for one family. This capacity can be increased by burning more frequently.

Dimensions—Diameter, 21¼ in.; height, 32½ in. Smoke pipe diameter, 6 in.

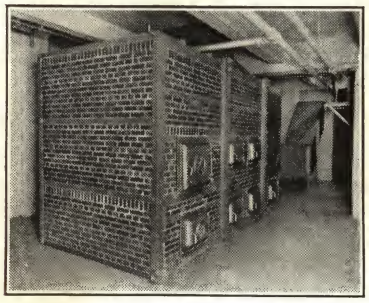
Standard Colors—Black top and bottom; choice of ivory or red body.

Attractively priced to suit the desires of the most conservative.

WASHBURN & GRANGER, INC.

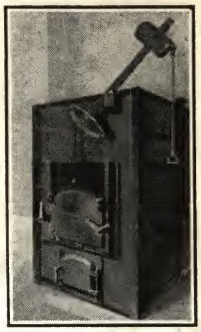
Manufacturers of Dean Incinerators, Crematories, Can Washers, Rubbish Chutes, Waste Heat Hot Water Heaters, Gas Washers, Boiler Grates and Floor Grids

53 Park Place
NEW YORK, N. Y.



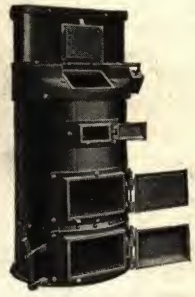
Dean Type A Incinerator

For garbage and combustible refuse. Capacity 100 lbs. to 2,000 lbs. per hour.



Dean Type B Incinerator

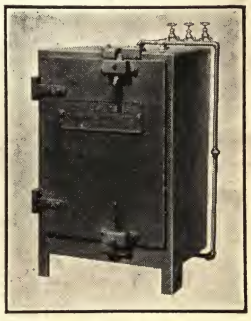
For dry or easily combustible refuse only. Capacities 60 to 378 cu. ft. per hour.



Type E Semiportable Incinerator

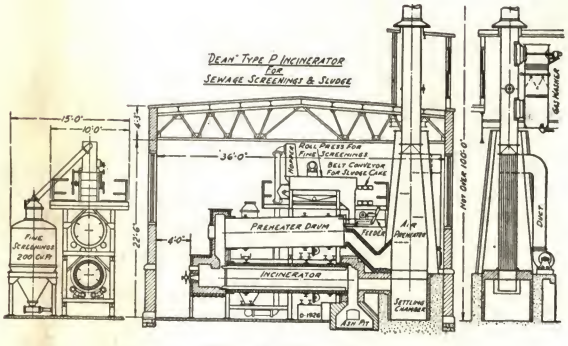
For garbage. Coal or gas fired. Capacity 50 lbs. per hour.

Type D, 25 lbs. per hour.



Dean Can Washer

For sterilizing with steam and rinsing with hot water, garbage and hospital refuse cans which are about 17 in. diameter, 24 in. high.



Type P Incinerator

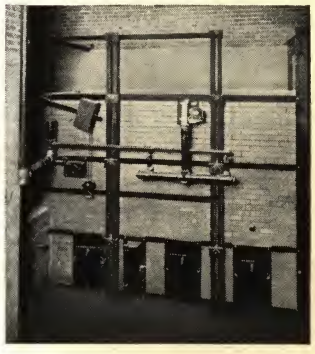
A mechanically operated incinerator for drying and burning fine sewage screenings and filtered sludge cake.

Also adapted to dry and burn processed refuse containing a large percentage of moisture.



Dean Gas Washer

Sold with Dean Incinerators for the complete elimination of fly ash and the reduction of temperatures to permit unlined breechings and stacks.



Dean Cremation Unit

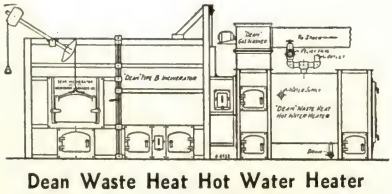
For human remains. Gas fired.



Dean Rubbish Chute

Bucket has positive seal when open and closes automatically when foot is released from the treadle.

Size of opening in bucket 14 in. high, 24 in. wide. Chute dimensions 24½x24 in.

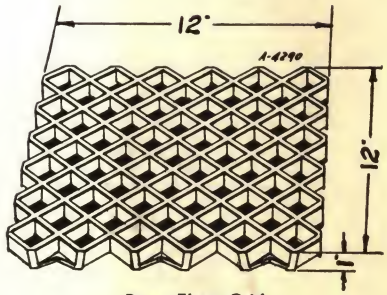


Dean Waste Heat Hot Water Heater

Combined waste heat hot water heater and gas washer.

Capacity, 500 gals. per hour. 100° F. temperature rise. Capacity of incinerator 114 cu. ft. combustible refuse per hour.

Space required 30 ft. long, 17 ft. wide, 11 ft. 6 in. headroom.



Dean Floor Grid

A cast iron grid for reinforcing concrete floors of ramps, loading platforms, boiler rooms, printing plants, garages and machine shops.

It will withstand continuous heavy shocks for years without breaking up or needing costly repairs.

PHILGAS DEPARTMENT, PHILLIPS PETROLEUM CO.

General Motors Building
DETROIT, MICH.

NEW YORK, N. Y., 1 Wall Street — BARTLESVILLE, OKLA., Phillips Building

PHILGAS SERVICE—AN EXACT DUPLICATION OF CITY GAS BEYOND CITY GAS MAINS



Modern and Economical

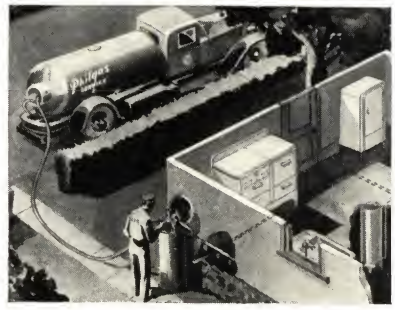
Philgas Service is an *exact duplication* of city gas service. The customer uses Philgas and the modern gas appliances just as if connected with city gas lines—never has to order fuel, or manipulate equipment. There are no tanks to change and a *continuous,* dependable gas supply is maintained by Philgas Service without interrupting the use of gas, without requiring the attention of the user, and without entering the customer's home or place of business. Continuity of the gas supply permits the safe and convenient use of fully automatic appliances. To carry the parallel of city gas service to completion, the user of Philgas is billed at monthly intervals for the exact amount of gas consumed—*after* it is used.

Real Gas

Philgas is real gas—a hydrocarbon commonly found in natural gas and known commercially as propane ($C_3 H_8$). The gas is treated in special plants to remove impurities and compressed to a liquid state for economy in shipping and distribution. Propane resumes its gaseous state *automatically* when relieved of pressure and is not to be confused with gasoline, kerosene and similar fuels which are normally liquid, and which must be artificially gasified before being burned. Philgas is piped into the house as a gas, and is used in the same manner as natural or artificial gas in all types of gas appliances.

Complete Service

Philgas is shipped in special tank cars to the many Philgas distributing stations. From the distributing stations Philgas is delivered at regular intervals in special tank trucks to the customer's installation. At the customer's home, consumption during the previous period is accurately determined and the gas supply replenished from the tank truck.



This service is performed without any attention from the customer and without interrupting the use of the gas at any time. Philgas is always ready at the turn of a valve.

Universal Applications

The uses of Philgas are as varied as are the applications of gas heat. Among the great variety of common appliances used with Philgas are:

Cooking ranges
Hot water heaters
Electrolux refrigerators
Laundry hot plates, Mangles
Coffee urns
Restaurant ranges
Gas brooders
Gas incubators
Melting pots
Bunsen burners
Steam tables
Singeing and drying torches
Radiant type heaters
Clothes pressing machines

Approved Appliances

Philgas is much higher in heat content and of different chemical constituency than artificial or ordinary natural gas, and therefore has different combustion characteristics. For these reasons, only those appliances which have been designed and constructed especially for use with propane gas are recommended.

To insure maximum efficiency and minimum operating costs for the user, PHILGAS DEPARTMENT "lists" as acceptable for connection, only these appliances which have been tested and

approved for *propane usage* by the American Gas Association Testing Laboratory. Such appliances are built by leading appliance manufacturers of the country. Consult the local Philgas office before specifying appliances.

Low Operating Costs

As with city gas the cost of operation depends exactly on amount of gas used by customer. Considering the efficiency of approved appliances, Philgas for cooking compares to city gas of average 530 B.t.u. content at about $2.00 per thousand cubic feet, or to electricity at 2¢ per kw. hr. for the average domestic consumer. For automatic water heating and refrigeration the new low Philgas rate compares to 530 B.t.u. city gas at approximately $1.00 per thousand cubic feet. Tens of thousands of satisfied users have found Philgas operating costs to be equal or less than those of much less convenient fuels.

Installation Only $9.75

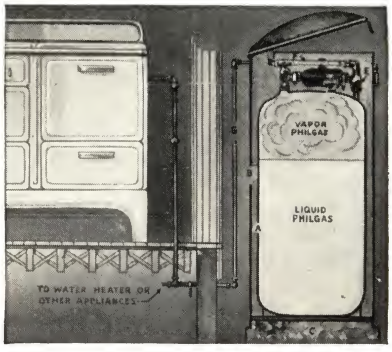
For $9.75 the company delivers and installs all Philgas equipment necessary to supply customer's appliances. The charge includes the labor of installing up to 30 ft. of piping from the Philgas equipment to appliances. *Buried installations can be furnished for an extra charge.* Equipment and piping remain property of the company.

Underwriters' Listing

Philgas Service equipment has been tested and listed as "Standard" by the Underwriters' Laboratory of the National Board of Fire Underwriters, and consequently has no effect on insurance rates.

Typical Philgas Installation

The installation is very simple. It consists of a steel cylinder (A) inside of a cylindrical metal cabinet (B), located outside customer's home or place of business. The entire installation stands on a concrete base (C). Resting on top of the steel cylinder is a regulator (D) which maintains a constant pressure of 11 in. of water on gas entering the house. (E) is safety valve set at 1-lb. pressure. From the safety valve the gas passes through flexible hose (F) and thence through standard gas



piping or copper tubing (G) to appliances inside the house. The metal cabinet is kept under lock and key.

As gas is consumed in range or heater, more Philgas automatically resumes its natural gaseous state in the cylinder, passes through the regulator and gas piping into appliance burners. Nothing to wear out or get out of order.

Data and Information

Two different sizes of gas storage equipment are used at consumers' homes, depending upon the number of gas appliances installed and volume of anticipated Philgas usage. Further flexibility to meet individual requirements is provided by Philgas, at no extra charge, through the installation of more than one unit of storage equipment where justified. Consequently, if recess in wall of house or other building is planned to accommodate Philgas Service equipment, the local Philgas office should be consulted as to which size of equipment will be used and whether a multiple installation is required.

Philgas above-ground equipment cannot be completely enclosed, but may be masked by shrubbery or by removable lattice work and may be painted by user in any color desired. Original color of standard cabinet is sage brush green. Buried installations can be made at extra cost.

(1) Dimensions of "standard" size equipment (illustrated): Height of cabinet (open) 72 ins.; diameter concrete base 23 ins.; diameter cabinet 21 ins.; height of cabinet (closed) 53 ins.; minimum size of recess for one unit of equipment (if recess is to be used) 26x26x75 ins. high.

(2) "Large" size equipment requires minimum space of 36x36x70 ins. high, per unit.

(3) All Philgas storage equipment must be placed (a) outside of building (b) at least 5 ft. from any openings in building which are below the top of the equipment (c) and so as to be reached by 50 ft. of hose from nearest point which delivery truck can approach.

(4) Roads leading to installation must be of such character as to be easily accessible to trucks twelve months in the year.

(5) Piping and labor incident to installing Philgas Service is done by Company employees, and the charge for same is covered by the initial charge for Philgas Service within the limitations in respect to extra piping and other unusual conditions set forth in the Philgas Service Application.

Company reserves the right to locate Philgas equipment on customer's premises so as to require a minimum of piping to the points of use, but should customer desire a location other than the point selected by the Company, his request will be granted upon payment of any additional expense incurred.

(6) Any piping inside the building done by other than the Philgas employees must be fitted with special compounds and the work done as specified by the local Philgas manager.

Suggested Specifications

Contractor shall supply Philgas Service equipment as manufactured and furnished by PHILGAS DEPARTMENT, PHILLIPS PETROLEUM COMPANY, General Motors Building, Detroit, Mich. (or local Philgas District address), under its standard Philgas Service Application, and arrange for installation of same by Philgas at point shown in architect's plans.

All gas piping preferably to be installed by Philgas. If not, contractor must consult local Philgas office concerning pipe sizes, location of equipment, joint compound specifications, and testing arrangements.

All gas appliances must bear American Gas Association Testing Laboratory seal of approval for *propane gas.* Philgas office will furnish names of dealers handling approved appliances. Connection to appliances to be made by Philgas.

WHERE PHILGAS SERVICE CAN BE OBTAINED

Philgas Service—the exact duplication of city gas service—is supplied in eighteen districts east of the Mississippi River. Each distributing station serves a district within a radius of approximately 25 miles from the central plant. These stations are listed below, together with general description of locations. Call or write any central, division or district office for exact information on territory served.

COMMUNICATE WITH PHILGAS DEPARTMENT, PHILLIPS PETROLEUM COMPANY, at Any of the Addresses Below:

Near New York (Southwest)
Box 502, Bound Brook, N. J.
Telephone: Bound Brook 1111

Near New York (West)
Box B, Haskell, N. J.
Telephone: Pompton Lakes 896

Near New York (North)
Box 587, Mount Kisco, N. Y.
Telephone: Mt. Kisco 5174

Near Bridgeport, Conn.
Box 351, Derby, Conn.
Telephone: Derby 472

Near Madison, Wis.
Box 608, Madison, Wis.
Telephone: Badger 6499

Near Hartford, Conn.
Box 227, Windsor, Conn.
Telephone: Windsor 791

South Central Conn.
Box 485, Niantic, Conn.
Telephone: Niantic 33

Near Providence, R. I.
Box 160, Washington, R. I.
Telephone: Coventry 8

Berkshire Section—N. Y., Conn., Mass.
Millerton, N. Y.
Telephone: Millerton 1

Near Boston, Mass.
Box 119, South Sudbury, Mass.
Telephone: South Sudbury 200

Near Baltimore, Md.
Box 63, Reisterstown, Md.
Telephone: Reisterstown 218

Near Washington, D. C.
Box 266, Rockville, Md.
Telephone: Rockville 304

Near Albany, N. Y.
Box 1188, Albany, N. Y.
Telephone: Albany 8-2271

Near Utica, N. Y.
Richfield Springs, N. Y.
Telephone: Richfield Springs 137

Near Toledo, Ohio
Box 145, West Toledo Station, Toledo, Ohio
Telephone: Lawndale 7488

Near Cleveland, Ohio
Box 491, Hudson, Ohio
Telephone: Hudson 40

Near Detroit, Mich.
Box 94, Pontiac, Mich.
Telephone: Pontiac 4154

Near Indianapolis, Ind.
Box 166, Maywood, Ind.
Telephone: Belmont 3399

For gas service in other localities under Philgas Self-service Plan write 7-101 General Motors Bldg., Detroit, Mich.

PYROFAX DIVISION, CARBIDE AND CARBON CHEMICALS CORPORATION

(UNIT OF UNION CARBIDE AND CARBON CORPORATION)

30 East 42nd Street, NEW YORK, N. Y.

"PYROFAX" GAS SERVICE BEGINS WHERE THE CITY GAS MAINS END



"Pyrofax" Gas—a Real Gas

"Pyrofax" Gas is propane—highly refined, purified, and uniform in content. It is delivered in liquid form in steel cylinders, thus permitting a comparatively small cylinder to hold the equivalent in heat units of approximately 5700 cu. ft. of city gas. "Pyrofax" Gas is conveyed through piping to gas burning appliances as a *true* gas at a pressure comparable to city gas—and not as a liquid. It is non-toxic and burns with a clear blue flame free from soot or odor.

Every farm, suburban home, school, hotel, hospital or other institution beyond the reach of city gas mains needs "Pyrofax" Gas Service.

What Are the Advantages of "Pyrofax" Gas Service?

Convenience—"Pyrofax" Gas offers all the conveniences of city gas. It is ideal for cooking, water heating, refrigeration and room heating. Leading manufacturers make gas burning appliances specifically adapted for use with "Pyrofax" Gas.

Economy—For the average family of four—"Pyrofax" Gas costs only $3 to $4 per month for cooking. With larger consumption lower rates are available. In the majority of communities, "Pyrofax" Gas Service costs from 10% to 50% less than electricity for cooking. Magic Chef "Pyrofax" Gas ranges adapted for use with "Pyrofax" Gas are available from $50 up.

Dependability—"Pyrofax" Gas users get gas *when they want it.* No waiting or worrying. The PYROFAX DIVISION OF CARBIDE AND CARBON CHEMICALS CORPORATION maintains the largest stocks of bottled gas in cylinders in the world. A vast network of distributing stations assures prompt, reliable delivery service.

How Much Does "Pyrofax" Gas Cost to Install?

"Pyrofax" Gas regulating equipment is loaned to the user without charge, except for a $9.75 installation charge. This compares with $50 to $130 installation charges for other type gas services. "Pyrofax" Gas regulating equipment is installed above ground—instantly accessible. There is nothing buried or concealed where leaks or defects may develop without detection.

Type "A" Equipment

Consists of regulating equipment and connections for 2 cylinders of "Pyrofax" Gas completely housed in a green enameled steel cabinet. An automatic device, with change-over signal, which cuts in the reserve cylinder of gas when the one in use becomes exhausted, is available. Equipment is 57 in. high, 37 in. wide and 19 in. deep. It is placed on a weatherproofed wood base which comes with equipment.





Type "H" Equipment

Includes regulating equipment and connections for 2 cylinders of "Pyrofax" Gas. Automatic change-over device with signal available. Over-all size, 37¼ in. wide, 18 in. deep, 55 in. high when closed and 69 in. high when open. Equipment mounted on weatherproofed wood base.

Listed by Underwriters' Laboratories

"Pyrofax" Gas is listed as "standard" by the Underwriters' Laboratories of the National Board of Fire Underwriters. This means that a "Pyrofax" Gas" installation, when made in accordance with rules of the National Board of Fire Underwriters, should not increase the insurance rate to the householder.

How Should "Pyrofax" Gas Service Be Specified?

For architects' use, the following should be included in plumbing specifications under gas piping section:

The contractor shall have installed one standard Type . . . "Pyrofax" Gas Equipment supplied by CARBIDE AND CARBON CHEMICALS CORPORATION of 30 East 42nd Street, New York, N. Y.

Gas piping shall be of the sizes shown and located as indicated on the detail drawing (specify as for city gas). Shellac should be used on pipe threads and unions should be ground seat type. Piping shall be connected by (the local "Pyrofax" Gas Distributor) to the gas-burning appliancies and all necessary adjustments on these appliances for burning "Pyrofax" Gas shall be made by (the local "Pyrofax" Gas Distributor).

All appliance included elsewhere in specifications, should be ordered from "Pyrofax" Gas Distributor, adapted for use with "Pyrofax" Gas.

A National Gas Distribution Service

Carbide and Carbon Chemicals Corporation and associated companies maintain more than 600 plants, warehouses and sales offices throughout the United States and Canada to serve thousands of "Pyrofax" Gas users.

Write to the PYROFAX DIVISION, CARBIDE AND CARBON CHEMICALS CORPORATION, 30 East 42nd Street, New York, N. Y., for the name of the nearest Distributor.

TIRRILL GAS MACHINE CORPORATION

19 Rector Street, NEW YORK, N. Y.
WORKS: NETCONG, N. J.

GAS GENERATING MACHINES

This Company manufactures various types of gas machines which generate, at low cost, a high-grade non-poisonous gas for operating gas appliances for cooking, heating, lighting, refrigeration, etc., in residences, laboratories, factories, hospitals and other public institutions, and for small municipal gas plants.

The gas-generating installation consists of a liquid gas storage tank and generator (B), which is the same for all types of installations; a source of air under slight pressure (A); and a mixer (C).

The source of air under pressure may be a weight-operated air pump with hand rewind only, or both hand and automatic electric motor rewind A, Fig. 1. A motor-driven, automatic rotary air blower with a small Airometer air pressure storage tank, Fig. 2. For industrial installations only, a motor-driven fan, not automatic is used. The mixer (C) is required with the weight-operated air pumps. It is sometimes required with the rotary air pump units, but is not used with the industrial fan-operated units.

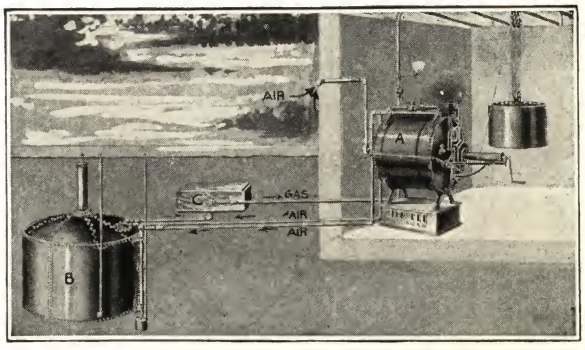


Fig. 1. Tirrill Gas Machine Installation

Operation

Air under pressure is furnished by the pump, blower or fan, as the case may be. In the case of the blower, a small amount of air is stored in the Airometer, whence it is delivered to the generator; in the case of the pump and fan, the air is delivered directly to the generator. The generator is buried out-of-doors, underground, where it acts as a storage tank for the liquefied gas and a container for the carburetor which generates the gas. Due to large storage capacity of generators there is no danger of frequent and sudden failure of the gas supply.

The air passing through the carburetor picks up gas vapor, forming a stable and permanent gas. Where a mixer is used, the gas passes from the carburetor to the mixer, where it is automatically mixed with air direct from the pump, so as to permit regulation of the richness of the gas as may be desired.

The hand rewind pump unit can be installed where no electric power is available, or, in case of failure of electric power, can be wound up by hand, thus preventing failure of gas supply.

The rotary blower unit is entirely automatic in its operation, and is particularly desirable for laboratories or other places where the gas must be piped a long distance, because much higher pressures can be obtained with the rotary blower.

The fan unit is not automatic; it is especially adapted for use in industrial plants where gas is in almost constant use.

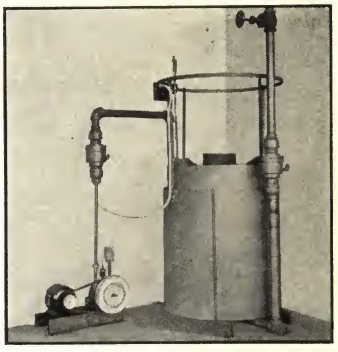


Fig. 2. The Tirrill Airometer and Pump

Backed by 75 Years Experience as a Leader in the Field

1. Safety—The machine mixes the gas outside the building underground. It makes a gas that contains no carbon monoxide; hence it is absolutely non-poisonous. It produces and distributes the gas noiselessly and requires no heat to operate it. In producing this gas no dangerous high pressures are used and there are no reducing valves to cause trouble.

Tirrill gas apparatus is listed by the National Board of Fire Underwriters as Standard Class "A" equipment, and its installation does not increase insurance rates.

2. Economy—Cost of Tirrill gas is much lower than that of other compressed or liquid gas. Under average conditions in the United States, the amount of Tirrill gas equivalent in heating value to 1000 cu. ft. of average city gas is produced by the Tirrill gas machine for $1.00 to $1.25. This is cheaper than bottled gas and cheaper than city gas in many communities.

3. Simplicity—The apparatus is easily installed and connected up to any existing gas piping. Any pipe fitter can install the apparatus in a short time by following instructions for erection. It requires no attention beyond an occasional (once or twice a year) filling of the generator tank with the Tirrill liquid gas. As the tanks have a considerable capacity, frequent fillings are not required.

4. Efficiency—Tirrill gas machine gives positive, continuous service—the gas being automatically made only as needed and no made gas being stored. The opening of a burner cock to a stove, heater, or any other appliance connected to the pipe system, starts the generator making gas, and shutting off the burner cock automatically stops the generator making gas. Variations in temperature have no effect on the efficiency of the gas machine's operation.

5. Durability—As only the highest grade materials and workmanship are employed—once installed, the system requires no upkeep or repairs. There are many Tirrill gas machines in use today which were installed thirty or forty years ago, and these are still giving perfect satisfaction to their owners.

Installation Service

The Tirrill Corporation is prepared to undertake the installation of its gas machines by experienced service men, or to refer customers to reliable local firms who will undertake the work.

CAPACITIES AND SIZES OF TIRRILL COUNTER-WEIGHT MACHINES

Machine No.	3	4	5	6	7
Gas delivered per hr., cu. ft.	400	550	850	1100	2500
Gas pressure, in.	2½	2½	2¾	3¼	3½
Equalizing pressure Meter (A):					
Length, in.	64	70	75	86	97
Height, in.	47½	47½	57	61	61
Diameter, in.	35	35	42	48	48
Weight box:					
Height, in.	24	24	24	24	24
Diameter, in.	34½	39½	44	52½	60¼
Total weight for loading weight box, lbs.	1250	1550	2400	3500	4500
Note: CI counterweights supplied in place of weight box if desired.					
Generator (B):					
Height (with dome), in.	69	70	80	82	96
Diameter, in.	53	59	65	75	100
Capacity, gals.	250	300	500	700	1250
Mixer (C):					
Height, in.	14	14	14	15	18
Diameter, in.	46	46	46	52	65
Shipping weight, lb.	1500	1775	2260	3475	4000

CAPACITIES AND SIZES OF TIRRILL AEROMETER GAS MACHINES

Machine No.	2	3	4	5	6	7
Capacity cu. ft. of gas per hr.	300	400	550	850	1100	2500
Maximum gas pressure, in.	6	8	8	10	12	12
Airometer dimensions:						
Height full, in.	50	50	48	108	106	168
Height empty, in.	32	32	32	78	78	96
Diameter, in.	31	50	50	60	72	72
Capacity, cu. ft.	6	20	26	49	67	170
Blower:						
No.	1A	1A	2A	3A	3A	5A
Capacity, cu. ft. per hr.	420	420	780	1500	1500	3180
Horsepower of motor	⅛	⅛	¼	⅓	½	1
Mixer:						
Diameter, in.	24	24	24	28	32	36
Maximum over-all width, in.	36	36	36	42	48	52
Maximum over-all height, in.	50	60	60	66	72	84

MEMORANDA